# CONNECTING PEOPLE: ACCELERATING UNIVERSAL SERVICE AND ACCESS TO COMMUNICATIONS SERVICES IN SOUTH AFRICA

by

**David John Bate**

submitted in accordance with the requirements for
the degree of

**Doctor of Public Administration**

at the

University of South Africa

Supervisor: Professor E J van der Westhuizen

Co-Supervisor: Professor G Naidoo

21 April 2014

**DECLARATION**

Student Number: 3318-074-1

I declare **CONNECTING PEOPLE: ACCELERATING UNIVERSAL SERVICE AND ACCESS TO COMMUNICATIONS SERVICES IN SOUTH AFRICA** is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

21 April 2014

David John Bate

## ACKNOWLEDGEMENTS

The author expresses his gratitude for the information and other contributions provided by numerous public agencies, companies, industry associations and other institutions including, *inter alia*, the Universal Service and Access Agency of South Africa, the Independent Communications Authority of South Africa, the Department of Communications of the Government of South Africa, the Internet Service Providers' Association of South Africa, Vodacom Proprietary Limited and Telkom SA Limited.

The author thanks Professor EJ van der Westhuizen as Supervisor and Professor G Naidoo as Co-Supervisor, of the Department of Public Administration and Management in the College of Economic and Management Sciences of the University of South Africa. It has been a long journey with Professor van der Westhuizen and a short journey with Professor Naidoo, but each of them played an instrumental role in the effort. This study would not have been completed without their support, encouragement and guidance.

The author appreciates the assistance and courtesy extended by the individuals who participated in the interviews as part of the author's primary research as well as the assistance provided by BMI TechKnowledge Group Proprietary Limited, particularly Mr Brian Neilson, Mr Tim Parle and Ms Tertia Smit. The author appreciates the assistance provided by Dr Theunis Kotze with the median polish analysis of answers to the closed-ended questions of the questionnaire and the assistance provided by Ms Jayne Hogarth in transcription of the interviews. The author also appreciates the significant contribution made by Ms Jenny de Wet with editing and citations.

The study preoccupied a significant portion of the author's life for a significant period. He commenced the study with perfect vision and concluded the study with reading glasses. He married and was blessed with the birth of a quartet of children. The author gratefully acknowledges and appreciates the patience, understanding and encouragement of his wife, Joanne, who shouldered an inordinate amount of responsibility during the thousands of hours the author spent on this study away from his family. The author also appreciates the understanding (less patience) of his four children, Jordan, Riley, Jacob and Harper, who generally left Dad alone in the library to 'do his homework'. The author would not have completed this study without the love and support of his family. The many sacrifices made by each of them along the way are truly appreciated and will never be forgotten. *Amor vincit omnia, et nos cedamus amori.*

## ABSTRACT

Access to communications services represents a human right. Beyond international precedents, this right is contemplated by Section 16 of the *Constitution of the Republic of South Africa, Act 108 of 1996*. In South Africa, the lingering effects of apartheid suggest that universal service may constitute a prerequisite for the socio-economic development of previously disadvantaged communities. Yet the principal policies historically pursued by the Government of South Africa to improve the availability, accessibility or affordability of communications services failed to achieve their objectives. The Government acknowledges such failure and has taken some steps to remedy previous mistakes. Given the growing importance of communications services in a digital century, however, it needs to take major new steps to ensure that all citizens enjoy available, accessible and affordable communications services across the ICT spectrum.

This study evaluates the regulatory, market and policy environments of South Africa's communications industry between 1958 and 2013, particularly the period between 1993 and 2013. Its primary aim is to identify causes of and remedies for the failures of universal service policies and programs. The study incorporates interviews with representatives of public and private sector stakeholders. It reviews policies and programs in international markets to identify precedents which may influence universal service in South Africa.

Based on analyses and independent thought, this study identifies trends (technology and competition) and isolates gaps (areas and people left behind by previous policies and current market conditions) as well as deficiencies (lack of affordability) that have affected and may affect universal service in South Africa's communications market. It proposes three new programs (Universal Coverage Program; Free Air Program; and Free Broadband Program) to accelerate the realisation of universal service. It proposes reforms to the regulatory environment (merger of USAASA with ICASA; use of targeted programs; regulation by incentive rather than obligation; use of a Program Accountability Paradigm to optimise policy implementation; reforms to USAF administrative and fund allocation procedures; formalisation of funding priorities; financial independence for ICASA; use of market-friendly policies; and spectrum management reforms). It also considers the viability of using state owned enterprises to deliver broadband services to boost universal service.

## KEY TERMS

Universal Service; Universal Access; Telecommunications; Communications Policy; ICT Policy; Broadband Policy; Public Policy Design; Public Policy Reforms; Digital Divide; Convergence.

Subject Category: 0617

## TABLE OF CONTENTS

# TABLES, FIGURES AND MAPS

## CHAPTER 2



## CHAPTER 3



## CHAPTER 4

**CHAPTER 5**



**CHAPTER 6**



**CHAPTER 7**

## ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| 3G | Third Generation |
| 4G | Fourth Generation |
| ACE | Africa Coast to Europe cable system |
| ADR | American Depository Receipt |
| ADSL | Asynchronous Digital Subscriber Line |
| AfDB | African Development Bank |
| Anatel | Agência Nacional de Telecomunicações |
| ANC | African National Congress. |
| ANOVA | Analysis of Variance |
| ARPU | Average Revenue Per User |
| ASP | Application Service Provider |
| AT&T | American Telephone and Telegraph Corporation |
| ATC | American Tower Corporation |
| B&K | Bill and Keep (see also SKA) |
| BBBEE | Broad Based Black Economic Empowerment |
| BEE | Black Economic Empowerment |
| BEREC | Body of Regulators of Electronic Communications |
| BOO | Build Own Operate |
| BOOT | Build Own Operate Transfer |
| BoP | Base (bottom) of Pyramid |
| BOT | Build Operate Transfer |
| BRICS | Brazil Russia India China South Africa |
| BTO | Build Transfer Operate |
| CCC | Complaints and Compliance Committee |
| CDH | Community Digital Hub |
| CDMA | Code Division Multiple Access |
| CEO | Chief Executive Officer |
| CFO | Chief Financial Officer |
| CINX | Cape Town Internet Exchange |
| CITEL | Inter-American Telecommunications Commission |
| CMC | Community Multimedia Centre |
| CODESA | Convention for a Democratic South Africa |
| COO | Chief Operations Officer or Chief Operating Officer |
| COPASA | Commercial Pay Telephone Association of South Africa |

| | |
|---|---|
| COSATU | Congress of South African Trade Unions |
| CPE | Customer Premises Equipment |
| CSC | Common/Citizen Service Centre |
| CSO | Community Service Obligation |
| CST | Community Service Telephone |
| CTC | Community Technology Centre |
| CUASA | Communication Users Association of South Africa |
| CWU | Communication Workers Union |
| DFA | Dark Fibre Africa Proprietary Limited |
| DINX | Durban Internet Exchange |
| DBSA | Development Bank of Southern Africa |
| DOC | Department of Communications, Government of South Africa |
| DTT | Digital Terrestrial Television |
| DWDM | Dense Wave Division Multiplexing |
| EASSy | Eastern Africa Submarine cable system |
| ECN | Electronic Communications Network |
| ECNS | Electronic Communications Network Services |
| ECS | Electronic Communications Services |
| EDGE | Enhanced Data GSM Environment |
| EU | European Union |
| FCC | Federal Communications Commission |
| FDT | Telecommunications Development Fund |
| FET | Further Education and Training Institution |
| FIFA | Fédération Internationale de Football Association |
| FITEL | Telecommunications Investment Fund |
| FM | Frequency Modulation |
| FttH | Fibre to the home |
| FUST | Fund for the Provision of Universal Access |
| GAAP | Generally Accepted Accounting Principles |
| Gb | Gigabit |
| GCIS | Government Communication and Information System |
| GDP | Gross Domestic Product |
| GHz | Gigahertz |
| GIS | Geographic Information System |
| GNI | Gross National Income |
| GPRS | General Packet Radio Services |

| | |
|---|---|
| GSM | Global System for Mobile Communications |
| HSPA | High Speed Packet Access |
| HSPA+ | Evolved High Speed Packet Access |
| HSRC | Human Sciences Research Council |
| I-ECNS | Individual Electronic Communications Network Services |
| IBA | Independent Broadcasting Authority |
| ICASA | Independent Communications Authority of South Africa |
| ICT | Information and Communications Technology |
| IDC | Industrial Development Corporation of South Africa Limited |
| IDRC | International Development Research Centre |
| IEEE | Institute of Electrical and Electronics Engineers |
| IFRS | International Financing Reporting Standards |
| IGF | Internet Governance Forum |
| IoT | Internet of Things |
| IP | Internet Protocol |
| IPB | ICT Price Basket |
| IPO | Initial Public Offering |
| IPWD | Institution of People with Disabilities |
| ISP | Internet Service Provider |
| ISPA | Internet Service Providers' Association of South Africa |
| ISRDP | Integrated Sustainable Rural Development Programme |
| IT | Information Technology |
| ITU | International Telecommunication Union |
| JINX | Johannesburg Internet Exchange |
| JSE | Johannesburg Stock Exchange |
| km | Kilometre |
| $km^2$ | Square Kilometre |
| kbps | Kilobits Per Second |
| KPI | Key Performance Indicator |
| LTE | Long Term Evolution |
| M2M | Machine to Machine |
| M&E | Monitoring and Evaluation |
| MB | Megabyte |
| Mbps | Megabits Per Second |
| MCT | Multi-Purpose Community Telecentre |
| MCTS | Mobile Cellular Telecommunication Services |

| | |
|---|---|
| MDDA | Media Development and Diversity Agency |
| MHz | Megahertz |
| MPCC | Multi-Purpose Community Centre |
| MPIA | Multi-Party Implementation Agreement |
| MPLS | Multi-Protocol Labelling System |
| MPNP | Multi-Party Negotiating Process |
| MTR | Mobile Termination Rate |
| MVNO | Mobile Virtual Network Operator |
| NBN | National Broadband Network |
| NCTP | National Colloquium on Telecommunications Policy |
| NEMISA | National Electronic Media Institute of South Africa |
| NEPAD | New Partnership for Africa's Development |
| NGN | Next Generation Network |
| NGO | Non-governmental Organisation |
| NITA | National Telecommunications and Information Administration |
| NPV | Net Present Value |
| NTF | National Telecommunications Forum |
| NTPP | National Telecommunications Policy Project |
| NTT | Nippon Telegraph and Telephone Corporation |
| NWBN | National Wireless Broadband Network |
| NYSE | New York Stock Exchange |
| OBA | Output Based Aid |
| OCPT | Office Congolais des Postes et Telecommunications |
| OECD | Organization for Economic Cooperation and Development |
| Osiptel | Organismo Supervisor de la Inversión Privada en Telecomunicaciones |
| OTT | Over the Top |
| PAP | Program Accountability Paradigm |
| PAYE | Pay As You Earn |
| PCC | Portfolio Committee on Communications |
| PIAP | Public Internet Access Centre |
| PIC | Public Investment Corporation SOC Limited |
| PICC | Presidential Infrastructure Coordinating Commission |
| PIT | Public Information Terminal |
| PoP | Point of Presence |
| POTS | Plain old telephone service |
| POTWA | Post and Telecommunication Works Association |

| | |
|---|---|
| PSTS | Public Switched Telecommunication Services |
| PTN | Private Telecommunication Network |
| QUANGO | Quasi-autonomous Non-governmental Organisation |
| R | South African Rand (see also ZAR) |
| REA | Rural Electrification Administration |
| RCDF | Rural Communications Development Fund |
| RDP | Reconstruction and Development Program |
| RIA | Research in Africa |
| ROU | Right of Use |
| SABC | South Africa Broadcasting Corporation |
| SABS | South African Bureau of Standards |
| SACF | South African Communications Forum |
| SADC | Southern African Development Community |
| SAex | South Atlantic Express cable system |
| SAFE | South Africa Far East cable |
| SANRAL | South African National Roads Agency SOC Limited |
| SANReN | South African National Research Network |
| SAPA | South African Press Association |
| SAPS | South African Police Service |
| SAT-3 | South Atlantic 3 cable |
| SATRA | South African Telecommunications Regulatory Authority |
| SCE | State Controlled Enterprise |
| SDH | Synchronous Digital Hierarchy |
| SIM | Subscriber Identity Module |
| SIP | Strategic Integrated Project |
| SKA | Sender Keeps All |
| SMA | Spectrum Management Agency |
| SMME | Small Medium and Micro Enterprise |
| SMP | Significant Market Power |
| SNO | Second National Operator |
| SOE | State owned Enterprise |
| SPV | Special Purpose Vehicle |
| STB | Set Top Box |
| STS | Standard Telephone Service |
| Subtel | Subsecretaria de Telecomunicaciones |
| TB | Terabyte |

| | |
|---|---|
| Tb | Terabit |
| Tb/s | Terabit per second |
| TCA | Telecommunications Carriers Association |
| TCO | Total Cost of Ownership |
| TENET | Tertiary Education and Research Network of South Africa |
| TUSMA | Telecommunications Universal Service Management Agency |
| TVWS | Television white space |
| UAS | Universal Access and Service |
| UASF | Universal Access and Service Fund |
| UCC | Uganda Communications Commission |
| UDM | United Democratic Movement |
| UFP | USAF Funding Panel |
| UNDP | United Nations Development Programme |
| UNEP | United Nations Environment Programme |
| UNISA | University of South Africa |
| US | United States of America |
| USA | Universal Service Agency |
| USAA | Universal Service Administration Agency |
| USAASA | Universal Service and Access Agency of South Africa |
| USAC | Universal Service Administrative Company |
| USAF | Universal Service and Access Fund |
| USAL | Under Serviced Area License |
| USAO | Universal Service and Access Obligation |
| USATN | Under Serviced Area Telecommunications Network |
| USATS | Under Serviced Area Telecommunications Services |
| USB | Universal serial bus |
| USD | United States Dollar |
| USF | Universal Service Fund |
| USPF | Universal Service Provision Fund |
| USO | Universal Service Obligation |
| VANS | Value Added Network Services |
| VoIP | Voice over Internet Protocol |
| VPN | Virtual Private Network |
| WACS | West Africa Submarine Cable |
| WASP | Wireless Application Service Provider |
| WASPA | Wireless Application Service Providers' Association |

| | |
|---|---|
| WEF | World Economic Forum |
| Wi-Fi | Any WLAN based on IEEE 802.11 standards |
| WiMax | Worldwide Interoperability for Microwave Access |
| WLAN | Wireless Local Area Network |
| WTO | World Trade Organization |
| ZAR | South African Rand (see also R) |

# CHAPTER 1

# INTRODUCTORY CHAPTER

## 1.1 INTRODUCTION

From our earliest ancestors to our latest friends, people have sought to communicate with each other (Curtin University, 2013, 1). People depend on communication for their emotional and economic well-being (Fox, 2011, 1; Branigan, 2010, 1; Comninos, Esselaar, Gillwald, Moyo & Naidoo, 2010, 1-3; Hardy, 2002, 278; Lutgendorf & Ullrich, 2002, 177-196). In short, people have an inherent need to connect with each other. The rise of the Internet (Tapscott, 1998) and the Facebook™ phenomenon (Kirkpatrick, 2010) highlight humanity's seemingly insatiable desire to communicate with kindred souls wherever found across the globe. They underscore the fundamental importance of communication to the way people live, work and play. As such, the ability to communicate represents one of the central aspects of modern humanity.

In the modern world, the communications industry is the oracle through which many people fulfil their desire to talk to each other. Telephones, computers, pagers, tablets, servers and many other communications devices rely on communications infrastructure to connect people. Indeed, the communications industry is arguably the most influential, if not the most important, enterprise in today's wired world as the availability, accessibility and affordability of communications services often represent key prerequisites to living a healthy, happy and prosperous life for many people across the planet (Fox, 2011, 1; ITU, 2012a, 1).

Yet many people do not enjoy the benefits of available, accessible and affordable communications services, particularly denizens of developing countries (ITU, 2012a, 1; Fox, 2011, 1). South Africa is no exception to this phenomenon (Comninos et al, 2010, 36). Indeed, South Africa suffers from a particularly inequitable distribution of communications services as a legacy of its apartheid period (South Africa, 1995, 8). This must change. If governments of the developing world aspire to improve health standards, alleviate poverty, improve literacy, advance education and promote prosperity for their citizens, the benefits of available, accessible and affordable communications services need to reach such citizens. The necessity for such tangible benefits is particularly urgent in South Africa.

The public policy ambition to ensure that every household in a national population enjoys the convenience of an available, accessible and affordable telephone hanging on a nearby wall is historically called 'universal service' to communications services. Where this is not immediately or practically possible, the public policy ambition to ensure that every citizen in a national population has access to an available, accessible and affordable telephone within a reasonable walking distance is historically called 'universal access' to communications services.[1] This study refers to each term uniquely as required but uses the abbreviations of 'universal service and access' or 'universal service or access' when considering the terms contemporaneously as context permits.

This study considers these twin public policy imperatives in the context of South Africa's communications market. It evaluates the definitions and origins of universal service and access as well as the applications and performance of universal service and access policies and programs in other developed and developing countries to identify trends which may positively influence consideration of such policies and programs in South Africa. It examines the regulatory, market and policy environments of South Africa's communications market between 1958 and 2013 to identify the causes of and remedies for the failure of the Government of South Africa to accelerate the availability, accessibility and affordability of communications services in the country. It incorporates interviews with representatives of key public and private sector participants to inform such evaluation and analysis. Based on such analyses, the study recommends the adoption of several new programs and regulatory reforms and considers potential market reforms to accelerate the realisation of universal service and access to communications services in South Africa.

This chapter introduces the study. The background and rationale for the study underline the importance of communications technologies to the development of commerce and community in emerging economies, particularly South Africa. The problem statement, research questions and assumptions define the direction of the study. The aim and objectives confirm the potential contribution to be made by the study to consideration of universal service and access policies in South Africa. Various limitations on the scope of the study are discussed in this chapter. The research design and methodologies are briefly highlighted as an important part of the study. The

---

[1] These are simplistic definitions. Infra, sections 2.3 and 2.4 for nuanced consideration of the definitions and concepts of 'universal service' and 'universal access'. Infra, section 5.3.2.2.2 for consideration of such definitions in the context of South Africa's communications market.

chapter summarises the treatment of abbreviations, acronyms and key theoretical concepts. It discusses the referencing and editing techniques applied in this study. The chapter concludes with an outline of the study's chapters and a summary of this introductory chapter.

## 1.2 BACKGROUND AND RATIONALE

The basic elements of communication date back to the origins of humanity. Our earliest ancestors communicated by conveying a message (Curtin University, 2013, 1), perhaps a grunt, from a source by means of a transmitter (the language areas of the sender's brain) through a signal (air) carried by a channel (sound waves) to the receiver (the language areas of the observer's brain).[2] Over time, increasingly sophisticated communications systems evolved that used sign language, stick drawings and eventually rudimentary spoken languages that enabled these ancestors to build increasingly sophisticated agrarian communities that advanced their kin and kind (Curtin University, 2013, 1; Careless & McLoughlin, 1951, 3545-3553).

The introduction of written languages represented a further advancement of communications systems that allowed agrarian settlements to record their knowledge and build and control vast empires well beyond the walls of their original communities (Curtin University, 2013, 1). The discovery of radio waves and subsequent development of analog and digital technologies exponentially increased people's ability to communicate with each other within and beyond our planet (FCC, 2014, 1). In all, the ability to communicate has been a cornerstone of humanity's evolution into the dominant community on our planet.

In recent years, a proliferation of highly sophisticated, affordable and accessible communications technologies has fundamentally changed the conduct of commerce and culture throughout the world. More than a decade ago, Paragraph 14 of the 2002 *Johannesburg Declaration on Sustainable Development* highlighted three facets of globalisation challenging traditional world development paradigms:

> *The rapid integration of markets, mobility of capital and significant increases in investment flows around the world have opened new challenges and opportunities for the pursuit of sustainable development* (United Nations, 2002, 2).

---

[2] For an overview of the essential elements of communication, see Economic Expert, 2014, 1.

However, each facet illustrates an effect rather than a cause of globalisation. Along with the advent of sophisticated information technologies, the ability to communicate through affordable and accessible real time communications technologies represents a key driver behind many facets of globalisation.

Yet the ability to communicate has been unevenly distributed in our modern world. Realising much of Marshall McLuhan's vision for a 'global village' (McLuhan, 1962), many residents of developed countries pervasively exploit available, accessible and affordable communications resources as part of their daily lives. Communications devices such as televisions, laptops, fixed line telephones, mobile telephones, satellite telephones, pagers, personal digital assistants, tablets and smart phones leverage communications protocols such as the Internet through broadband, radio, satellite and digital transmission networks to 'wire' many of us to our global community on a continuous, instantaneous, real time basis.

At the same time, many residents of developing countries do not enjoy equally pervasive use of available, accessible and affordable communications resources. Given the concentration of the world's population in developing nations, *'most of the world has no experience of what readily accessible communications can do for society and economy'* (Mandela, 1995, 3). This disparity between communications-enabled developed countries and communications-disabled developing countries is popularly known as the 'Digital Divide'.[3]

While the spread of communications technologies has powered the acceleration of commercial and cultural progress in many developed countries, the absence of such technologies has stunted economic and social advancements in many developing countries. South African President Nelson Mandela noted in 1995 that:

> *Eliminating the distinction between information rich and information poor countries is also critical to eliminating economic and other inequalities between North and South, and to improving the quality of life of all humanity* (Mandela, 1995, 1-2).

Mandela also noted the important role played by communications services in integrating developing countries into the modern world:

---

[3] For further information about the Digital Divide, see Digital Divide Institute, 2012.

> *If more than half the world is denied access to the means of communication, the people of developing countries will not be fully part of the modern world. . . .* (Mandela, 1995, 1-2).

Failure to bridge this divide may have serious consequences. As the *Johannesburg Declaration on Sustainable Development* foretells:

> *The deep fault line that divides human society between the rich and the poor and the ever-increasing gap between developed and developing worlds pose a major threat to global prosperity, security and stability* (United Nations, 2002, 2).

As such, development of ICT capabilities in emerging economies has become an ambition of numerous multilateral efforts, notably the United Nation's *Millennium Development Goals* (United Nations, 2003, 1).

Universal service was historically the principal public policy used to realise this ambition. Originally conceived in the United States of America in the 1960s to promote the installation of telephones in farm houses in America's hinterland, universal service gained popularity as a public policy in the 1980s when deregulation of communications markets in many developed countries created concerns for preserving service to communities served by incumbent monopolies and extending service to remote communities.[4]

Yet numerous socio-economic challenges diminished the relevance and realistic implementation of universal service in many developing countries. As such, another public policy popularly known as 'universal access' emerged which focused regulatory efforts on providing access to basic communications services rather than installing a telephone in every household as contemplated by universal service ambitions. Public polices in developing countries in South America, Asia and Africa were subsequently crafted around achieving specific universal access objectives.[5]

Among developing countries, South Africa was saddled with extraordinary universal service challenges. Beyond the suite of significant socio-economic barriers that discourage the equitable distribution of communications services in most developing

---

[4] Infra, section 2.3.

[5] Infra, section 2.4.

countries, South Africa was burdened with the effects of apartheid policies which deliberately excluded the provision of communications services to non-white communities. As the Government of South Africa's 1995 *Green Paper on Telecommunications Policy* (hereinafter referred to as the *'Green Paper'*) noted:

> *In South Africa, there is an enormous gulf between developed and disadvantaged areas with regard to access to telecommunication facilities and services. This is part of the legacy of apartheid and must be redressed* (South Africa, 1995, 8).

In the same year, President Mandela confirmed that:

> *The value of information and communication is felt with particular force when, as happened in South Africa for so many years, their denial is made an instrument of repression* (Mandela, 1995, 1).

The affect of apartheid on the distribution of communications services in South Africa was not lost on the African National Congress (ANC):

> *The neglect of African, Indian and Coloured areas by the state in terms of provision of telecommunications services is at the centre of the ANC's concern. Presently out of a total of 3.2 million telephones only 0.8 per cent has been provided to urban black communities. . . . The situation has to be urgently addressed* (ANC, 1993, 1).

The subsequent *Reconstruction and Development Programme* tabled as a political manifesto by the ANC in 1994 highlighted the marginalisation of black South Africans in terms of access to communications services:

> *Under apartheid the provision of telecommunications was racially distorted. For black people it is estimated that less than 1 line per 100 persons is in place compared with about 60 lines per 100 white persons. Other countries with comparable per capita wealth have 30 lines per 100 persons. The situation is far worse in rural areas* (ANC, 1994, 18).

Under the aegis of the *Reconstruction and Development Programme,* the ANC demanded that '*telecommunications services must be provided to all schools and clinics within two years*' and challenged the incoming Government of South Africa to:

> *. . . develop a modern and integrated telecommunications and information technology system that is capable of enhancing, cheapening and facilitating education, health care, business information, public administration and rural development* (ANC, 1994, 18).

The subsequent emergence of the ANC as the principal political party in the first majority-elected Government of South Africa in May 1994 transformed the ANC's platform into Government policy. The new administration recognised the importance of communications services to South Africa's economic survival. The *Green Paper* noted that:

> *The information revolution is sweeping across the world, and the global economy is increasingly an information- and knowledge-driven one. Telecommunications is the backbone of the global information economy and is becoming more and more important. It is not simply an aspect of development, but a precondition for its success* (South Africa, 1995, 8).

The Government of South Africa subsequently settled on four principal policies to deliver universal service in South Africa. Initially, the Government imposed obligations on network operators to roll out services to disadvantaged areas as part of their license terms. The Government subsequently created a dedicated Universal Service Agency to advance universal service ambitions. The Government also created a Universal Service Fund to provide subsidies to operators and underwrite programs to deliver communications services to disadvantaged constituencies. Finally, the Government franchised Under Serviced Area Licenses to operators to accelerate delivery of communications services to areas with low teledensity.[6]

Despite such efforts, the Government has not published any systemic study regarding the impact of its four principal universal service policies.[7] Given the stated importance of communications services for South Africa's socio-economic development and need to redress historical imbalances, an investigation of the effectiveness of such policies and identification of new policies which may accelerate universal service in South Africa represent important areas for consideration.

## 1.3 PROBLEM STATEMENT, RESEARCH QUESTIONS AND ASSUMPTIONS

This study poses a central problem. Efforts to solve this problem are guided by five research questions and informed by five research assumptions which are outlined in this section of this chapter.

---

[6] Infra, sections 5.2 to 5.4.

[7] Infra, sections 1.5.2 and 9.4.1.2.

### 1.3.1 Problem statement

The principal problem addressed by this study is:

> *What kinds of new public policies and programs and reforms to existing policy, regulatory or commercial paradigms are required to accelerate the realisation of universal service and access to communications services in South Africa?*

### 1.3.2 Research questions

In addressing the principal problem, the following five clusters of research questions are pursued as part of the study:

- What are the definitions and origins of universal service and universal access as public policies in international communications markets? What are the principal features of universal service and access policies and programs in the communications sectors of countries, including developed markets in North America (United States of America), Oceania (Australia), Asia (Japan) and the European Union as well as developing markets in South America (Brasil, Chile and Peru), Southeast Asia (Malaysia) and Africa (Uganda)? What lessons can be learned from universal service and access policies and programs in the communications markets of these other markets which might be avoided, adopted or adapted to accelerate the delivery of universal service and access to communications services in South Africa?

- What were the primary characteristics of the regulatory environment of South Africa's communications market between 1958 and 2013, particularly the period between 1993 and 2013? What was the nature of regulatory authorities, relevant legislation and regulatory frameworks in South Africa's communications market during this period? How did this regulatory environment affect implementation of the Government of South Africa's universal service and access policies and programs in this period and likely affect implementation of such policies and programs in the years ahead?

- What were the primary characteristics of the commercial environment of South Africa's communications market between 1958 and 2013, particularly the period between 1993 and 2013? What were the market conditions, market segments and nature of market participants in South Africa's communications market during this period? How did this commercial environment affect implementation of the Government of South Africa's universal service and access policies and programs in this period and likely affect implementation of such policies and programs in the years ahead?

- What were the principal characteristics of the Government of South Africa's universal service and access policies and programs between 1996 and 2013? How did such policies and programs perform in meeting stated policy objectives and realising universal service and access to communications services in South Africa?

- Based on analyses of international precedents as well as South Africa's regulatory, market and policy environments between 1958 and 2013, particularly the period between 1993 and 2013, what kinds of new policies or programs and amendments to existing policy, regulatory or commercial paradigms are recommended to accelerate the realisation of universal service and access to communications services in South Africa in the years ahead?

### 1.3.3 Research assumptions

Five primary assumptions inform the research efforts of this study. The nature of each assumption is described below:

- The widespread availability of communications services contributes positively to the socio-economic development, quality of life and quality of opportunity of people living in South Africa and, as such, is a desired public good.

- The Government of South Africa is responsible for facilitating the availability, accessibility and affordability of communications services in the country.

- Private sector actors generally represent the most efficient resources to deliver communications services in South Africa.

- The Government of South Africa has a legitimate regulatory role in South Africa's domestic communications market and may intervene in this market to encourage or influence private sector actors to provide available, accessible and affordable communications services.

- The provision of available, accessible and affordable communications services in South Africa needs to occur on a cost effective and sustainable basis.

Based on the problem statement, five clusters of research questions and five primary research assumptions, this study pursues a central aim and seeks to fulfil nine principal objectives.

## 1.4 AIM AND OBJECTIVES

The overall aim of the study is to identify public policies and programs that may optimally accelerate the availability, accessibility and affordability of communications services in South Africa given extant regulatory, commercial and policy environments. To achieve this aim, the objectives of the study are to:

Objective 1: Explore the importance of available, accessible and affordable communications services to citizens living in the modern world.

Objective 2: Examine the origins and definitions of universal service and access as well as the applications and performances of universal service and access policies and programs in international communications markets as a bellwether of the utility of such policies and programs in South Africa.

Objective 3: Track the evolution of the regulatory environment in South Africa's communications market between 1958 and 2013, particularly the period between 1993 and 2013, to identify key developments which may have affected and may continue to affect the implementation of universal service and access policies and programs in the country's communications market.

Objective 4: Understand and evaluate the nature of the commercial environment in South Africa's communications market between 1958 and 2013, particularly the period between 1993 and 2013, to identify key market characteristics which may have affected and may continue to affect the implementation of universal service and access policies and programs in the country's communications market.

Objective 5: Consider the rationale and evaluate the specific performances of the four principal public policies and ancillary programs adopted by the Government of South Africa between 1996 and 2013 to improve the availability, accessibility and affordability of communications services.

Objective 6: Describe the research design and methodologies, data collection and analysis approaches and types of data associated with the study, including the semi-structured interviews conducted with key informants drawn from a representative sample of the population of public and private sector actors involved in the design and implementation of universal service and access policies and programs in South Africa.

Objective 7: Undertake analyses and interpretation of primary data derived from the semi-structured interviews to benchmark the perceptions of sample members of the performance of key public sector actors, policies and programs related to the realisation of universal service and access to communications services in South Africa.

Objective 8: Identify trends, isolate gaps and make recommendations regarding potential program, regulatory and market reforms available to the Government of South Africa that may accelerate the realisation of universal service and access to communications services in South Africa given prevailing regulatory, commercial and policy environments in the domestic communications market.

Objective 9: Review the problem statement, central aim, principal objectives and key research questions and confirm that the study has addressed such matters. Summarise key conclusions and recommendations. Highlight limitations of the study and suggest areas for further research. Culminate and close the study.

## 1.5 SCOPE AND DELINEATION

This study focuses on identifying optimal public policies and programs to accelerate the realisation of universal service and access to communications services in South Africa. In pursuit of this focus, this study sets four limitations on the scope of investigation undertaken to solve the central problem, answer the five clusters of key research questions and achieve the overall aim and objectives of the study:

### 1.5.1 Longitude

This study incorporates information collected on the regulatory, commercial and policy environments of South Africa's communications industry between 1 January 1958 and 31 December 2013, the last date for which substantial data is reliably available. This study makes every effort to use the latest available data for key indicators (which may fall outside the prescribed period) but, in many instances, reliable recent data is simply unavailable.

This study evaluates the impact of the Government of South Africa's four principal universal service policies and ancillary programs between 1996 and 2013. This represents a timely period of investigation: the former year marks introduction of the *Telecommunications Act, Number 103 of 1996 (*South Africa, 1996b) that launched the Government's market liberalisation efforts and the latter year marks the Government's investment in a major policy review expected to produce a green paper, a white paper and new legislation in the near term (South Africa, Department of Communications, 2013, 21; Ellipsis, 2012, 1; McLeod, 2012a, 14).

### 1.5.2 Lack of empirical information

Many universal service policies and programs embarked upon by the Government of South Africa between have not benefited from any systemic, empirical program review.[8] Some quantitative performance information is available to complement anecdotal evidence in some instances.[9] As highlighted in Chapter 5, the absence of and lack of attention to defined performance parameters and appraisal systems for many universal service efforts represent critical Government implementation

---

[8] Supra, note 7.

[9] Ibid.

failures. In most instances, these failures have limited the ability to evaluate universal service policies and programs undertaken by the Government of South Africa in the domestic communications market.

### 1.5.3 Forecasts

The regulatory structures and commercial conditions of South Africa's communications industry are subject to ongoing changes.[10] Any forecasts contained in this study are generally limited to a three year future period to minimise the influence of extrapolations which may or may not prove accurate given such changes in a fast moving and rapidly evolving market.[11]

### 1.5.4 Other policies

The Government of South Africa has enacted a broad range of policies and programs in the ICT sector, notably to improve the availability of computers in schools and deliver medical expertise to remote hospitals through communications infrastructure networks. Numerous provincial and municipal governments have undertaken ICT initiatives which impact universal service and universal access in South Africa. Several regional African efforts complement such activities and affect public policies in South Africa.[12]

Policies or programs undertaken by the Government of South Africa or any other entity which do not relate to the delivery of communications services in South Africa are considered only to the extent that they impact, directly or indirectly, the availability, accessibility or affordability of communications services and, consequently, the realisation of universal service and universal access to communications services in the country.

---

[10] Infra, sections 3.1 to 3.5.

[11] For example, see Budde, 2012b; Informa, 2012; GSMA, 2011a; IBM, 2011; and BMI TechKnowledge, 2010.

[12] Infra, section 5.3.2.1.2.

## 1.6 RESEARCH DESIGN AND METHODOLOGIES

This study is an exploratory investigation of opportunities to accelerate the availability, accessibility and affordability of communications services in South Africa through prudent use of public sector interventions in South Africa's communications market. It adopts a 10 step bespoke research design that may be broadly divided into three major stages of effort: an invention stage; a data collection stage; and a drafting and revision stage. The study is predominantly a qualitative research effort. It adopts an epistemological approach that closely resembles the 'model-dependent realism' school of inquiry which incorporates a post-positivist approach with elements of interpretivism.[13]

The study adopts two principal data collection methods. It relies extensively on applied inductive thematic analysis with use of mixed methods to further investigations of certain aspects of the study. The study includes secondary research which principally consists of two literature reviews that consider seven different categories of data to acquire secondary data of a qualitative and quantitative nature. The study also includes primary research which principally consists of six semi-structured interviews with key informants drawn from a representative sample of the population of public and private sector actors involved in the design and implementation of universal service and access policies and programs in South Africa to generate primary data of a qualitative and quantitative nature.[14]

The data universe collected during such research informs the examination, evaluation, interpretation and analyses of precedents related to universal service and access in international communications markets as well as the regulatory, commercial and policy environments of South Africa's communications market between 1958 and 2013, particularly the period between 1996 and 2013. It also informs the nature of recommendations about ways to accelerate the realisation of universal service and access to communications services in South Africa. Discussion of the study's research design and methodologies is found in Chapter 6. Analyses and interpretation of primary data derived from the interviews are found in Chapter 7.

---

[13] Infra, section 6.2.

[14] Infra, sections 6.1 to 6.4. Infra, section 6.4.1.3 for further consideration of the basis, representativeness and treatment of the population and sample of case studies considered as part of the literature reviews conducted by this study. Infra, sections 6.4.2.2 through 6.4.2.5 for further consideration of the basis, representativeness and treatment of the population, sample and key informants associated with the semi-structured interviews conducted by this study.

## 1.7 ABBREVIATIONS AND ACRONYMS

Any study of any communications market necessarily involves use of various industry-specific abbreviations and terms. A list of all acronyms and abbreviations used in this study is included at the outset of the manuscript.

## 1.8 KEY THEORETICAL CONCEPTS

Any study of any communications market necessarily involves a discussion of various industry-specific terms and subject-specific concepts. The terms used throughout the study are defined in the relevant chapters, with the definitions of 'universal service' and 'universal access' considered at length in Chapter 2 (international markets) and Chapter 5 (South Africa).

## 1.9 REFERENCING AND EDITING

This study adopts certain prescriptions and protocols regarding referencing and editing. Further particulars about such matters are described in the following paragraphs:

### 1.9.1 Referencing

This study uses the Harvard University citation methodology. In the event that any particular argument or fact asserted by any author(s) is cited within this manuscript, the surname(s), publication year and page number(s) of the relevant work by such author(s) have been cited in this manuscript. In the event that any general reference to any work by any author(s) is cited within this manuscript, the surname(s) and publication year of the relevant work by such author(s) have been cited in this manuscript. References for all sources of information, including secondary data, are listed by author in alphabetical order at the end of this manuscript.

The availability and accessibility of vast amounts of information on the Internet in various forms (often without some of the standard information that accompanies printed works) creates challenges for conventional referencing methodologies. Chapters of books or articles in newspapers, magazines and other publications that have defined page numbers in 'hard copy' formats do not necessarily have the same page numbers in corresponding online formats. Indeed, the web pages of Internet-

sourced material often start with a first page regardless of the page number(s) of material found in the original place of publication. Where references have been confirmed through online resources, the page number(s) used on the web site have been noted in this manuscript. As such, an inordinate amount of material is cited with the first page as the relevant location indicator.

In the event that any particular reference was sourced online and did not contain any page number(s), the relevant chapter(s) have been cited in this manuscript. Absent any chapter reference, the screen page number(s) for such references have been cited in the manuscript. Absent any such screen page number(s), the estimated page number(s) based on the length of the screen page(s) have been cited in this manuscript due to the lack of any other benchmark.

The durability of online sources of information also presents challenges for conventional referencing methodologies. Given the exponential growth of the Internet during the course of the study, some of the information acquired online in the earlier part of the investigation is no longer accessible on the Internet. Wherever possible, an alternate source for the original information has been identified and cited in this manuscript. Where alternative sources of the original information are not available, the author relies on printed copies of such material downloaded on the last date that the original information was accessed at the original online site of such information (as noted in the references).

Despite such efforts, several sources of information cited in this study may not refer to any specific page number(s) within the cited reference(s) where the page number(s) may be expected under customary circumstances. In any such event, any reliable page number(s) were not available to the author to include in any such reference, typically due to the lack of any page number(s) in the original source material(s).

This study also makes various references to public officials, such as the Minister of Communications of the Government of South Africa. In every instance, every reference refers to the person occupying that office at the time that they took any action contemplated by the study. In the event of any ambiguity, the manuscript clarifies the position of the person ‘at the time’ of the relevant action considered by the study. In the event that this person is subsequently cited in this study after they ceased to hold that office, they are referred to as a ‘former’ office holder.

Various Latin abbreviations are used in relation to references cited in this study. This practice is permitted by the Harvard University citation methodology (Burger, 2010, 216). The consistent use of such abbreviations facilitates the brevity of references and avoids the duplication of information in references.

### 1.9.2 Editing

This manuscript has been reviewed by a professional editor. The editor provided guidance on the use of language, spelling, grammar and the syntax of words and sentences found in this manuscript. The editor also confirmed the appropriate use of the Harvard University citation methodology in the manuscript. A copy of the editor's letter is attached as Appendix 4.

## 1.10 OVERVIEW OF CHAPTERS

The study spans nine chapters. Some of the chapters are lengthy. Although the author has made every effort to limit content to matters germane to the subject of the study, the absence of any consolidated academic consideration of universal service and access policies and programs in South Africa between 1996 and 2013 favours a thorough treatment of such matters. Furthermore, the absence of any consolidated academic consideration of the development of regulatory and commercial environments in South Africa's communications market across this period requires an examination of such matters due to the pivotal influence of such environments on the realisation of universal service and access to communications services.

Further particulars of each of the nine chapters are found in the following paragraphs:

### 1.10.1 Chapter 1: Introductory chapter

Chapter 1 provides a general introduction to the study. The chapter outlines the background and rationale for the study. The chapter confirms the problem statement, research questions and assumptions of the study. The aim, objectives and scope of the study are discussed in this chapter. Research methods are highlighted as an important part of the study. The chapter also includes an overview of the study's chapters and concludes with a discussion of the treatment of abbreviations and acronyms, key theoretical concepts and the methodology used to cite references in the study.

### 1.10.2 Chapter 2: Origins, applications and performances of universal service and access policies and programs in international communications markets

Chapter 2 considers the origins and definitions of universal service and access as well as the applications and performances of universal service and access policies and programs in international communications markets, including various developed and developing countries. It defines and evaluates key elements of universal service and access policies and programs based on international precedents. The chapter includes analyses of the concepts of universal service and access and the applicability of international precedents which may inform further consideration of policies and programs to realise universal service and access to communications services in South Africa.

### 1.10.3 Chapter 3: Regulatory environment of South Africa's communications market

Chapter 3 defines primary characteristics of the regulatory environment of South Africa's communications market between 1958 and 2013, particularly the period between 1993 and 2013. It examines the nature of regulatory authorities, relevant legislation and regulatory frameworks to isolate dynamics that may have influenced universal service and access to communications services in this period and likely affect implementation of universal service and access policies and programs in South Africa in the years ahead.

### 1.10.4 Chapter 4: Commercial environment of South Africa's communications market

Chapter 4 defines primary characteristics of the commercial environment of South Africa's communications market between 1958 and 2013, particularly the period between 1993 and 2013. It explores market conditions, market segments and the nature of market participants to isolate dynamics that may have influenced universal service and access to communications services in this period and likely affect implementation of universal service and access policies and programs in South Africa in the years ahead.

### 1.10.5 Chapter 5: Origins, applications and performances of universal service and access policies and programs in South Africa's communications market

Chapter 5 considers the origins and definitions of universal service and access as well as the applications and performances of universal service and access policies and programs in South Africa's communications market. It describes the history and evaluates the relevance of the definitions of 'universal service' and 'universal access' adopted by the Government of South Africa. It examines and evaluates the policies and programs introduced by the Government of South Africa to increase the availability, accessibility and affordability of communications services in the country between 1996 and 2013. As part of such examination and evaluation, the chapter draws conclusions about such policies that may help determine the relevance of such policies and programs or influence the nature of new policies or programs intended to accelerate the delivery of universal service and access to communications services in South Africa in the years ahead.

### 1.10.6 Chapter 6: Research design and methodologies

Chapter 6 discusses the research design and methodologies used by the study. It describes a 10 step bespoke research design and the principal epistemological approaches adopted to undertake the study. The chapter reviews the three principal data collection approaches and seven types of data considered as part of secondary research. It discusses the methodologies and techniques used to conduct the semi-structured interviews with key informants drawn from a representative sample of the population of public and private sector actors involved in the design and implementation of universal service and access policies and programs in South Africa. The chapter discusses the strategies used to enhance the trustworthiness of findings and results. It reviews key ethical considerations. The chapter concludes with a summary of the data retention and destruction policy adopted by the study.

### 1.10.7 Chapter 7: Analysis and interpretation of primary data

Chapter 7 focuses on the evaluation, interpretation and analyses of data derived from the semi-structured interviews. It organises such data into meaningful units of study that facilitate comparison within, between and across key areas of interest. Five statistical analysis techniques are used to interpret quantitative data obtained through answers to 25 closed-ended questions. Along with evaluation and

interpretation of qualitative data obtained through answers to 67 open-ended questions, such analyses support conclusions about the views of sample members regarding the performance of key public sector actors, policies and programs related to the realisation of universal service and access to communications services in South Africa.

### 1.10.8 Chapter 8: Trends, gaps and recommendations related to the acceleration of universal service and access to communications services in South Africa

Based on analyses of universal service and access precedents in international markets as well as the regulatory, commercial and policy environments of South Africa's communications market between 1958 and 2013, particularly the period between 1993 and 2013, Chapter 8 identifies trends, isolates gaps and makes recommendations arising out of the study. Such recommendations include the introduction of three new programs and adoption of numerous regulatory reforms to accelerate the realisation of universal service and access to communications services in South Africa. The viability of using state owned enterprises to deliver broadband services that advance universal service and access to communications services in the country is also explored as part of this chapter.

### 1.10.9 Chapter 9: Realisation of the problem statement, aim, objectives and research questions, conclusions and recommendations, limitations and further research areas

Chapter 9 reviews the problem statement, aim, objectives and research questions to confirm that the study has addressed such matters. It summarises conclusions and recommendations. It highlights limitations of the study and suggests further areas for research. In conclusion, it culminates and closes the study.

## 1.11 CONCLUSION

This chapter provides an introduction to the study. It reviews the important, if not essential, role that communications services play in the ability of people to succeed in the modern world. It notes the historical legacy of apartheid policies and highlights the particular importance of the availability, accessibility and affordability of communications services to the success of a democratic South Africa.

The chapter introduces the definitions and origins of universal service and access in the context of communications markets. It confirms the study's focus on the examination of the policies and programs adopted by the Government of South Africa between 1996 and 2013 to achieve universal service and access to communications services in the country. It affirms the study's intention to recommend new policies and programs and consider amendments to existing policy, regulatory and market paradigms that may accelerate the availability, accessibility and affordability of communications services in South Africa.

The background and rationale, problem statement, research questions, assumptions, central aim, principal objectives, scope and research methods germane to this study are discussed in this chapter. The treatment of abbreviations and acronyms, key concepts and reference methodology are also discussed in this chapter. Collectively, this review of such considerations firmly establishes the academic approach adopted by the study in pursuit of its ambitions. Having established such a foundation in this chapter, Chapter 2 considers the definitions and origins of universal service and access and the applications and performance of universal service and access policies and programs in international markets as a bellwether of the utility of such policies and programs in South Africa.

# CHAPTER 2

# ORIGINS, APPLICATIONS AND PERFORMANCES OF UNIVERSAL SERVICE AND ACCESS POLICIES AND PROGRAMS IN INTERNATIONAL COMMUNICATIONS MARKETS

## 2.1 INTRODUCTION

Chapter 1 introduced the study and highlighted the importance of available, accessible and affordable communications services to individuals living in the world, particularly South Africa. It discussed key parameters that guide the study and, *inter alia*, established the central aim and principal objectives of the study. Among such objectives (Objective 2) is the examination of the definitions and origins of universal service and access as well as the applications and performances of universal service and access policies and programs in international communications markets to determine the utility of such policies and programs in South Africa. Chapter 2 addresses this objective. This chapter defines and evaluates key elements of the concepts of universal service and access in the context of international communications markets. Furthermore, it highlights universal service and access policies and programs in the communications sectors of developed and developing markets to understand and contrast the nature and performance of such policies and programs and gain insights into lessons that may inform consideration of similar public policy ambitions in South Africa. The chapter culminates with analyses of the concepts of universal service and universal access and the applicability of international precedents to potential public policy interventions to realise universal service and access to communications services in South Africa.

The right to universal service to communications services has been around as a concept for over 100 years (Brands & Leo, 1998, 208). Although initially formulated by private sector actors, the concept has been almost universally adopted, in different forms through different means, by public sector actors throughout the world's communications markets in the past 85 years (Brands & Leo, 1998, 208). As such, the Government of South Africa's consideration of universal service and access policies and programs for South Africa's communications market presumably did not occur in a vacuum: key public policy agitators likely (or should have) considered the history of universal service and access policies and programs and their achievements and failures in other markets as part of their development of universal service and

access policies and programs in South Africa. Moreover, the successes and failures of universal service and access policies and programs in other communications markets are relevant to any consideration of any new policies or programs or reforms to extant policy, regulatory and market paradigms that may accelerate the realisation of universal service and access to communications services in South Africa.

Given such imperatives, a discussion of the definitions and origins of 'universal service' and 'universal access' as well as the application and performances of universal service and access policies and programs in international communications markets represents a highly useful means to further understand and evaluate the 'tried and tested' public policy tools that were available to the Government of South Africa in crafting its universal service and access policies and programs between 1996 and 2013 (considered in Chapter 5). Such discussion may also highlight the prospective suitability of such policies and programs to accelerate the delivery of universal service and access to communications services in South Africa under prevailing policy, regulatory and commercial conditions (considered in Chapter 8).

## 2.2 DEFINITIONS OF UNIVERSAL SERVICE

In the context of communications markets, the concept of 'universal service' means many different things to many different people:[15]

> *Universal service is a chameleon-like phrase. It refers generally to widespread access to and affordability of telecommunications services, but it takes on different meanings depending on the time and the place, and the particular policy debate* (Riordan, 2001, 424).

Given such ambiguity, an informed review of the definition of 'universal service' and each key element of the concept in international communications markets may assist consideration of an appropriate definition for universal service and each key element in South Africa's communications market.

Among its various permutations in global communications markets, universal service generally embraces three aspects of the right to communications services. Table 2.1 identifies and describes each of these three key elements:

---

[15] Infra, section 2.4.

**Table 2.1**

**Key components of universal service**

| | |
|---|---|
| **Availability** | National coverage of telephony services wherever and whenever required. |
| **Accessibility** | Harmonised user treatment, with non-discrimination in terms of price, service and quality, irrespective of location, ethnicity, gender or religion. |
| **Affordability** | Reasonably priced services within the purchasing power of most users. |

Source: ITU, 1998, 11-15.

Each of these three elements is typically represented in definitions of universal service contained in communications-related statutes. For example, in the United States of America, section 151 of the *Telecommunications Act of 1996, 110 Statute 56* entrusts the Federal Communications Commission (FCC) with responsibility to deliver 'to all the people of the United States, without discrimination . . . a rapid, efficient, nation-wide, and world-wide wire and radio communication service . . . at reasonable charges' (United States of America, 1996).[16] In the United Kingdom, *'universal service provides a safety net that ensures basic fixed line services are available at an affordable price to all citizens and customers across the UK'* (Office of Communications, 2006, 5). Across different countries, however, various public policies and programs have emphasised different elements of the right to universal service to communications services in different ways, as subsequently shown in sections 2.2.1 through 2.2.3 of this chapter.

### 2.2.1 Availability

Most countries seek to deliver universal service to communications services on a national basis. In Ireland, universal service ensures that *'a basic set of telecommunications services is available to all consumers throughout the country'* (Ireland, 2012, 1). In Japan, universal service represents the *'provision of such telecommunications services nationwide which are indispensable for people's daily lives'* (Japan, 1984b, 5). Yet the availability of communications services on a national basis implies the existence of services in both urban and rural areas. The roll outs of new communications networks, however, generally focus on covering urban centres ahead of rural areas. The principal reason behind the disparate treatment of urban and rural constituencies is based on the perceived absence of sufficient profits to motivate private sector actors to roll out services to rural areas.[17]

---

[16] The FCC was established in the United States of America by the *Communications Act of 1934, 48 Statute 1064* as an independent federal regulatory agency charged with making policy related to interstate and international communications made by wire and radio as well as regulation of communications carriers, television and radio broadcasters and cable television operators. The FCC enjoys rule-making authority as well as adjudication authority (United States of America, 1934).

[17] Infra, section 2.3.1.

Three adverse economic assumptions about rural areas generally inform this perception:

- High infrastructure costs

  The breadth and variety of terrain in many rural areas, including geographic challenges such as mountains, valleys, rivers and deserts, may increase the costs of building communications infrastructure in such areas,[18] particularly due to high 'last mile' connectivity costs.[19]

- Insufficient critical mass

  The costs of providing communications services, particularly the installation of requisite infrastructure, need to be recovered from subscribers over a reasonable period. Low population densities in most rural areas may fail to generate sufficient critical mass to meet commercial cost recovery requirements.[20]

- Low spending power

  In most countries, the median incomes of rural populations are lower than those of urban populations.[21] As such, many rural markets may be less lucrative than urban markets in terms of the amount of spend (lower) and type of spend (low value with little demand for high margin services).[22]

Governments have employed a variety of regulatory policies and programs to mitigate these adverse assumptions, largely relying upon their authority to license the provision of communications services in domestic markets as the basis for realising universal service to communications services in areas not readily served

---

18 Infra, section 2.4.

19 The 'last mile' or 'last kilometer' of connectivity refers to that part of any communications network that transmits signal to end users. For a discussion of the 'last mile' or 'last kilometer' of connectivity and the high costs associated with such connectivity, see Budde, 2006.

20 Infra, section 2.4.

21 Ibid.

22 Ibid.

by private sector actors under customary commercial conditions. Table 2.2 identifies and describes key characteristics of the three principal means used by governments to mitigate these adverse assumptions:

**Table 2.2**
**Key public policies to deliver universal service to under serviced areas**

| | |
|---|---|
| **Public private partnerships** | Structuring public-private partnerships, particularly using BOO, BOOT or BOT arrangements, to facilitate delivery of communications services to rural areas on an affordable basis by allocating costs and risks between the public sector and private sector.<br>Countries which have employed this regulatory approach include India, Indonesia, Lebanon, Malaysia, Philippines, Solomon Islands and Thailand. |
| **Twinning** | Introducing license requirements which require provision of communications services in less lucrative areas as a condition to provision of services in profitable areas.<br>This 'twinning' requirement has been employed with success in the Philippines. |
| **Auctions** | Competitive bidding among market players to provide communications services to under serviced areas for the lowest amount of publicly-funded subsidy.<br>Countries which have employed this regulatory approach include Chile, Columbia, Ghana, Guatemala and Peru. |

Source: Adapted from Gasmi & Recuero, 2005, 24, 29; Ó Siochrú, 1996, 8; Ó Siochrú, 1996, 6; Wellenius, 1997, 2-4.

### 2.2.2 Accessibility

As a public policy goal, universal service seeks to ensure the accessibility of communications services for all users on an equal footing. The availability and affordability of communications services is a moot point if people cannot access such services. As Congresswoman Gwen Moore of the United States of America's House of Representatives said:

> *If the freedom to communicate is a fundamental right then access to the means to communication must also be a fundamental right. Without access, one cannot be a part of the telecommunicating community* (Jaconsen, 1989, 59).

Much of the attention on the accessibility of communications services has focused on addressing the specific communications needs of elderly and disabled citizens and on the proliferation of public payphones. Almost every country in the world that has adopted universal service as a public policy has implemented specific laws, policies and programs that not only encourage but often mandate and financially support the delivery of communications services to disabled citizens and elderly citizens (Australia, 1999; 1998; 1997; BEREC, 2010, 28; CTV, 2006, 1; CRTC, 1999, 1; United Kingdom, 1984, section 93; United States of America, 1949; 1936; 1934). The importance of public payphones has diminished in recent years with the proliferation

of mobile communications services and many countries have elected to exclude or diminish the importance of this requirement within universal service obligations imposed on communications companies (BEREC, 2010, 17).

### 2.2.3 Affordability

As a public policy goal, universal service seeks to facilitate access to basic communications services at prices within the purchasing power of most consumers. The retail cost of communications services is an amalgam of numerous input costs, including infrastructure and equipment costs, installation costs, radio frequency spectrum allocation tariffs, interconnection charges, marketing costs, overheads and, of course, profit margins for communications infrastructure suppliers and communications services providers (Brands & Leo, 1998, 154-169, 186-192).

Governments have adopted various regulatory policies to realise affordable communications services. In communications markets served by a monopoly or weak competition, regulatory agencies have often regulated profits through tariff setting and review mechanisms that evaluate input costs and prescribe permitted profit margins (Landgrebe, 2002, 15-21; South Africa, 1996b). In communications markets adequately served by competition, regulatory agencies have often permitted market forces to dictate prices through the purchasing decisions of price-sensitive consumers (Landgrebe, 2002, 25; South Africa, 1996b).[23]

Regulatory programs have also increased the affordability of communications services to disenfranchised people. Low income groups in many countries receive some form of subsidy to access communications services. Some subsidies take the form of public funds contributed from the national fiscus as found in the United States of America, United Kingdom and European Union (BEREC, 2010, 91; FCC, 2006a, 1-7; Wellenius, 2000, 5-11). Other subsidies take the form of discounted tariffs provided by market actors as found in France, Belgium, Denmark and many other European countries (BEREC, 2010, 17-22).

---

[23] Infra, sections 2.3 and 2.4 for discussion of the reasons that communications markets evolved as utility-like industries and the rationale for the introduction of competition into such markets through public policy interventions.

Infra, sections 4.4.2 and 8.4.2 for discussion of the history of communications markets as utility-like industries, particularly in relation to proposed policy reforms.

General discussion of the concept of communications markets as utilities may be found in Brands & Leo, 1998.

Taken together, the key elements of the right to universal service to communications services comprise a fluid paradigm that intuitively identifies the three prerequisites necessary to obtain the benefit of communications services. However, this paradigm is often adopted by public and private sector actors in different ways to suit the needs of different constituencies in different communications markets in different states of development. Moreover, the concept and importance of each element of the concept often change for regulators and consumers alike, alongside changes in the development of such markets.

The relative importance of each element of universal service changes for regulators with changes to the delivery capabilities of communications network operators. During the start-up period of telephone networks, the availability of basic telephony services to the widest population represents the regulator's primary universal service concern. Once basic telephony services have been established in target markets, the accessibility of such services, particularly the parity of products and prices between service areas, becomes the regulator's predominant universal service concern. With mass market expansion, the affordability of communications services becomes the regulator's prevalent universal service concern. Once the three elements of universal service have been adequately addressed within a basic services framework, subsequent regulatory efforts tend to focus on optimising the value of each element through forward-looking public policies that regulate new technologies and other means that improve or otherwise optimise each element of universal service to every consumer of communications services (Milne, 1998, 775-780).

Yet the relative importance of each element of universal service also changes for consumers with changes to the delivery capabilities of communications networks. The availability of basic telephony services, particularly if such services are enjoyed by other consumers in other areas, initially drives consumer demand for universal service. Once satisfied with basic telephony services, however, consumer demand shifts away from geographic availability to demographic accessibility and affordability.

In this respect, the emergence of a broad range of information and communications technologies (ICT) creates layers of individual rights in communications markets similar to the differentiation of individual rights in other universal service markets, such as education (Sawhney & Jayakar, 1999, 15-37). Within any stratified market, different population segments view universal service in different terms with different entitlement rights. Some scholars suggest that private sector actors deliver universal service in

communications markets without any need for interventions by public sector actors that inherently skew the efficient operation of market forces (Sawhney & Jayakar, 1999, 15-37). Other scholars imply that public sector interventions are required to realise universal service in communications markets because private sector actors fail to deliver available, accessible and affordable communications services to all members of society without such interventions (Schement & Forbes 1999, 179-193).

While such analysis confirms a common understanding that universal service needs to encompass the three key elements of availability, accessibility and affordability of communications services, it also highlights a healthy debate over the roles of public and private sector actors and the means used by such actors to realise universal service in different communications markets in different stages of development. Indeed, the importance of each universal service element and the allocation of responsibilities between regulatory agencies and market participants to deliver universal service may differ dramatically between individual communications markets, particularly between developed countries and developing countries. As such, a consideration of the origins, applications and performances of universal service policies in the communications markets of developed and developing markets may help inform consideration of new policies and programs or the amendment of existing policies and programs that optimise the realisation of universal service and access to communications services in South Africa.

## 2.3 UNIVERSAL SERVICE IN DEVELOPED MARKETS

The concept of universal service was initially created by private sector actors in the United States of America to justify the monopoly protections afforded incumbent operators in the domestic communications market. It was subsequently appropriated by public policy agents to justify the provision of communications services to constituencies beyond the reach of such monopolists.[24] Over a fifty year period and beyond, the universal service policies of the United States Government meaningfully improved the availability, accessibility and affordability of communications services to many Americans, particularly citizens living in rural communities, on an efficient and cost-effective basis.[25]

---

[24] Infra, section 2.3.1.

[25] Ibid.

The success of universal service policies in North America's largest communications market led the governments of many other developed countries to incorporate similar public policies into the regulation of their communications markets, often in tandem with market liberalisation efforts.[26] In Oceania, Australia is a leading proponent of the realisation of universal service to communications services and has undertaken significant public policy reforms to address the evolution of universal service in changing market conditions. In Asia, Japan is an ardent advocate of universal service and access to communications services. In Europe, the European Union has developed a wide range of universal service policies to improve the availability, accessibility and affordability of communications services in member countries.

### 2.3.1 North America (United States of America)

Universal service was initially conceived in the United States of America, not as a public policy but rather as a private sector concern. The concept originated in 1907 when the American Telephone and Telegraph Corporation (AT&T) adopted the slogan 'One System, One Policy, Universal Service' to confirm its role as the exclusive provider of communications services in the United States of America in opposition to any 'dual service' system comprised of autonomous, unconnected multiple telephony operators (Brands & Leo, 1998, 2). Between the 1920s and 1960s, American regulators generally focused on promoting the creation of a unified, integrated national telephony network rather than advancing household telephone use (Brands & Leo, 1998, 197-246). As such, the concept of universal service was beyond the interests of early public policy makers who focused on the breadth rather than the depth of services as a critical concern in the development of nascent communications markets.

The foundation for universal service as a public policy was created in the 1930s and 1940s with the birth of 'big government' in the United States of America. The collapse of capital markets and consequent Great Depression heralded the presidency of Franklin Delano Roosevelt and his New Deal policies which substantially increased the involvement of the federal government, not only in the markets, but also the kitchens of America.[27] Increased government involvement in economic and social activities heightened scrutiny of the private sector's ability and

---

[26] Infra, section 2.4.

[27] For further discussion of the Great Depression and the New Deal, see Rauchway, 2008.

willingness, absent any profit motive, regulatory restraint or incentive, to serve as an agent for realising the Great Society.[28] In terms of market behaviour in the communications industry:

> *An important reason for making universal service a fundamental goal of telecommunications policy is a belief that the social value of a ubiquitous network will not be reflected adequately in individual consumers' decisions to take service* (Cherry & Wildman, 1999, 45).

In the 1930s and 1940s, nascent acceptance and expectance of government's ability to temper and guide the market's invisible hand to improve the quality of life[29] was an essential prerequisite for development of this belief, particularly the egalitarianism inherent in the concept of universal service as a 'one phone, one house' public policy in America's communications market (Garcia & Gorenflo, 1999; Brands & Leo, 1998).

Electrification of America's hinterland between the 1940s and 1960s spurred the arrival of universal service as a public policy in America's communications market. The *Rural Electrification Act of 1936, 7 United States Code § 901 et seq* (hereinafter referred to as the '*Rural Electrification Act*') charged the Rural Electrification Administration (REA) with facilitating the delivery of electricity to America's farms by supplying low interest loans to cooperative utilities (United States of America, 1936). As it financed the roll out of an electricity grid across America's vast plains, the REA noticed that higher costs and lower revenues associated with the provision of telephony services to many rural areas reduced the private sector's incentive to serve these communities (Ellis, 1966, 113). As such, public sector intervention was required to mitigate this market deficiency (Ellis, 1966, 126).

The REA was ideally placed to implement such market intervention. The *Rural Electrification Act* was amended in 1949 to empower the REA to make loans to furnish and improve rural telephone service (United States of America, 1949). Subsequent amendments in 1971 created the Rural Telephone Account and the Rural Telephone Bank to encourage the formation of local cooperatives and provide soft loans and technical support to roll out infrastructure, ensure connectivity and

---

[28] For further discussion of the Great Depression and the New Deal, see Rauchway, 2008.

[29] Ibid.

maintain basic phone services in rural areas (United States of America, Department of Agriculture, 1982, B-2). In 1994, the REA was abolished and its functions assumed by the Rural Utilities Service, an agency of the United States Department of Agriculture (United States of America, 1999, Chapter 9).

The REA was largely successful in realising its mandate. Only 36% of America's farms enjoyed rudimentary telephony service at the REA's inception in 1949 (United States of America, 1999, Appendix 5). By 1976, over 90% of all American farms enjoyed such service (United States of America, Department of Agriculture, 1982, 1-2). Beyond delivery of telephony services, the REA oversaw the standardisation of rates and coverage areas and significant technology transfers (Garcia & Gorenflo, 1999, 1). While some critics suggest that rural telephony services were plagued by poor quality and lack of reliability (Camp & Tsang, 2001, 4), others claim that the REA realised '*universal high-quality service, rapid deployment, and low rates*' that not only delivered service benefits and upgrades but also stimulated local economic development (Garcia & Gorenflo, 1999, 1).

Moreover, the cost of the REA's market intervention was remarkably low. Despite a large number of rural subscribers connected to the national network in the past eight decades, not a single borrower defaulted on any loan extended by the Rural Electrification Administration or its successor, the Rural Utilities Service (New York Times, 2005, 1). As such, some scholars have heralded the REA as '*one of the most immediate and profound successes in the history of federal policy-making for the national economy'* (Malone, 2000, 2).

Alongside the development of rural telephony under the Rural Electrification Administration, the realisation of universal service in America's communications market became a concern of the Federal Communications Commission, an independent statutory body entrusted with regulation of America's telephone industry pursuant to the *Communications Act of 1934, 48 Statute 1064* (United States of America, 1934).[30] While various state regulatory agencies pursued universal service policies for communications services within specific territories of the United States of America, notably through cross-subsidies between residential telephone services and business telephone services, the FCC promoted such

[30] Supra, note 16.

ambitions on a national basis through federal programs and policies which separated the cost of telephone calls between federal and local jurisdictions (Brands & Leo, 1998, 201). By manipulating the formula used to determine such allocations, the FCC implicitly increased the cost of long distance calls to subsidise the cost of local calls (Brands & Leo, 1998, 230).

Liberalisation of America's communications market in the 1980s did not radically affect domestic universal service policies. In terms of private sector actors, the 1982 *Modification of Final Judgment (United States of America v. Western Electric Company, Incorporated and American Telephone and Telegraph Company, Civil Action Number 82-0192)* that terminated AT&T's monopoly spurred competition in the industry (Brands & Leo, 1998, 207-208, 210) which promoted the proliferation of communications services that aided the realisation of universal service goals. In terms of public sector actors, the FCC tweaked its universal service policies by adopting a more explicit access charge regime that continued the availability of cheap local calls underwritten by higher cost long distance calls (Brands & Leo, 1998, 207-208, 210).

The FCC's complacency was supported by market data. The United States of America enjoyed a 94% national telecommunications penetration rate in the 1980s (Riordan, 2001, 426). High national teledensity led many policy makers to conclude that the FCC's subsidies adequately addressed domestic universal service requirements:

> *Until the late 1980s the weight of opinion on households without telephones seems to have been that existing subsidy programs adequately included all those that could reasonably be connected. Thus, for the century of telephone service, little or no thought was given to those left off of the national network* (Schement & Forbes, 1999, 181).

The lack of telephone service to 6% of remaining American households was largely attributed to poverty-related factors (Schement, 1998, 11, 198).

As access to basic communications services became a more important part of American society in the 1980s and 1990s, however, the adequacy of the FCC's universal service policies came under heightened scrutiny:

> *It has come to be accepted that the telephone represents functional membership in the information society, not a lifestyle choice such as television. Thus 6% of households without telephone service (an estimated 5.8 million households, and 15.3 million individuals) represent an unacceptable number of persons* (Schement, 1998, 198).

New market data challenged accepted paradigms. The Current Population Survey conducted by the United States Bureau of the Census historically measured teledensity on a national basis without correlation to other benchmarks. Commencing in 1994, however, the National Telecommunications and Information Administration (NTIA) commissioned the Census Bureau to cross-tabulate national teledensity statistics with various socio-economic and demographic indicators (United States of America, Department of Commerce, 1995, 1).

Subsequent reports indicated that teledensity varied substantially according to income, race, gender, age, education, region and three geographic categories (rural, urban and central city localities) (Schement & Forbes, 1999, 184-192). Successive NTIA reports specifically highlighted the existence of an 'urban handicap' more severe than low rural teledensity: rural areas boasted a 93.9% penetration rate against a 92.1% penetration rate for central cities in 1994 (United States of America, Department of Commerce, 1995, 1). By 1999, central cities continued to lag behind rural and urban areas (United States of America, Department of Commerce, 1999, 1).

Ensuing studies challenged the reasons for the pervasive presence of 'phoneless' Americans. Poverty was discounted as a key factor, with most marginal users driven off communications networks by usage-related costs such as non-payment of toll charges rather than access-related costs (Schement, 1998, 187-215). As such, the focus of universal service to communications services in the United States expanded from consideration of accessibility issues to consideration of affordability issues (Schement, 1998, 187-215).

The *Telecommunications Act of 1996, 110 Statute 56* (United States of America, 1996), the first major overhaul of America's communications laws in over 62 years, was designed to remedy the dispossession of America's remaining phoneless population. The legislation sought to accelerate the availability of affordable basic telephone service to all Americans and established a minimum benchmark for 'universal service' as part of overarching industry reforms. Table 2.3 identifies the

key components used to measure universal service to communications services in the United States of America following enactment of the law:

**Table 2.3**
**Minimum universal service components (USA)**

| | |
|---|---|
| • Voice-grade access to the public switched network | • Touch-tone signalling |
| • Access to emergency services | • Single-party service |
| • Access to long distance services | • Access to operator services |
| • Limits on long distance service fees for low income users | • Access to directory assistance |

Source: United States of America, 1996.

The FCC was charged with a radical realignment of its universal service policies to achieve such ambitions. A Universal Service Joint Board empanelled under the FCC's governing legislation (United States of America, 1996) brought together federal and state regulators and a consumer advocate to develop recommendations regarding the scope of services and funding platform necessary to realise universal service in the communications market of the United States of America (United States of America, Department of Commerce, 2006, 1).

In November 1996, relying largely on findings of the Universal Service Joint Board, the FCC realigned the focus of its universal service policy framework and expanded the application of its universal service policies (United States of America, Department of Commerce, 2006, 1). The FCC's new universal service policy was driven by four primary goals:

- Implementing the universal service objectives established by relevant laws, including targets for delivering universal service to communications services to low income individuals and rural, insular and high cost areas as well as schools, libraries and rural health care providers.

- Maintaining affordable rates for basic communications services.

- Subsidising basic phone service for qualifying low income consumers by all communications carriers through a universal service fund.

- Ensuring that the benefits of competition in the communications market reached as many consumers as possible (United States of America, Department of Commerce, 2006, 1).

Augmenting efforts of the Rural Utilities Service, the FCC launched four types of universal service programs to realise these goals which are identified and described in Table 2.4:

**Table 2.4**
**Key universal service programs (USA)**

| | |
|---|---|
| **Low income programs** | Telephone service discounts to low income consumers. |
| **High cost programs** | Financial support to communications operators in areas where the cost of providing services is above market norms. |
| **Education programs** | Various initiatives to enable schools and libraries to access educational resources through communications networks. |
| **Rural health care programs** | Various initiatives to enable health care providers in rural areas to use communications services to access advanced diagnostic and other medical services available in urban communities. |

Source: Adapted from FCC, 2004, 1.

A newly created Universal Service Fund (USF) underwrote each type of program (FCC, 2004, 1). The FCC created a not-for-profit company called the Universal Service Administrative Company (USAC) to administer this Fund (USAC, 2012a, 1). Pursuant to the *Telecommunications Act of 1996, 110 Statute 56* (United States of America, 1996), all interstate communications companies were required to contribute to the USF based on a formula that altered quarterly according to USF requirements (FCC, 2005, 1).

The USF has actively implemented its mandate. The USAF spent USD 8.1 billion in 2011 on implementing the four key universal service programs. It allocated USD 4 billion on high cost programs that assisted over 1,900 eligible carriers. It spent nearly USD 2 billion on low income programs that assisted over 13.7 million low income households. It earmarked over USD 80 million for rural health care that supported over 3,000 health care providers. The USAF also spent over USD 2 billion on subsidising communications services to over 21,000 schools and libraries across the United States of America (USAC, 2012a, 14).

The concept of universal service to communications services remains a shifting public policy paradigm in the United States of America. Discussions over the scope, sources and beneficiaries of USF funding, technology implications, administrative waste, mismanagement, fraud and abuse within the USAC frequently arise in debates over universal service to communications services in the United States of America (Johnston, 2005, 1). Public sector actors have unsuccessfully attempted legislative reforms that generally emphasise a shift towards universal access and

account for the rapidly growing importance of broadband services as a prevalent communications platform.[31] Recognising the importance of mobile services and broadband services relative to traditional fixed line services, private sector actors such as Verizon and AT&T have proposed amendments to the Universal Service Fund which include, among other recommendations:

- Limits to the size of the USF's high cost fund.

- Competitive tenders to select firms to provide communications services to unserved areas.

- Adoption of a 'wire-centre approach' model to replace a statewide cost averaging model for setting prices to communications services (Jordan, 2009, 111-128).[32]

These proposals acknowledge the evolution of America's communications markets beyond the circumstances that originally gave birth to the concept of universal service. Rather than focus on the installation of a fixed telephone in every household, the concept of universal service needs to focus on ensuring the accessibility of communications services for every citizen without regard for any location (fixed or mobile), delivery platform (wired or wireless technologies) or device (telephone, mobile phone, smart phone, tablet, glasses, etc). It needs to account for the shift away from the regulation of a monopolist operator deploying a single type of fixed analog technology to the regulation of a diverse range of communications networks and communications services providers deploying a variety of tethered and untethered digital technologies. In short, the concept of universal service needs to be pulled from the regulated analog century into the deregulated digital century.

---

[31] Legislative efforts which failed to materialise into law include the *Telecommunications Act of 2005* which was merged into the *Communications Opportunity, Promotion and Enhancement Act of 2006* as well as the *Universal Service for Americans Act of 2007* and the *Universal Service Reform Act of 2010*.

[32] A wire centre is '*a physical structure containing telecommunications equipment that includes both landline, cellular, and other types of switches. These switches are used for routing and connecting telephone calls across the country*' (Marketing Systems Group, 2013, 1). As such, the pricing of communications based on wire centres focuses on the cost of communications with the geography of the wire centre rather than, in this instance, the entire state.

Partly in response to such pressures, the FCC approved a six year transfer process in October 2011 that transitions money from the USAC's high cost program to a new USD 4.5 billion annual 'Connect America Fund' (FCC, 2011, 1; Gross, 2009, 1). This Fund is dedicated to the expansion of broadband Internet in the United States of America (FCC, 2011, 1; Gross, 2009, 1). Given evolving technologies and expanding consumer habits, further reforms of policies related to the delivery of universal service to communications services are inevitable in the United States of America.

### 2.3.2 Oceania (Australia)

Australia is home to a sophisticated communications market. Fixed line teledensity continues a slow decline from approximately 49% in 2009 to 46% in 2012 (World Bank, 2013a, 1). Mobile teledensity continues to climb from approximately 101% in 2009 to 106% in 2012 (World Bank, 2013b, 1). As shown in succeeding paragraphs, the Government of Australia is devoting significant resources to the roll out of a national broadband network. The mobile broadband market has transitioned to 4G Long Term Evolution (LTE) capabilities (Budde, 2013a, 1). Such dynamics favour the exponential growth of services that rely on such communications capabilities, including e-health, tele-education, e-government, smart grids, Internet of Things (IoT),[33] machine to machine (M2M)[34] and Over the Top (OTT) services[35] (Budde, 2013a, 1). Universal service has played and continues to play an important role as Australia's communications market undertakes this fundamental transformation onto these advanced digital platforms.

Australia was an early advocate of universal service requirements as a component of its communications market liberalisation efforts. In 1999, the Government of Australia imposed specific universal service obligations on incumbent communications network operators as an explicit part of its market liberalisation legislation (Australia, 1999).[36] Six years later, the Government of Australia unveiled

---

[33] The IoT is '*a computing concept that describes a future where everyday physical objects will be connected to the Internet and be able to identify themselves to other devices*' (Janssen, 2014a, 1).

[34] M2M '*refers to data communications between two or more machines. M2M is commonly translated as Machine-to-Machine but has sometimes been translated as Man-to-Machine, Machine-to-Man and others. Among cellular telephone service providers, M2M, Telemetry or Telematics is accomplished using public wireless networks'* (M2M Datasmart, 2013, 1).

[35] OTT services are '*applications and services that depend on mobile data networks for their use'*, such as the streaming of video (Goldstuck, 2013b, 4).

[36] The *Telecommunications (Consumer Protection and Service Standards) Act, Number 50 of 1990* established, *inter alia*, standards for the supply, installation and maintenance of communications services, including pay phones, as well as the accessibility of such services (Australia, 1999).

an AUD 1.1 billion universal service financial package to roll out communications services to regional, rural and remote areas, extend mobile telephony coverage, build new regional communications networks and establish communications services for remote indigenous communities (Australia, 2006, 1). This 'Connect Australia' program also established an AUD 2 billion Communications Fund to finance future regional communications developments (Australia, 2006, 1).

The advent of a new government in Australia accelerated communications market reforms that fundamentally affected the concept of universal service in the country. Following the 2007 federal elections, the governing Labour Party announced its commitment to construction of a high speed national broadband network (NBN Exchange, 2014, 1). Although this policy suffered from some significant early setbacks (NBN Exchange, 2014, 1), the Government of Australia ultimately delivered on this policy with creation of the National Broadband Network (NBN) through the *National Broadband Network Companies Act, Number 22 of 2011* (Australia, 2011a) and the *Telecommunications Legislation Amendment (National Broadband Network Measures Act – Access Arrangements) Act, Number 23 of 2011* (Australia, 2011b). The Government of Australia expects to spend AUD 40 billion to deliver high speed fibre optic broadband infrastructure to 93% of Australian homes with the remaining 7% of households connected using satellite and fixed wireless options. This initiative '*has the potential to transform Australia's economy*' (McLeod, 2012b, 15).

The nature of universal service in Australia's communications market fundamentally changed with the advent of the National Broadband Network. In March 2012, the Government of Australia passed the *Telecommunications Legislation Amendment (Universal Service Reform) Act, Number 44 of 2012* (Australia, 2012a) to ensure the ongoing delivery of universal service in the NBN era. This law shifted responsibility for the delivery of universal service to communications services in Australia away from a regulatory model which imposed obligations on market participants towards a contractual model which established a public-private partnership model for implementation of universal service in Australia's communications market (Australia, 2012b, 3).

A key feature of the new legislation was the creation of the Telecommunications Universal Service Management Agency (TUSMA) which is responsible from July 2012 for securing contracts with private sector actors to ensure delivery of the following services to all Australians: standard telephone service; payphone service;

emergency call services; and national relay services (Australia, 2012b, 3-8). Funding for TUMSA is derived from contributions by industry participants, although the Government is augmenting such contributions across a two year transition period (Australia, 2011c, 1).

### 2.3.3 Asia (Japan)

Japan has '*one of the most active* [communications] *markets in the world'* (Budde, 2013b, 1). Fixed line teledensity continues a slow decline from approximately 53% in 2009 to 51% in 2012 (World Bank, 2013a, 1). In 1979, Japan became the first country to launch a mobile network (Knott-Craig, 2013, 10). Since that year, mobile teledensity continues to climb, growing from 92% in 2009 to 109% in 2012 (World Bank, 2013b, 1). Japan was the fourth country to introduce 4G LTE technology which is cannibalising demand for 3G services (Budde, 2013b, 1). Fibre to the home (FttH)[37] is growing in popularity along with digital and mobile broadcasting (Budde, 2013b, 1). Throughout such developments, universal service has represented and continues to represent an important regulatory consideration in the domestic communications market.

As with public policy interventions in the United States of America and Australia, Japan has expanded and modified its universal policies over the past 30 years to adapt to evolving domestic communications market conditions. The *Nippon Telegraph and Telephone Corporation Law, Number 85 of 25 December 1984* (Japan, 1984a) required the reconstituted Nippon Telegraph and Telephone Corporation (NTT) to effect the '*appropriate, fair and stable provision of nation-wide telephone services*' (Japan, 1984a). Although not a defined term, universal service to communications services was realised by implementing geographically averaged access charges and local calling rates which subsidised rates in high cost (generally unprofitable rural and remote areas) territories through higher rates in lower cost (generally profitable urban areas) territories (Japan, 2007, 3).

---

[37] Fibre to the home exists when any fibre optic communications network connection *'extends from a central office to the boundary of a home living space or business office'* (Janssen, 2014f, 1). Cf. various other permutations of the 'fibre to the x' phenomenon (Fiber Optic Association, 2012, 1-3).

At the same time, the Government of Japan promulgated the *Telecommunications Business Law, Number 86 of 25 December 1984* (hereinafter referred to as the '*Telecommunications Business Law*') which codified the concept of universal service and encouraged operators to '*provide such services appropriately, impartially and stably*' (Japan, 1984b, 5). Various components of universal service, such as basic tariffs, public telephones and emergency services, were prescribed by regulation (Japan, 2007, 2). The legislation also required operators to establish tariffs for universal service and granted the Ministry of Communications the right to regulate such tariffs in the domestic communications market (Japan, 1984b).

The *Telecommunications Business Law* also empowered the Minister of Communications to create a 'Universal Telecommunications Service Support Institution' to compensate communications network operators for the provision of universal service to commercially unprofitable areas (Japan, 1984b). However, this support institution was not created until 2005 (Japan, 2007, 1). In the intermittent period, the Telecommunications Carriers Association (TCA) established by Japan's market participants in 1987 collected funds from members and provided subsidies to subscribers for the provision of communications services in designated universal service areas (TCA, 2012, 1) based on a price per number approved by the Ministry of Internal Affairs and Communications. The TCA may continue in this role today (NTT, 2012, 1).

The debate over universal service in Japan's communications market gained momentum in the early part of the 21st century. In October 2005, the Telecommunications Council delivered a universal service report which codified the 'benchmark method' for calculating universal service subsidies based on the number of telephone numbers maintained by each carrier. In December 2005, the Minister of Communications finally created the Universal Service Administration Agency (USAA) as the statutory support institution and thereafter defined the scope of eligible carriers and consequent universal service obligations imposed on such carriers (Japan, 2007, 1). By November 2006, the amount of compensation and contributions from carriers were established and the USAA subsequently commenced collections and distributions in April 2007 (Japan, 2007, 1).

As with public policy makers in the United States of America and Australia, the Government of Japan continues to evolve its universal service policies to account for shifting communications market conditions. Due to the rise of alternate delivery channels and increased competition between communications carriers that have decreased profits in urban areas historically used to subsidise rural areas, the cross-subsidisation model was abandoned in favour of a cost-based model in 2007 (Japan, 2007, 3). The cost-based model collects universal service contributions based on the number of subscribers of operators and awards subsidies based on the cost of communications services less the average cost of such services (Japan, 2007, 3). Given the rise of mobile communications services and broadband communications services, recent policy discussions appear focused on realising universal service through delivery of access to communications services rather than delivery of any specific communications services (Mitomo & Tajiri, 2010, 98-109).

Cumulatively, Japan continues to refine its policies in respect of the right to universal service to communications services in the second decade of the 21st century. The concept of universal service in Japan's communications market has been generally settled (by law and consensus) to involve three components (essentiality, availability and affordability of communications services). Yet the optimal means to achieve these components remains open for ongoing debate.

### 2.3.4 European Union

Leaders of the European Union believe that competition law by itself cannot deliver universal service and access to communications services to citizens of member countries. As such, the European Parliament issued a Universal Service Directive in 2002 which outlined the obligations of member states to provide universal service to communications services within their countries (European Union, 2002, 55-57). This Directive compels member states to ensure that residents of their countries enjoy access to basic communications services, including voice communications and a connection to the Internet, at an affordable price (European Union, 2002, 57).

The Directive establishes minimum requirements in terms of access to communications exchanges, operator assistance, directory inquiries, emergency services and public payphones as key components of universal service (European Union, 2002, 55). It allows for compensation if service providers incur costs beyond customary commercial standards in the delivery of universal service to

communications services (European Union, 2002, 56). Members of the European Union have adopted various public policy programs to satisfy their obligations under the Directive which may be broadly divided into four key components: scope of services; regulation of services; delivery mechanisms; and funding mechanisms.

Across Europe, most countries have adopted specific universal service obligations for communications services consistent with the Universal Service Directive. Four countries have terminated some services found within the Directive, including the provision of directory services, directory of subscribers and public payphones, on the grounds that market conditions have superseded the utility of such services (BEREC, 2010, 9-12). Four countries have expanded universal service obligations beyond the requirements of the Directive, largely by mandating the delivery of broadband services to public institutions at affordable prices (BEREC, 2010, 9). In 2009, Finland became the first country in the world to declare the entitlement to broadband services as a human right and expand universal service obligations in its communications market to include the provision of broadband access at a minimum speed of 100 Mbps to every citizen by 2015 (Ahmed, 2009, 1; Lahtinen, 2009, 1).

27 European countries provide for universal service to communications services by law (BEREC, 2010, 6). Most of these countries have created an independent regulatory authority to implement or regulate universal service obligations in domestic communications markets. Specific obligations related to the quality and affordability of communications services provided under universal service policies are generally codified by regulations or regulatory decisions (BEREC, 2010, 9-12). Many European countries impose performance targets regarding the delivery of communications services under universal service policies (BEREC, 2010, 9-12). Many European countries require operators to deliver periodic reports to the independent regulatory authority regarding implementation of universal service in domestic communications markets (BEREC, 2010, 9-12).

The delivery of universal service to communications services varies across Europe. A significant number of European countries (20) designate a single universal service provider which is typically the former state owned fixed line monopolist. Several European countries (eight) appoint multiple operators to deliver different components of universal service in the domestic communications market. Some European countries (four) designate different operators to deliver universal service

to different geographies within the domestic communications market. In such circumstances, European countries typically rely on competitive tenders to select universal service providers (BEREC, 2010, 30).

Universal service obligations are often funded by cost sharing mechanisms between service providers rather than compensation from public funds (BEREC, 2010). 27 European countries calculate cost sharing contributions from operators based on turnover while two countries use a combination of cost sharing and public funds and three countries use public funds on an exclusive basis (BEREC, 2010, 7-9).

As demonstrated in the United States of America, Australia, Japan and the European Union, the concept of the right to universal service to communications services has evolved in recent years to account for shifting communications market conditions. In each jurisdiction, the evolution of universal service to communications services has generally occurred and continues to occur in incremental steps achieved through an '*overlapping consensus*' between market participants rather than through regulatory prescription (Sawhney, 1994, 375-395). Indeed, the introduction of explicit universal service obligations has largely occurred in these markets well after introduction of widespread household telephony services (Sawhney, 1994, 375-395). In some European countries, such as Finland, scholars suggest that the Universal Service Directive of the European Union has '*added no value to previous practices*' because private sector actors have met or exceeded the requirements thereof (Wirzenius, 2008, 1). As such, the debate over universal service to communications services in developed markets appears to have shifted away from a narrow focus on the need to deliver fixed line communications services to every household towards a broader dialogue about the definition of communications services (inclusive of broadband services), divisions of responsibilities between public and private sector actors for the implementation of universal service requirements and use of different technologies to deliver communications services to realise universal service in a digital century.

## 2.4 UNIVERSAL SERVICE IN DEVELOPING MARKETS

Commercial conditions and consumer characteristics of communications markets in developed countries are substantially different from commercial conditions and consumer characteristics of communications markets in developing countries. Such differences may give rise to divergent public policy priorities that affect the approach to and implementation of universal service in the communications markets of developing countries. Indeed, the track records of universal service policies and

programs in several emerging economies, including countries in South America, Asia and Africa, suggest that the realisation of 'universal access' rather than 'universal service' to communications service may represent the preferred regulatory objective of public policy makers and require policies and programs distinct from precedents in developed markets to realise this objective.

### 2.4.1 Market characteristics

Most developing countries share a common trait that distinguishes their communications markets from those of their developed counterparts, namely the lack of available communications services to a large part of their society. African countries share this trait with other developing countries. As a continent, Africa is home to nearly 15% of the world's population (World Population Statistics, 2014, 1) but only 6% of the world's phones (Budde, 2011a, 1). As Table 2.5 illustrates, Africa lags behind every key indicator relative to the world and every other region of the world, particularly the basket of developed countries.

**Table 2.5**
**Key indicators for global communications services sector, 2013 (estimate)**

| Figures in millions | Global | Developed countries | Developing countries | Africa | Arab states | Asia & Pacific | CIS | Europe | Americas |
|---|---|---|---|---|---|---|---|---|---|
| **Mobile subscriptions** | 6,835 | 1,600 | 5,235 | 545 | 394 | 3,547 | 476 | 790 | 1,048 |
| *Teledensity* | 96.2% | 128.2% | 89.4% | 63.5% | 105.1% | 88.7% | 169.8% | 126.5% | 109.4% |
| **Fixed line subscriptions** | 1,171 | 520 | 652 | 12 | 35 | 515 | 72 | 243 | 272 |
| *Teledensity* | 16.5% | 41.6% | 11.1% | 1.4% | 9.3% | 12.9% | 25.7% | 39% | 28.4% |
| **Mobile broadband subscriptions** | 2,096 | 934 | 1,162 | 93 | 71 | 895 | 129 | 422 | 460 |
| *Teledensity* | 29.5% | 74.8% | 19.8% | 10.9% | 18.9% | 22.4% | 46% | 67.5% | 48% |
| **Fixed broadband subscriptions** | 696 | 340 | 357 | 3 | 12 | 303 | 38 | 168 | 164 |
| *Teledensity* | 10% | 27% | 6% | 0.3% | 3.3% | 7.6% | 13.5% | 27% | 17.1% |

Source: ITU, 2013f, 1.

Yet Africa is home to the fastest growing fixed line market in the world (Budde, 2011a, 1). Rising demand for Internet access and broadband capabilities have underpinned a renaissance for fixed line operators (Budde, 2011a, 1). Despite a steady decrease in the number of fixed line voice subscribers, the exponential increase in the number of fixed line broadband subscribers bodes well for Africa's fixed line operators in the years ahead (Budde, 2011a, 1).

Africa is also home to the fastest growing mobile market in the world (Hoehler & McHenry, 2012, 4). Mobile telephony represents the communications medium of choice for Africans: mobile services enjoy approximately 98% market share relative to the 2% market share claimed by fixed line telephony.[38] Africa supported nearly 620 mobile connections in 2011 (distinct from mobile subscribers) and expects to support 910 million mobile connections by 2015 (GSMA, 2011a, 5-9). 95% of African mobile connections are prepaid compared to 52% in Europe (GSMA, 2011a, 17). The mismatch between mobile teledensity (63.5%) shown in Table 2.5 and GSMA statistics confirms that many Africans own more than one mobile phone.[39]

Key trends include the growth of mobile broadband services. Africa was home to the fastest growing mobile broadband market from 2010 to 2013, with mobile broadband penetration increasing from 2% in 2010 to 11% in 2013 (ITU, 2013g, 6). By 2015, Cisco estimates that more people in Sub-Saharan Africa will have access to mobile telephony services than access to electricity in their homes (GSMA, 2011a, 14). The proliferation of mobile broadband is changing the way Africans conduct business and social relationships:

> *The proliferation of low cost Chinese Smartphones . . . will see more African subscriber[s] getting online and taking part in the global economy. This means more m-commerce and more m-advertising. These devices are Africa's first rich media connected devices which will be used to drive product sales, cost savings, communications and entertainment for SME's in Africa* (St Clair, 2011, 50).

Africa is predicted to generate over USD 200 billion in mobile money transfers (approximately 18% of the continent's GDP) by 2015 (IBM, 2011, 1). Such transfers are projected to represent the highest revenues per user for mobile payments from any region in the world (Mobithinking, 2012, 1).

Broadband represents the most compelling development in Africa's communications market. The completion of several submarine fibre optic cables between 2008 and 2013 is expected to increase Africa's undersea cable capacity by 30 times (from 80 Gbps in 2008 to 20,750 Gbps in 2013) (World Wide Worx, 2010, 44) and reduce prices (Analysis Mason, 2012, 1; Pyramid Research, 2011, 1). The availability of high speed fibre cables offers all operators the opportunity to

---

[38] Supra, Table 2.5.

[39] Infra, section 4.2.1 for South Africa as an example of such consumer behavior.

deliver high speed broadband services but particularly benefits fixed line operators in urban markets where they may provide turnkey high speed fibre-based last mile solutions to their customers.

To capitalise on the availability of such bandwidth, many African countries are rolling out national fibre backbone networks to deliver high speed broadband services to communities well beyond major urban centres (Finweek, 2013, 9). Interestingly, over 50 fixed line operators in Africa have adopted CDMA technology (including Neotel Proprietary Limited in South Africa) to provide fixed line broadband connectivity which enables such operators to offer mobile services in those markets that support converged licensing regimes (Budde, 2011a, 1). Indeed, mobile data revenue in Africa is forecast to reach USD 18.5 billion and account for 22% of total African mobile communications services revenues by 2016 (Informa, 2012, 1).

In terms of universal service to communications services, the digital divide between developed and developing countries differs from the historic disparity between serviced and under serviced areas of developed markets in two important ways:

- Historic absolute teledensity levels of developing countries are much lower than historic absolute teledensity levels of developed countries. America enjoyed 60% national teledensity (United States of America, Department of Commerce, 1995, 1) at promulgation of the 1949 *Telephone Amendment Act, 63 Statute 948, 7 United States Code 901-914 and 922-924* (United States of America, 1949) while Tanzania mustered only 0.4% national teledensity in 2003 (United Nations, 2005, 265). As such, any contemporary realisation of universal service in developing countries commences from a much lower base than any platform historically applicable to developed countries.

- Increases in absolute teledensity levels have put more phones in the hands of more people. As such, a larger communications gap exists between smaller pockets of phoneless communities and larger phone-enabled populations than the historical communications gap that existed between rural communities and urban populations in developed countries. In Africa, for example, it is estimated that 36% of Africans within the 25 largest African mobile markets continued to lack access to mobile services in 2011 (GSMA, 2011b, 2-3).

At the same time, economic, demographic, geographic and consumer conditions in the communications markets of many developing countries resemble conditions found in America between the 1940s and 1960s:

- In terms of economic circumstances, the commercial activities of many developing countries are often dominated by a small handful of affluent families, tribes, political parties or 'big men' in a manner similar to the influence exerted by a few clusters of powerful industrialists over America in the middle of the 20th century. Consistent with precedents established by their earlier American counterparts, African elites may not voluntarily roll out communications services to marginal areas in favour of capital allocations to more profitable territories or investment opportunities.

- In terms of demographic circumstances, substantial numbers of residents of rural communities, particularly youth, are migrating to urban centres in search of education, work and lifestyle opportunities. This phenomenon reduces the populations of rural areas and often lowers rural income levels which discourage the provision of communications services to these sparsely populated and economically depressed areas.

- In terms of geographic circumstances, many under serviced communities are situated in isolated areas or difficult terrain which increase infrastructure and operating costs and discourage the provision of communications services by private sector interests.

- In terms of consumer circumstances, the consumption characteristics of the communications markets of many developing countries resemble conditions found in America's communications market between the 1940s and 1960s. Like members of many American farm families in the middle of the 20th century, significant populations within many developing countries are illiterate or lack sufficient education (United Nations, 2005, 123) to exercise the type of sophisticated consumer choices often necessary to enforce optimal private sector market behaviour. Like mid-century American farm families, moreover, these populations do not benefit from many of the amenities and social services prevalent in urban centres that could help them overcome such deficiencies.

The economic, demographic, geographic and consumer market characteristics of many developing countries therefore suggest that introduction of explicit universal service requirements in domestic communications markets is consistent with the circumstances that drove introduction of similar requirements in the communications market of the United States of America in the last century. Moreover, the prevalence of teledensity levels in developing countries well below the lowest historical teledensity levels of developed countries suggests that, unlike the grace period that incubated the roll out of universal service in the communications markets of developed countries, the realisation of universal service in the communications markets of developing countries may require explicit top-down public sector intervention to compel private sector actors to kick-start their historically incremental, market-driven approach towards delivery of universal service to communications services in domestic markets.

### 2.4.2 Development of universal service

As highlighted by the previous discussion, conditions in the communications markets of many developed countries differ from conditions in the communications markets of many developing countries. Moreover, the introduction of communications services, focus on universal service and proliferation of communications services among local populations generally occurred much earlier in developed markets relative to their developing counterparts. As such, it is not surprising that the concept of universal service and consequent public policy tools used to implement universal service in the communications markets of developing countries diverge substantially from experiences in developing countries.

#### 2.4.2.1 Universal access in developing countries

The wholesale absence of communications services in major segments of society in many developing countries and the growing digital divide between developing countries and their developed counterparts has given rise to the concept of ‘universal access’ rather than ‘universal service’ as a pragmatic means to expeditiously remedy these two deficiencies on a cost effective basis. In its simplest form, ‘universal access’ proposes the availability of some form of affordable telephone service within reach of every person on a national level.

Some authorities distinguish universal access as a policy apart from universal service. In the United States of America, the FCC relies on the ITU's suggestion that universal service represents '*a telephone in every home*' while universal access represents '*a telephone within a reasonable distance to everyone*' (FCC, 2006b, 1). The FCC subsequently defines the different policy purposes behind each concept:

> *Universal access is often used to describe the initial stages of telecommunications build out. The emphasis of universal access policies is to increase access to telephones or telecommunications services on a community-wide level. Universal access programs often seek to foster installation of public payphones or public call centers in rural villages or low-income urban areas with the goal of providing a basic and initial connection to the network.*
>
> *Universal service policies are typically aimed at either providing telephone or telecommunications services to all households within a country, including those in remote and hard-to-serve locations, or increasing the number of individuals with telecommunications services.*
>
> *Universal service programs tend to focus on making the cost of obtaining and maintaining telephone service more affordable to individual users or to targeted groups of users such as low-income consumers and residents of high-cost and rural areas* (FCC, 2006b, 2).

The ITU subscribes to the FCC's policy paradigm, suggesting that low income countries focus on the realisation of universal access to communications services as a near to medium term objective with universal service retained as a long term goal (ITU, 1998, 10-15). Some emerging economies, such as South Africa, have acknowledged such distinctions. Section 59(2)(a) of South Africa's *Telecommunications Act, Number 103 of 1996* distinguishes between universal access as '*access by all areas and communities in the Republic to telecommunication services*' and universal service as *'the universal provision for all persons in the Republic of telecommunication services, including any elements or attributes thereof'* (South Africa, 1996b).

While a distinct term, universal access may be historically viewed as a subset of universal service since the concept realises two of the three components of universal service, namely the provision of accessible and affordable communications services to the general population. While universal access also achieves the national coverage of communications services sought by

universal service, it historically does not contemplate such access on equal terms to the entire population. Under traditional universal access policies, marginalised areas typically experienced the benefits of communications services through community-based mechanisms such pay telephones and regional telecentres while more populated or profitable areas often enjoyed such benefits on a 'one phone, one person' basis.

In most other respects, however, the implementation of universal access in domestic communications markets sought the same results as the implementation of universal service. Consistent with the FCC's policy paradigm and ITU's policy prescription, the implementation of universal access to communications services generally represented an interim step towards realisation of full-fledged universal service to such services rather than a separate public policy priority. With the proliferation of new mobile communications technologies in the 21st century, however, the importance of providing 'one phone in every household' has given way to an essential 'connectivity' prerequisite that may make universal access to communications services and the application of new means to achieve universal access more relevant public policy priorities in many developing countries than the goal of universal service to such services.[40]

#### 2.4.2.2 Policy instruments in developing countries

Means historically used to realise universal service in the communications markets of developing countries, whether characterised as universal service or universal access, have varied widely but generally featured a funding component and an implementation component. Some of the more popular forms of these components are summarised in Table 2.6:

**Table 2.6**

**Typical funding structures for the promotion of universal service in the communications markets of developing countries**

| | |
|---|---|
| **Sources of finance** | Profit reinvestment; sector taxation; licence fees; interconnection fees; obligatory contributions by market participants. |
| **Instruments** | Direct investment policy by relevant government authorities; roll out targets for operators; licence 'twinning' requirements; multiple licences; BTO and BOT arrangements; licence subsidies; tariff controls (averaging, cross-subsidy and targeting certain users); innovation. |

Source: Ó Siochrú, 1996, 6.

[40] Infra, section 8.3.

Public policy and public finance have proven popular means of accelerating universal service in many domestic communications markets. Numerous countries have required operators to roll out basic communications services to under serviced areas as part of their license conditions (Telecommons Development Group, 2000, 1). Numerous countries have established a universal service fund with levies collected from operators to finance implementation of universal service policies in domestic communications markets (Ó Siochrú, 1996, 7). While many developed countries use their universal service funds to pay monopolist carriers to provide communications services on a national basis (BEREC, 2010, 6-12), many developing countries, such as South Africa and Peru, use their funds to pay for specific projects in support of universal service ambitions in domestic communications markets.[41]

Private sector interests have also advanced universal service objectives in the communications markets of many developing countries absent any public policy framework or public sector regulation. In many rural and less affluent areas of developing countries once considered marginal territories, private sector operators have created unique structures to satisfy demand for communications services on a profitable basis (ITU, 1998, 10-15):

- In Bangladesh, Grameen Telecom provides micro-loans to often illiterate women to purchase mobile phones, stopwatches and calculators needed to establish micro-businesses selling phone calls. The success and profitability of this program has not only increased access to communications services in previously under serviced rural villages but also improved the quality of life for women entrepreneurs (Lawson & Meyenn, 2000, 1).

- In Brasil, Telebahia introduced an automatic answering service that receives messages without being attached to a separate telephone line, effectively mimicking the voice mail service offered as part of mobile telephone subscriptions. This product enabled less affluent community members to communicate on an affordable basis and substantially mitigated the absence of any stand-alone communications infrastructure or services (Wellenius, 2000, 1-3).

---

[41] Infra, sections 2.4.3.1.3, 5.2.3 and 5.3.3.

A mix of public and private sector solutions may optimally realise universal service and access objectives in the communications markets of developing countries. Critical public facilities such as health clinics and schools and inherently profitable private sector facilities such as businesses and affluent private households may benefit from private sector provision of communications services on a 'one phone, one household' basis while less affluent or emerging neighbourhoods may benefit from private sector provision of community-based communications facilities such as pay telephones, phone shops and telecentres, with or without some form of public subsidy (Wellenius, 2000, 4-9). Such a mix of solutions likely creates a network of communications connections within marginalised communities that substantially addresses the imperatives underpinning the drive for universal service to communications services in developing countries.

Regardless of the pursuit of universal service or access or the form of public sector interventions or private sector initiatives, the track records of public policies in the communications markets of many emerging economies suggest that the means used to realise such pursuits have largely emulated the means used to realise universal service in the communications markets of developed markets despite dramatically divergent market conditions, often with mixed results. As such, a review and analyses of the applications of the principal types of universal service and access policies and programs adopted by governments in the communications markets of developing markets in South America, Asia and Africa may yield insights into aspects of universal service and access policies and programs which may be avoided, adopted or adapted to advance universal service to communications services in South Africa.

### 2.4.3 Market precedents

The wave of communications market reforms that swept many developed countries in the 1980s and 1990s also rippled into many developing countries. In South America, Asia and Africa, many countries adopted liberalisation programs designed to increase competition and expand the delivery of communications services to citizens. Given the prominent position of universal service as a public policy pillar in the communications markets of many developed countries, many of these developing countries actively considered and subsequently introduced universal service policies as part of their communications market reforms.

Precedents drawn from countries in South America, Asia and Africa may offer insights into the effectivity and efficacy of specific universal service policies and practices in the communications markets of developing markets that may benefit subsequent consideration of ongoing universal service efforts in South Africa's communications market. In particular, the impact of geographic, demographic, political and economic imperatives on the implementation of universal service and access policies and programs in the communications markets of these countries may inform consideration of the challenges and choices facing the Government of South Africa as it considers universal service and access policies and programs in the domestic communications market.

#### 2.4.3.1 South America

Many countries in South America were early proponents of communications market reforms. Between 1988 and 1998, more than two thirds of South America's national telecommunications network operators were partially or fully privatised by their state shareholders (ITU, 2000, 8). Accompanying market liberalisation efforts spurred tremendous growth in the provision of communications services in South America: the breadth of basic telecommunications networks grew twice as fast in South America as developed countries in that decade (ITU, 2000, 6-7). Yet not much more than one third of South America's households acquired fixed line telephone service during this period (ITU, 2000, 2).

By 1999, the governments of South America banded together to remedy this deficiency through a concerted regional focus on the implementation of universal service policies and programs in domestic communications markets (Summit Implementation Review Group, 1999, 1-3). Under the aegis of the Second Summit of the Americas, the Santiago Plan of Action bound regional governments to implement significant universal service commitments through collective and individual communications market reforms (Summit Implementation Review Group, 1999, 1). On a regional level, the Inter-American Telecommunications Commission (CITEL) was mandated to prepare a Universal Service Manual to *'define the concepts of service and universal access'* and *'address the current situation and prospects of rural telephone service and public service in the region'* (Summit Implementation Review Group, 1999, 3).

This regional initiative was augmented by numerous national initiatives. Argentina imposed various universal service obligations on licensed communications network operators, including a requirement to roll out connections to every locality with more than 2,000 inhabitants. Ecuador established special or differential tariffs for residential communications services for low income and rural areas that subsidised subscription fees and service charges. Paraguay implemented a universal service fund to advance the provision of basic communications services to rural regions and other commercially unviable areas (Summit Implementation Review Group, 1999, 2).

Among public sector interventions in South America, the efforts of Brasil, Chile and Peru are particularly instructive of the policies and programs adopted by many emerging economies of the southern hemisphere to realise universal service and access in domestic communications markets. As such, the challenges, failures and achievements of these countries in the implementation of universal service policies and programs in their domestic communications markets may provide insights into the range of solutions available to other developing countries, particularly South Africa, in their quest to realise efficient and cost-effective universal service policies and programs in their communications markets.

#### 2.4.3.1.1 Brasil

Maturation of Brasil's communications market tracked Brasil's economic and political development. Only 6.2% of Brasil's population enjoyed access to some form of fixed line telecommunications service in 1989, with no mobile service available anywhere in the country (ITU, 2001a, 1-47). By 1995, Brasil's communications market reflected a tale of two worlds divided by money, industry and geography. A minority of wealthy families enjoyed high quality communications services, with 98% of Brasil's residential telephones located in the homes of 20% of Brasil's wealthiest families (ITU, 2001a, 6). Industry and geography also determined access to communications services: the industrialised southeast region enjoyed 23.1% teledensity while the agrarian northeast region lagged behind with 9.1% teledensity in 1995 (ITU, 2001a, 12). Brasil's vast geography also conspired against the roll out of communications services to rural and remote areas, with many communities served by pay telephones (Romao, 2002, 8).

Following decades of dictatorships, political unrest and economic instability, the democratically-elected Government of Brasil introduced sweeping economic reforms in August 1995 that included fundamental changes to the regulation of Brasil's communications market. Successive structural reforms included the privatisation of the state owned network operator, the introduction of competition in most market segments, particularly the mobile market, and a reworking of the tariff scheme (ITU, 2001a, 8).

As part of such reforms, the Government of Brasil pursued three principal universal service policies to redress the historically unequal distribution of Brasil's communications services. First, the Government embedded universal service requirements within the license conditions imposed on communications network operators. Second, the Government introduced specific universal service targets for communications network operators within such license terms. Third, the Government created and implemented a universal service fund to realise specific universal service policy objectives in the domestic communications market.[42]

In terms of license conditions, the *Telecommunications Law of 1997, Law Number 9472 of 16 July 1997* (hereinafter referred to as the '*Brasil Telecommunications Law*') created a new regulatory body called the Agência Nacional de Telecomunicações (Anatel) to encourage communications network operators to provide quality services at commercially reasonable rates and, where necessary, alternative forms of services at lower rates for people not able to pay commercially reasonable rates (Brasil, 1997). To counter low teledensity, Anatel compelled fixed line operators to roll out infrastructure to remote, rural and other under serviced areas as a precondition for approval of new services (Economist Intelligence Unit, 2006, 1). Anatel also enforced severe price-cutting targets imposed by *Brasil's Telecommunications Law*.

In terms of specific universal service goals, the Government of Brasil introduced the *General Plan of Goals for Universal Access to Fixed Switched Telephone Service* (Brasil, 1998a) which set annual targets for the

---

[42] See subsequent discussion of such matters in succeeding paragraphs.

roll out of universal services to 2005, such as the provision of one pay telephone for every 100 persons in every community by 2005 (CITEL, 2000, 18-40). Subsequent subsidiary plans such as the *General Target Plan for Universal Access to Services, PGMU Decree 2592 of 15 May 1998* (Brasil, 1998b) and the *General Plan for Quality Targets, PGMQ Resolution 30 of 29 June 1998* (Brasil, 1998c) enabled Anatel to establish universal service obligations for fixed line operators under individual licenses, including the minimum number of access lines and community pay telephones required under each concession as well as the roll out of services to rural areas, hospitals, schools and disabled people. The cost of implementing such obligations was borne solely by operators (CITEL, 2000, 43).

Compliance with required universal service requirements was monitored through a monthly universal services report submitted by each operator to Anatel which not only highlighted universal service performance but also identified corrective action undertaken to remedy any deficiencies (CITEL, 2000, 40). Anatel enjoyed the flexibility to alter specific universal service requirements in individual licenses to account for technological advances and evolving community service requirements, provided that such amendments were consistent with concession terms (CITEL, 2000, 44). Anatel also enjoyed the flexibility to propose complementary or anticipatory goals to be met by operators as part of their licenses (CITEL, 2000, 44).

In terms of funding universal service objectives, the Government of Brasil created a universal service fund to accelerate specific universal service ambitions beyond requirements imposed on fixed line operators by the overarching telecommunications law (Brasil, 1997). The Fund for the Provision of Universal Access (FUST) was created by an eponymously named law in 2000 (Brasil, 2000). FUST represented an important part of Brasil's universal service regime. In November 2000, Brasil's Communications Minister said that:

> *The fund represents not only the path through which the social role of telecommunications can be fulfilled, but through which social justice can be promoted as well* (Anatel Magazine, 2000, 42).

FUST funds were earmarked to improve communications services in low income areas, sparsely populated regions, remote border communities and rural districts. Such funds were also earmarked to expand the presence of high speed communications networks and supply equipment to disabled people and institutions serving disabled people not addressed by specific license obligations imposed on operators (ITU, 2001a, 20-47).

The Ministry of Communications set FUST's priorities. The Ministry initially focused FUST allocations on extending Internet services to schools, health clinics, libraries and other education institutions on concessionary terms (ITU, 2001a, 21-40). The Ministry subsequently focused FUST priorities on the roll out of communications services to low income and sparsely populated areas (ITU, 2001a, 40). Anatel was tasked with executing, implementing, monitoring and enforcing the Ministry of Communication's FUST priorities through programs, policies and directives (ITU, 2001a, 40). To accomplish its mandate, Anatel was divided into operational precincts including a Superintendency for Universalisation (ITU, 2001a, 23-27).

FUST was funded by annual contributions from each service provider equal to 1% of gross operating revenues earned from the provision of communications services (Brasil, 2000). In 2001, the Government of Brasil allocated 50% of proceeds from the auction of new radio spectrum frequencies to FUST which injected about USD 100 million toward FUST's efforts to accelerate the delivery of communications services to education institutions and USD 50 million towards FUST's efforts to accelerate the provision of such services to health care facilities (ITU, 2001a, 40-47). Anatel was responsible for submitting FUST's annual budgets for the Ministry of Communications' approval and maintaining FUST's accounts (Anatel, 2006, 42). Anatel ultimately accounted to Brasil's National Congress for FUST expenditures (ITU, 2001a, 23-42).

Anatal engaged in a very transparent public process to allocate FUST funds and otherwise discharge its administrative responsibilities. In terms of fund allocations, Anatel used reverse auctions and competitive bidding to procure goods and services for its programs (ITU, 2001a, 45). The regulatory authority also instituted a transparent adjudication procedure that established precedents for further FUST allocations (ITU, 2001a, 2-40). In

terms of administrative processes, Anatal created 'Citizen Rooms' which enabled people to review Anatel's activities, decisions and communications legislation and monitor ongoing cases, submit license requirements and file complaints (ITU, 2001a, 20-31). Anatel personnel were also stationed in such rooms to answer questions and assist public queries (ITU, 2001a, 33). Such efforts earned Anatel recognition as '*one of the most transparent agencies in the world*' (ITU, 2001a, 45).

Anatel also adopted a unique market-driven tariff-adjusting mechanism which significantly reduced the cost of communications services in Brasil. Anatal created a web site which tracks the basic rates for domestic long distance, international long distance and mobile telephony charges, based on information collected from operators, to enable consumers to shop for the lowest cost services (ITU, 2002, 1). Anatel also produced a web-based comparative database to help consumers select the telephone carrier most suited to meet their communications services requirements (ITU, 2001a, 32). While the viability of this simple mechanism initially met with scepticism from industry analysts (ITU, 2001a, 1), the latent explosion of competition between Brasil's communications network operators and service providers fuelled a downward spiral in the cost of calls as individual operators competed to post the lowest tariffs on this web site (ITU, 2001a, 46).

Introduction of a competitive market environment certainly improved Brasil's overall teledensity levels (ITU, 2001a, 47). However, Brasil's universal service efforts also contributed significantly to enhancing the availability, accessibility and affordability of communications services in the country, particularly for under serviced areas and low income constituencies. Taken together, this mix of private sector efforts and public sector interventions fundamentally changed the communications landscape in Brasil:

> *Brazil has achieved great success in expanding ICTs to its citizens by first identifying national universal service objectives that include both private and public ICT access* (Schymura de Oliveira, 2003, 1).

Fixed line service improved dramatically in Brasil. The number of fixed telephone lines in Brasil grew from 13.3 million in 1994 to 38.3 million in December 2000, exceeding universal service targets by more than 3.3

million phones (ITU, 2001a, 10). Such fixed line service included individual connections to every village in Brasil with more than 600 inhabitants (Schymura de Oliveira, 2003, 1).

The depth and breadth of access to telephony services in Brasil also improved dramatically. The number of pay telephones doubled from 1.5 phones per 1,000 inhabitants in 1988 to 3 per 1,000 inhabitants in 1998 (ITU, 2006, 14). The reach of pay telephones extended to every settlement in Brasil with over 1,000 inhabitants by 2000 (Navarro, 2000, 1). Such payphones populated every village in Brasil with more than 300 inhabitants by 2003 (Schymura de Oliveira, 2003, 1), including at least 50 remote indigenous villages (Navarro, 2000, 1).

By 1998, Brasil supported 12.1% fixed line teledensity and 4.7% mobile teledensity. Such levels increased to 14.9% fixed line teledensity and 13.6% mobile teledensity by 2000 (ITU, 2006, 11-96). Fixed line teledensity plateaued at approximately 21% in 2002 and remained at that level in 2011 (Budde, 2012a, 1). The Government of Brasil reactivated Telebras, the former state owned monopolist, to roll out a National Broadband Plan to deliver a fibre optic backbone network to major cities which is expected to spur higher fixed line teledensity in the near term (Budde, 2012a, 1). Mobile communications services achieved 145% teledensity by the end of 2012 with competition meeting the robust demand requirements of Brasilian consumers (Budde, 2012b, 1). Indeed, the Government of Brasil intends to achieve 100% telephony coverage in rural areas by 2014 (Budde, 2012b, 1). Along with market liberalisation efforts, the Government of Brasil's public policy interventions clearly advanced and continue to advance the goal of universal service and access in the country's communications market.

#### 2.4.3.1.2 Chile

Chile historically suffered from low teledensity. Only 5.3% of Chile's population enjoyed access to any form of communications services in 1987, with rural areas particularly devoid of any services (Wellenius, 2002, 3-52). Three principal factors conspired to deprive many of Chile's rural communities of basic telephone services. First, high infrastructure costs, particularly the cost to roll out base stations over highly mountainous terrain,

discouraged many operators from providing communications services to rural communities. Second, low income levels endemic to many agrarian communities suggested a lack of disposable income needed to purchase communications services and justify infrastructure investment by operators. Finally, many local communications companies failed to create innovative service offerings or payment packages for rural communities, thereby overlooking prospectively profitable markets under appropriate conditions (Wellenius, 2002, 24).

Like many of its neighbours, the Government of Chile embarked upon communications market liberalisation efforts to remedy such malaise. Beyond the privatisation of telecommunication operators and facilitation of competitive communications market conditions, the Government of Chile focused on the creation and implementation of specific universal service programs (Wellenius, 2002, 35-36. A Telecommunications Development Fund (FDT) was established by amendment to prevailing communications legislation (Chile, 1994a) with a specific, time-bound mandate to spur private sector investment in communications infrastructure in Chile's under serviced areas. Implementing regulations were enacted by presidential degree shortly thereafter (Chile, 1994b).

The FDT's mandate was divided into two phases. The first phase from 1994 to 2000 focused on funding the roll out of community pay telephones in rural and other under serviced areas (Access Division, 1994, 1-12). The second phase from 2001 to 2010 focused on funding the roll out of a wider range of communications services (Access Division, 1994, 1-12). The FDT was financed through Chile's national budget (Wellenius, 2002, 1).

The FDT was administered by a Telecommunications Development Council comprised of seven members appointed by the President of Chile. This Council included the Minister of Transport and Telecommunications (chair) as well as the Ministers of Economy, Finance, and Planning (or their representatives) and three communications professionals from different regions. The Council discharged three principal responsibilities: it established an annual program and priorities of projects eligible for FDT subsidies; it awarded subsidies through a competitive public tender process; and it published an annual FDT report. The Deputy Minister of Transport

and Telecommunications served as executive secretary to the Council. The communications regulatory authority, the Subsecretaria de Telecomunicaciones (Subtel), served as the Council's secretariat and provided administrative and technical resources in support of Council efforts (Wellenius, 2002, 5-6).

Subtel engaged in an annual general information-gathering process that solicited requests for the roll out of public pay telephones from regional authorities, local municipalities, neighbourhood associations, communications companies and ordinary citizens. Any interested party was entitled to submit a simple half-page form through regional government offices to request the roll out of pay telephones Based on this annual public input process, Subtel grouped requests into sets of projects generally comprising between 20 and 50 pay telephones linked by physical proximity and technical feasibility (Wellenius, 2002, 33-46).

Subtel subsequently evaluated the merits of each project against two types of net present value (NPV): a private sector NPV based on a cost benefit analysis of the commercial feasibility of each project and a public sector NPV based on the perceived socio-economic benefits arising from each project. Projects with a positive private sector NPV were classified as private sector projects and referred to the private sector to apply for licenses. Projects with a positive public sector NPV but negative private sector NPV were classified as public sector projects and ranked according to the absolute minimum amount of once-off subsidy required to provide each project with a positive private sector NPV (Wellenius, 2002, 6).

Subtel engaged in a competitive public tender process which invited private sector actors to bid for public sector projects. Greenfield and incumbent operators were eligible to participate in this process by satisfying minimum eligibility requirements. Through a transparent evaluation process, bidders which required the lowest amount of once-off subsidy for individual projects secured a license to realise such projects. Bidders were also entitled to propose the provision of additional services as part of their submissions, although the merits of such services were not considered as part of the evaluation process even if included in subsequent concession terms (Wellenius, 2002, 6-7).

Each license was valid for 30 years and granted each license holder the non-exclusive right to provide pay telephone services and any other communications services specified in their bid within their concession area. Licenses imposed stringent performance requirements upon license holders. The service area, deadline for the roll out of infrastructure and commencement of services and minimum service standards were included in tender documents and license terms. Each license holder was required to provide pay telephone service on a continuous basis for the first 10 years of each concession. The FDT subsidy was only paid once all telephones were operational. While required radio frequencies were allocated to license holders at no additional initial cost, license holders were required to pay annual spectrum frequency fees thereafter (Wellenius, 2002, 6-7).

License holders were permitted to set market-related rates for local calls and other services. However, regional calls were regulated for the first 10 years of every concession according to an indexed formula that accounted for wholesale price costs, labour costs, foreign exchange conditions and corporate tax rates. License holders and long distance carriers were required to post call charges on each pay telephone and inform Subtel of any amendments thereto (Wellenius, 2002, 6-7).

The FDT was remarkably successful in extending the availability and accessibility of communications services to under serviced areas. In its first full year of operation, the FDT funded 46 projects spanning 1,285 locations and spent USD 4.3 million, averaging about USD 3,500 per constructed facility, to expand the scope of communications services to 500,000 people, about a third of Chile's under serviced population. From 1995 to 2000, the FDT completed seven rounds of licensing which extended basic voice communications services to virtually every rural area. Total FDT subsidies averaged about 0.3% of total communications sector revenues while total FDT administration costs averaged less than 3% of FDT subsidies between 1995 and 2002 (Wellenius, 2002, Chapters 3-9).

By the end of phase one of its mandate, the FDT had underwritten 6,093 rural pay telephones which serviced about 2.2 million inhabitants. Only 1% (about 150,000 people) of Chile's population were estimated to suffer from

the absence of access to basic communications services in 2000 compared to a 15% disenfranchisement level at commencement of the FDT in 1994 (Wellenius, 2002, 33-46). As such, the FDT came to be regarded as '*one of the most cost-effective telecommunications support programs worldwide'* (Wellenius, 2002, 21).

Today, Chile's communications sector is one of the most developed markets in South America, underpinned by robust competition, substantial infrastructure investment and a transparent regulatory regime (Budde, 2011b, 1) that continues to include key universal service obligations. Fixed line penetration has peaked at just over 20% teledensity in recent years (Budde, 2011b, 1). Mobile penetration reached 139% teledensity in 2011 with recent double digit growth expected to continue into the medium term (Budde, 2011b, 1). Broadband services are enjoying similar growth rates with nearly 12% broadband teledensity achieved in 2011 (Budde, 2011b, 1). Teledensity is expected to rise if the Government of Brasil implements plans to create a national wholesale communications infrastructure provider in the near term (Budde, 2011b, 1).

#### 2.4.3.1.3 Peru

Peru historically suffered from low teledensity. Only 2.4% of Peru's population enjoyed access to any form of communications services in 1992 (Osiptel, 2006a, 2). As late as 1994, Peru supported more than 70,000 rural population centres with less than 3,000 inhabitants (Coopers & Lybrand, 1996, 5) which enjoyed less than 0.2% teledensity (Osiptel, 1996, 3).

While teledensity rose marginally to 6.7% by 1997, three principal factors conspired to deprive Peru's rural communities of basic telephone services. First, high infrastructure costs, particularly the cost to roll out base stations over mountains and through dense equatorial forests, discouraged many operators from providing communications services to rural communities. Second, poverty endemic to many agrarian communities suggested a lack of disposable income needed to purchase communications services and justify infrastructure investment by operators. Finally, rural communities were often isolated from economic centres and overlooked by monopolist operators as candidates for the delivery of communications services (Coopers & Lybrand, 1996, 5-93).

Like many of its neighbours, the Government of Peru embarked upon substantive communications market liberalisation efforts to remedy this malaise (Peru, 1994a). Beyond the privatisation of telecommunication operators and facilitation of competitive market conditions, the Government of Peru focused particularly on the introduction of universal service and access programs to improve the availability, accessibility and affordability of communications services to its citizens (Peru, 1994b). In 1998, the Telecommunications Investment Fund (Fitel) was established by decree (Peru, 1994b) with the following mandate:

> *. . . to finance telecommunications services in rural areas and areas considered as preferential social interest places. . . .* [and act] *as a mechanism to enhance equity and development in a growing telecommunication market* (Osiptel, 2004, 3).

Beyond this general remit, Fitel's statutory mandate set some very specific universal access goals, including the provision of pay telephone services to 500 rural towns and public access to Internet services in each of Peru's 554 district capitals within ten years (Peru, 1994b).

Fitel was managed by Peru's communications regulatory authority, the Organismo Supervisor de la Inversión Privada en Telecomunicaciones (Osiptel) (Osiptel, 2006a, 7). Osiptel functioned as Fitel's administrator and fund manager: Osiptel established Fitel's strategy and objectives, prioritised Fitel's funding priorities, managed the project selection process and governed grant concession activities (Coopers & Lybrand, 1996, 144-169). However, the Ministry of Transportation and Communications ultimately approved selected projects (Osiptel, 2004, 9). Osiptel otherwise provided Fitel with those technical and administrative services required to implement its mandate (Coopers & Lybrand, 1996, 3-224). Fitel was funded through a 1% levy on gross revenues earned by licensed communications operators (Osiptel, 2006a, 22).

Osiptel advanced a concept for the delivery of universal service in Peru's communications market based on the promotion of private sector investment and introduction of competitive market conditions (Osiptel, 2006b, 12-13). The Government of Peru agreed with this approach, adopting competition guidelines which not only opened the domestic

communications market to competition but renewed a focus on the roll out of communications services to under serviced areas (Intven, 2000, 22, 172-173). These guidelines defined universal service as '*access to voice telephony, low-speed fax and data and free emergency calls'* and mandated the delivery of such service to 5,000 under serviced locations by 2003 (Intven, 2000, 6).

Building upon this mandate, the Government of Peru unveiled the Rural Projects Program to finance rural communications projects in Peru with Fitel funds (Osiptel, 2006b, 12-13). The Program divided Peru into six regions, each comprising between 400 and 1,000 communities with similar geographic and political characteristics (Osiptel, 2006b, 12-13). The Program was financed by Fitel in two phases. Under the first phase, Fitel underwrote several rural communications development initiatives. As part of the Fitel I Program, the Fund subsidised the roll out of public pay telephones to 213 rural villages in the northern jungle region and subsidised the private sector's provision of public pay telephones to 1,937 small villages in south, south central and northern regions (Osiptel, 2006b, 12-13). As part of the Fitel II Program, the Fund subsidised the private sector roll out of community telecentres to 257 rural district capitals and installation of community pay telephones in 2,290 small rural towns by April 2003 (Osiptel, 2006b, 12-13). Under the second phase, the Payphone Increase Project underwrote the roll out of additional public pay telephones to 1,616 rural and urban towns served by only a single pay telephone (Osiptel, 2006b, 12-13).

Osiptel employed competitive tenders to award contracts for Fitel projects (Osiptel, 2006b, 12-13). Operators that offered to deliver required services for the least amount of subsidy won the right to install, operate and maintain services under a 20 year concession (Osiptel, 2006b, 12-13). Osiptel encouraged tenders for multiple regions to realise economies of scale and designed a bidding process that enabled bidders to simultaneously bid for any combination of three projects (Intven, 2000, 63-86). Under concession terms, Osiptel permitted every operator to use its facilities to provide additional services to subscribers within its concession area, although Osiptel regulated retail prices for rural communications services and interconnection charges to limit opportunistic market pricing practices (Cannock, 2001, 1-4).

The amount of Fitel subsidies generally ranged between USD 8,000 and USD 11,000 per pay telephone (Osiptel, 2006b, 12-13). Such subsidies covered initial installation costs as well as maintenance costs for a five year period (Osiptel, 2006b, 12-13). Fitel paid subsidies over a five year period against specific performance milestones which linked such subsidies to the realisation of specific performance objectives, such as facility roll out commitments, service quality and service reliability (Cannock, 2001, 1-4). Teething problems were encountered during early projects and the quality and reliability of telephony services varied under concessions. In the first pilot concession, for example, the operator failed to satisfy service reliability requirements and specified service targets, resulting in substantial penalties and withholding of subsidy payments (Cannock, 2001, 1-4).

Notwithstanding such difficulties, Fitel largely succeeded in realising the roll out of basic telephony and Internet services to under serviced areas. Demand for communications services in concession areas generally exceeded expectations. In the pilot concession, traffic levels surpassed Osiptel forecasts by 32% in the first year. Costs of subsidies in concession areas were generally below expectations. In the pilot concession, the winning bid requested a subsidy 41% lower than Osiptel's estimate and 74% lower than the incumbent operator's offer. As such, the pilot concession mobilised private investment at a rate of USD 22 per population on the back of a USD 11 subsidy per population. By March 2001, Fitel had funded concessions in six regions of Peru covering the 5,000 rural towns targeted to receive telephony services by 2003 (Cannock, 2001, 1-4).

Yet Peru continues to struggle in its efforts to achieve universal service. Peru suffers from the third lowest fixed line penetration in South America after Bolivia and Paraguay (Budde, 2011c. 1). Moreover, significant market disparities exist in the fixed line market: 63% of the country's fixed lines are concentrated in the two major urban centres that enjoy 19.7% fixed line teledensity in contrast to the 0.9% fixed line teledensity found in some rural areas (Budde, 2011c, 1). Unlike the fixed line market, Peru's mobile market has enjoyed double digit growth in recent years and achieved 110% penetration by 2011. Despite such saturation, the availability of mobile services remains a challenge in Peru with some coastal areas enjoying over 120% mobile teledensity while some rural areas suffer with only 26% mobile teledensity (Budde, 2011c, 1).

While universal service has improved dramatically in Peru in the past 25 years, the Government of Peru continues to battle endemic market conditions which discourage the availability, accessibility and affordability of communications services in rural areas. Three challenges have yet to be overcome in the quest to deliver universal service in Peru: widespread rural poverty, expensive tariffs and the geographic inaccessibility of rural communities continue to hinder the roll out of communications services to under serviced areas in Peru. As of 2013, the Government of Peru has yet to identify public policy solutions to overcome such challenges.

#### 2.4.3.2 Asia (Malaysia)

Asia has a mixed track record of communications market reforms (Cabanda, 2011; Brown, Hossain & Nguyen, 2004; Smith & Staple, 1994). Some Asian countries embraced the wave of communications market liberalisation efforts that swept across the world in the 1980s and 1990s while other countries demurred to focus on other political or economic reforms. Given widespread disparity between income groups in many Asian countries, however, the right to universal service to basic communications services has gradually become a public policy priority in most Asian countries, regardless of the vast socio-economic variances between individual countries (Cabanda, 2011; Brown et al, 2004; Smith & Staple, 1994).

Numerous Asian countries have pursued universal service policies and programs in domestic communications markets (Brown et al, 2004; Smith & Staple, 1994). Singapore and Korea have mandated access to fixed line services, community pay telephones and emergency services while Thailand has included access to low speed Internet services as part of universal service prescriptions in domestic communications markets (Reowilaisuk, Jhandavimol, Prapinmongkolkarn & Tadthiemron, 2005, 7). Bangladesh has introduced an operator-funded universal service fund which focuses on improving overall teledensity as well as access to communications services in low income, under serviced and high cost areas (Mahamud, 2004, 6).

Bhutan has mandated the state owned monopolist to pursue various rural telephony projects, Voice over Internet Protocol (VoIP) projects and prepaid calling card programs as part of its efforts to improve the availability,

accessibility and affordability of communications services in the country (Wangchuk, 2004, 9). Indonesia has established specific roll out targets for universal access to communications service for rural villages with initial efforts underwritten by the fiscus but subsequent efforts funded by operator contributions (Herlambang, 2004, 12). India has adopted a gradual approach which initially focused on operator roll out obligations but subsequently created a universal service fund to accelerate the delivery of communications services to under serviced areas (Ghosh, 2004, 4).

Among Asian countries, Malaysia was one of the earliest outposts for communications market reforms. As a result of market liberalisation efforts undertaken by the Government of Malaysia in the late 1980s and early 1990s, national teledensity in Malaysia increased from less than 10% in 1980 to over 69% in 2000 (Minges, 2002, 1-56). This increase in teledensity was largely driven by increased mobile phone penetration as well as certain universal service obligations imposed on Telekom Malaysia Berhad, the incumbent fixed line operator, by the Jabatan Telekomunikasi Malaysia (Department of Telecommunications) (MCMC, 2001a, 7). While national teledensity skyrocketed in this period, access to communications services continued to vary significantly between some regions in Malaysia, with certain areas experiencing less than 8% teledensity (Minges, 2002, 22).

In 1998, the Government of Malaysia embarked upon a second round of sweeping communications market reforms. Consistent with the Government of Malaysia's drive to transform the country into a multimodal communications and technology hub, the *Communications and Multimedia Act 1998*, *Act 588* (hereinafter referred to as the *'Communications and Multimedia Act'*) established a new, holistic regulatory framework for the communications and broadcasting industries (Malaysia, 1998a). The *Communications and Multimedia Commission Act 1998, Act 589* (hereinafter referred to as the *'Communications and Multimedia Commission Act'*) established the regulatory authority to govern these industries on a holistic basis (Malaysia, 1998b). Over 30 different types of communications licenses were consolidated into four horizontally differentiated classes of licenses: network facilities providers; network services providers; application services providers; and content application services providers (MCMC, 2002a, 16).

As part of such reforms, the Government of Malaysia revisited universal service policies enforced in the domestic communications market. Section 202(1) of the *Communications and Multimedia Act* charged the new Malaysia Communications and Multimedia Commission (MCMC) with formulating an appropriate universal service framework to address, among other concerns, lingering disparities in access to basic communication services between different regions in the country (Malaysia, 1998a).

The MCMC subsequently developed and issued a series of consultative papers for public and industry comment.[43] At the conclusion of this consultative period, the MCMC unveiled a universal services framework centred on the following principal objectives:

> *To promote the widespread availability and usage of network services and/or applications services throughout Malaysia by encouraging the installation of network facilities and the provision of network services and/or applications services in underserved areas or for underserved groups within the community* (MCMC, 2003a, 9).

The MCMC consolidated these objectives into four specific goals which are summarised in Table 2.7:

**Table 2.7**

**MCMC universal service goals**

| Type of access | | Type of service | |
|---|---|---|---|
| | | **Basic** | **Internet** |
| | **Collective** | Collective access to basic telephony and public payphone services | Collective access to Internet services |
| | **Individual** | Individual access to basic telephony services | Individual access to Internet services |

Source: MCMC, 2003a, 13.

The MCMC divided universal service objectives between axes of access and services and distinguished between collective and individual access to communications services. Realisation of collective access to communications services represented a higher priority than realisation of individual access to such services (MCMC, 2000, 4). The MCMC defined universal access in terms

[43] For example, see MCMC, 2000.

of accessibility to basic telephony services and basic Internet services. As part of its mandate, the MCMC subsequently defined minimum Internet capability standards (MCMC, 2000, 5).

The MCMC identified underserved groups and underserved areas as two key constituencies that required greater access to communications services (MCMC, 2010, 3). Underserved groups represented people in areas that did not have collective or individual access to basic communications services, including disabled people, children under protection, women under rehabilitation and people living in low cost houses (MCMC, 2010, 3). Underserved areas initially represented territories where fixed line teledensity was at least 20% below the average national fixed line penetration rate (MCMC, 2010, 8). In 2010, however, the definition of underserved area was expanded to include any territory with a penetration rate for broadband communications services below the national average and any territory with over 80 people per square kilometre or less with insufficient access to public mobile communications services (MCMC, 2010, 3).

Similar to paradigms applied in Brasil, Chile and Peru, the MCMC created a fund to underwrite its universal service policies and programs. In early 2001, the Universal Service Provision Fund (USPF) was created pursuant to the *Commission Determination on Universal Service Provision, Determination Number 2 of 2001* to finance the delivery of communications services to underserved areas and underserved groups through two principal means: the installation of network facilities and the provision of network services; and the provision of application services that deliver access to communications services (MCMC, 2010, 5). The USPF was funded by a 6% contribution of net weighted revenues from all license holders except small operators (MCMC, 2010, 2, 6). Administration of the USPF was vested to a Universal Service Provision Department within the MCMC which delegated responsibility for financial allocations from the USPF to a MCMC committee that included representatives from at least one license holder (MCMC, 2001b, 9).

The MCMC adopted a four step implementation mechanism to achieve universal service in Malaysia:

- As the first step of every process, the MCMC published universal service targets (Malaysia, 1998a). As part of an initial diagnostic effort, for example, MCMC identified 89 under serviced areas (MCMC, 2004b, 12). This number grew to 373 areas by 2008 which were reclassified into 135 districts in 2010 (MCMC, 2010, 8).

- As the second step of every process, the MCMC invited qualified license holders to tender for the provision of services in these areas (MCMC, 2004a, 14). Each bidder was required to submit a draft universal service plan for each area which specified the minimum number of telephone lines and types of telephone lines required in each area but otherwise left each bidder to specify the type of technology, roll out timetable and target sites in each area (MCMC, 2004b, 14; 2003a, 6). In the event that no application was received for any particular area, the MCMC could compel any license holder to provide services to such area (MCMC, 2002b, 16).

- As the third step of every process, the MCMC evaluated submissions against a set criteria: the needs of the underserved area; the number of collective and individual access points; the proposed timetable for realising roll out of services; and the amount of claimed subsidy (MCMC, 2003b, 11). The MCMC offered winning bidders a five year USPF subsidy to roll out communications services to underserved areas, after which operators were required to maintain such services without subsidy (ITU, 2004, 1-19). The amount of the USPF subsidy plugged the gap between the amount spent by operators to roll out communications services to underserved areas (capital costs and operating expenditures) and the amount of revenues received by operators from the provision of communications services within such areas (MCMC, 2002a, 17).

- As the final step in the process, the MCMC required winning bidders to periodically report to the MCMC on their progress towards realising their obligations (MCMC, 2001b, 17). The MCMC also monitored implementation progress by winning bidders (MCMC, 2010, 4).

In 2008, the MCMC reclassified underserved areas into three layers: sub-urban and rural areas; rural areas; and remote areas. This classification delineated each area based on population size, distance to nearby towns, infrastructure (such as power and electricity), access to transportation networks; type of geography; and availability of communications services (MCMC, 2010, 9-21). Goals for the delivery of communications services varied for each category of underserved area, with sub-urban and rural areas targeted for public mobile communications services, broadband community applications and collective telephony access but rural areas targeted only for the first two types of services (MCMC, 2010, 12-13).

In the past 15 years, Malaysia achieved many of its universal service objectives in the domestic communications market. The country enjoys 150% national teledensity (CIA, 2012, 1), the second highest in Asia after Singapore. Mobile phones remain the predominant form of communication, with Malaysia's 128% mobile teledensity far exceeding its 25% fixed line teledensity (MCMC, 2012, 2) despite the Government of Malaysia's heavy investment in ICT projects (MCMC, 2012, 1-40). Some critics suggest that these penetration rates have occurred despite universal service obligations (Keong, 2010, 1; Sidhu, 2010, 1). The Universal Service Fund in Malaysia had collected about USD 1.5 billion but only paid out about USD 60 million by 2010 (Sidhu, 2010, 1). Market observers and politicians (Keong, 2010, 1; Sidhu, 2010, 1) suggest that the inability of the MCMC to manage tenders effectively and pay compensation claims efficiently has eroded the integrity of the universal service mandate:

> *So if things are not working out smoothly and the USP fund not being put to effective use, perhaps the model isn't working out as planned. A review may be necessary to achieve the desired results or ambiguity will continue to sow doubts in the minds of many* (Sidhu, 2010, 2).

The Government of Malaysia has yet to address such concerns. Furthermore, the MCMC has yet to dispense most of the universal service funds or achieve specified roll out targets to underserved groups and underserved areas within the domestic communications market by 2013. The continuing intransigence of the Government of Malaysia and ineffectuality of the MCMC suggest that the administration and implementation of universal service policies by public sector agencies susceptible to bureaucracy and political intervention likely represent sub-optimal means to materially influence the improvement of universal service and access to communications services in emerging markets.

#### 2.4.3.3 Africa (Uganda)

Many African countries adopted communications market liberalisation programs in the 1990s that followed precedents established by developed markets in North America, Oceania and Europe as well as developing markets in South America and Asia. In the fixed line market, governments across Africa privatised at least 20 state owned communications network operators between 1995 and 2006 and the number of private operators exceeded the number of state owned incumbents in Africa by 2006 (ITU, 2007b, 3). Governments across Africa also licensed second or third network operators in the fixed line market, with approximately 63% of African countries supporting partial or full competition in domestic fixed line communications markets by 2006 (ITU, 2007b, 4). In the mobile market, many governments across Africa licensed multiple network operators to provide communications services in this period, with approximately 91.3% of African countries supporting partial or full competition in domestic mobile communications markets by 2006 (ITU, 2007b, 3-4). By 2014, Africa supported at least 100 fixed line operators and 200 mobile network operators (Brookwood, 2014).

Given Africa's development priorities, the delivery of universal service and access to communications services represented a heightened public policy priority within these broader communications market reforms.[44] By 1998, over 75% of African countries had adopted universal service and access policies in domestic communications markets (Marcelle, 1998, 5). Among such countries, a wide variety of specific programs were implemented to realise such policies, including but not limited to:

- Compelling operators to provide communications services at geographically averaged tariffs.

- Compelling operators to provide communications services at discounted tariffs for commercially marginal users such as low income groups and rural constituencies.

---

[44] Infra, sections 1.2 and 5.2 as an example of such priorities in South Africa.

- Creating a universal service fund and compelling operators to contribute to such fund to underwrite programs that advanced the realisation of universal service in domestic communications markets.

- Imposing network roll out obligations and rural network development targets on operators as conditions precedent for licensing new communications services or securing interests in privatised state owned communications assets (Marcelle, 1998, 5-6).

In the majority of such countries, responsibility for implementing such programs vested to an independent communications regulatory agency, although South Africa, Tanzania and Uganda created a separate universal service agency to spearhead such efforts (Marcelle, 1998, 5). Among African countries, Uganda has been one of the leading advocates for the realisation of universal service to communications services. As such, the experience of universal service and access policies and programs in Uganda's communications market may provide insights into the challenges and success factors that may affect implementation of universal service and access in the communications markets of other African countries, including South Africa.

The Government of Uganda adopted a communications market liberalisation policy in 1996 which significantly increased the depth of population with access to communications services. Teledensity jumped from 0.28% in 1998 to over 4.2% in 2004 (UCC, 2005a, 7). Uganda supported approximately 35% mobile teledensity by 2011 (Mugabe, 2011, 1). Moreover, increased mobile market competition reduced the cost of mobile calls in Uganda by 60% since 2010 (Mugabe, 2011, 1).

As with other developing countries, however, Uganda's geography and demography have conspired to restrict the roll out of communications services to many rural and poor areas. 87% of Uganda's population reside in rural areas (World Bank, 2003, 3) and represent 83% of Uganda's lowest income group in 1999 (UCC, 2005a, 38). For communications network operators, geographic impediments forewarn of higher infrastructure costs while demographic impediments suggest a lack of disposable income to pay for services to justify investment in such infrastructure.

Alongside other communications market reforms, the Government of Uganda adopted the most significant universal service laws in Africa to address these challenges (Wanjiku, 2009, 1). In 2003, the Government of Uganda established the Rural Communications Development Fund (RCDF) pursuant to the *Uganda Communications Act of 1997, Laws of Uganda Cap 106* (Uganda, 1997) aimed at '*leveraging investment in rural areas where communication services are socially desirable but are not economically viable'* (UCC, 2005b, 1). The RCDF was financed through a 1% contribution of gross revenues by all ICT operators, including postal service providers (UCC, 2005a, 36). Management of RCDF affairs was vested to the Uganda Communications Commission (UCC) under the supervision of a five member Board that included a UCC representative, a finance professional nominated by the UCC, a representative from the Ministry of Works, Housing and Communication, a representative nominated by the Uganda Institution of Professional Engineers and a representative from civil society (UCC, 2004a, 57). The RCDF was also charged with publishing an annual report for UCC approval (UCC, 2004a, 60).

To determine the optimal use of RCDF funds, the UCC conducted market research which validated the presence of geographic and demographic market barriers[45] that limited private sector interest in providing communications services to under serviced communities (UCC, 2004a, 40-41). In particular, rural areas suffered from a lack of economies of scale endemic to urban areas that increased the cost of doing business for service providers both in terms of infrastructure investment and operating costs (UCC, 2004a, 46, 51-53). The UCC drew two significant conclusions from its research. First, market conditions suggested that under serviced areas would continue to suffer a lack of basic communications services absent public policy intervention, particularly subsidies to encourage private sector interest in providing communications services to these areas. Second, the delivery of universal access rather than universal service represented the optimal public policy objective, at least in the near term (UCC, 2004a).

[45] Such as *'sparsely populated northern and northeastern districts* [that] *experience some political upheaval'* (UCC, 2004ba, 9).

Building upon its research and conclusions, the UCC unveiled a universal service policy built around the provision of universal access to under serviced communities, notably '*access of basic communications services that are of an acceptable quality at affordable prices and at reasonable* distances' (UCC, 2004b, 23). To realise this overarching objective, the UCC defined 926 under serviced rural counties within Uganda and introduced specific access targets for each county (UCC, 2004b, 11). The provision of basic voice telephone service to each county was judged a precondition for further access initiatives (UCC, 2004b, 11). Once voice telephony services were available in each county, the provision of one community pay telephone per 5,000 inhabitants within all counties by 2005 was designated as a second significant policy objective (UCC, 2004b, 12). Ancillary objectives within the UCC's overarching universal service policy included:

- Supporting the establishment of points of presence for Internet services.

- Increasing the use of ICT through market-leading projects such as community telecentres.

- Ensuring the effective use of RCDF resources to leverage investment in rural communications development under sustainable business models, particularly through competitive access to subsidies (UCC, 2004, 13).

The UCC initially adjusted the financial model of Uganda's communications market players to advance these universal service objectives. Specifically, the UCC enhanced the financial returns available to operators in rural areas by permitting operators to charge higher tariffs in rural areas and introducing asymmetrical interconnection rates between urban and rural calls (UCC, 2004b, 13). The UCC subsequently offered incumbent operators the first right of refusal to roll out communications services within the 926 under serviced rural counties under this amended financial model (UCC, 2004b, 11). Based on improved return opportunities and other business considerations, these operators took up this opportunity in 772 counties (UCC, 2004a, 22).

The UCC subsequently introduced RCDF subsidies to stimulate private sector interest in the provision of communications services to the remaining 154 under serviced areas. The UCC used two means to minimise the cost of these subsidies. First, it bundled various counties together to improve aggregate commercial returns by blending marginal opportunities with commercially attractive opportunities (UCC, 2004a, 45). Second, it employed a reverse auction tender process that awarded concession opportunities to bidders requesting the lowest subsidy (UCC, 2004a, 11, 15, 63-78). Bidders were required to submit sustainable business plans that led to a self-sustaining business model absent any subsidy (UCC, 2004a, 63-78).

Packaged as part of a broader Universal Access Programme (UCC, 2005b, 1-15), the RCDF's reverse auction for the remaining 154 under serviced areas garnered significant private sector interest (UCC, 2004b, 11). The World Bank ultimately underwrote USD 11 million in subsidies for the roll out of communications services to such areas between December 2001 and October 2004 (UCC, 2005b, 3). In 2005, the Government of Uganda signed a Rural Communication Development License Agreement with MTN Uganda Limited which provided USD 3.7 million in subsidies to roll out additional public pay telephone services, extend network coverage, install 32 Internet points and launch telecentres in 20 districts within 104 sub-counties of Uganda (UCC, 2005b, 3). This initiative complemented the UCC's previous efforts to roll out communications services to Uganda's under serviced areas. In every instance, operators were monitored by the UCC for compliance with roll out and coverage requirements on a quarterly basis (UCC, 2004a, 80-81).

The UCC's universal service efforts have been largely successful. It has rolled out more services to its most under serviced areas than any other country in Africa (Wanjiku, 2009, 1). By 2011, the Universal Access Programme had delivered network coverage in 65% of the country covering 95% of the population (Commonwealth Ministers, 2011, 1). The scope of benefits has included school labs, Internet points of presence, district information portals and Internet cafes (Wanjiku, 2009, 1). Critics have cited the lack of local content, research and allocation of funds to deliver communications services in areas already covered by private sector operators as key deficiencies (Wanjiku, 2009, 1) along with the failure to fund broadband and multimedia development (Wakabi, 2009, 6-7).

Despite such criticism and continued efforts to realise universal access to communications services in more remote areas of the country, Uganda has been cited as a case study on the effective implementation of universal service to communications services in Africa (Wanjiku, 2009, 1; ITU, 2007a, 1). Indeed, the Uganda universal service fund has been named as one of only two universal service funds in the world (the other in Columbia) that has had an impact on increasing the availability of communications services in domestic markets (ITU, 2007a, 1).

Five key success factors were identified for the success of Uganda's universal service policies. First, the introduction of competition into the domestic communications market using technology neutral licensing prior to the privatisation of incumbent operators. Second, the presence of a trusted, independent communications regulatory authority. Third, the allocation of universal service funds to enhance the proliferation of mobile communications services rather than fixed line communications services. Fourth, a focus on delivering communications services to the most remote and uneconomical areas. Fifth, the use of market forces to identify areas not served by market participants on commercial terms, including reliance on competitive auctions to identify service providers and implementation of least cost subsidies to effect the delivery of communications services to such areas (ITU, 2007a, 1). Such dynamics represent important considerations in any discussion of policies and programs to advance the realisation of universal service and access in South Africa's communications market.

## 2.5 LESSONS FOR UNIVERSAL SERVICE AND ACCESS IN SOUTH AFRICA'S COMMUNICATIONS MARKET BASED ON INTERNATIONAL PRECEDENTS

The concept of universal service to communications services has evolved dramatically since the term was first coined over 100 years ago in the United States of America. Many developed countries have dedicated significant public policy efforts to implementing universal service and access in domestic communications markets. Many developing countries have followed their footsteps and dedicated even more significant efforts to address an even more urgent need for universal service and access in their communications markets. Several important lessons may be learned by the Government of South Africa from such precedents as it evaluates ways to accelerate the delivery of available, accessible and affordable communications services in the country.

### 2.5.1 Universal service as a public policy

The concept of universal service to communications services has expanded dramatically across the past century. Originally conceived by American private sector actors as a slogan to justify monopoly protections and subsequently appropriated by American public policy makers as a catch phrase to justify the roll out of basic telecommunications services to America's hinterland, the concept of universal service, in terms of communications markets, has now come to represent the basic right of every member of any society to some form of communications services. There is no disagreement over the legitimacy of this right. The public policy debate now focuses on the scope and substance of services required to realise this right and the optimal means to deliver this right.

Constituencies covered by the concept of universal service to communications services have expanded dramatically across the past century. Demand for universal service to communications services is no longer defined by a division between rural and urban polarities but rather by a division between phone-empowered and phoneless segments of society. While the reasons for this schism may be linked to geography, as rural areas and urban ghettos generally remain under serviced relative to their suburban counterparts (ITU, 2012a, 1), a myriad of other socio-economic and demographic factors have increasingly contributed to the disenfranchisement of people from even rudimentary access to communications services. Poverty, ethnicity, gender and age are all factors which affect accessibility to communications services (Schement & Forbes, 1999, 179-193). As such, policies and programs which traditionally focused on the delivery of universal services to communications services to remote and rural areas need to be augmented by policies and programs that consider ways to reach other targets that need assistance to access basic communications services, such as low income groups, ethnic minorities, women and young people.

The importance of universal service to communications services has increased dramatically across the past century. Historically, the absence of communications services did not necessarily stunt local commerce nor affect delivery of local health care services. In today's increasingly interconnected world, however, the absence of communications services materially compromises not only the quality of commerce but also the quality of life for many communities. As more and more people rely on communications services around the world, the cost of being a phoneless member of society rises dramatically:

> *In the information age, universal access to communications technology is the primary policy tool for enabling citizens to participate in the economic, political and social activities fundamental to a well-functioning and stable society* (Schement & Forbes, 1999, 180).

As such, the need for universal service to communications services in this century is much more dramatic than any such need in the past century.

Beyond developed markets, the consequences of the disenfranchisement of people from communications services are even more pronounced in developing countries. The inability of developing markets to bridge the growing digital divide may impede the ability of marginalised constituencies to conduct commerce, receive social services and otherwise access opportunities to improve the quality of their lives relative to connected constituencies. Such a phenomenon fosters further isolation, stunts development and contributes to a perpetual poverty trap for phoneless people in developing countries.

As such, the historical approach used to realise universal service to communications services may not sufficiently remedy the spiralling digital divide. The World Summit on Information Society's Working Group in Internet Governance affirms that *'telecommunication is a basic social and economic necessity'* (World Summit on Information Society, 2004. 15). Rather than apply a gradual, incremental market-driven effort towards realisation of universal service to communications services, the magnitude of isolation and challenges of interconnection endemic to communications markets in developing countries suggest that a top-down, government-driven public policy intervention of sweeping significance may be required to effect any meaningful realisation of this necessity.

The means of delivering universal service to communications services has also changed dramatically across the past century. Universal service to communications services originally referred to the delivery of fixed line household telecommunications services. The proliferation of mobile communications services, increasing convergence between communications platforms and the rise of divergent communications technologies means that universal service to communications services may now be realised through a myriad of different delivery channels and products ranging from broadband platforms to Internet technologies

and may not necessarily involve delivery to any fixed address. This dilemma confronted the Council of Social Service during its review of universal service in Australia's communications market:

> *One of the key issues which needs to be addressed, but which unfortunately falls outside of this review, is the definition of the STS* [Standard Telephone Service]*. As recently as 10 years ago this was a simple task, however this is not the case today. Internet service provision, data speeds, mobility, broadband and a range of other issues suddenly become important in discussing what is and what is not standard. The area is complex and even further complexity is added when trying to consider future services.*
>
> *If the definition of STS is to be changed to cover a range of data and mobility issues then clearly this will have a significant impact on cost and funding formulas* (Council on Social Service, 2004, 4).

As such, any practical, meaningful definition of universal service needs to focus on the delivery of communications services to users on a technology neutral basis. As the Council on Social Service further concluded, any concept of universal service '*needs to be forward looking, capable of responding to technological change while remaining focussed on peoples* [sic] *needs'* (Council on Social Service, 2004, 5).

Any meaningful concept of universal service to communications services in South Africa also needs to account for differences in public needs and consequent differences in public policy priorities that generally exist between developed countries and developing countries:

> *African policy makers would be ill-advised to take either the conceptual starting point or current preoccupations of universal service policy in wealthy economies as the basis for defining universal service objectives which are meaningful in their own contexts.*
>
> *Not only are the market structures in the telecommunications sector of OECD countries and in the majority of African countries very different, but the wider socio-economic structures and patterns of* [sic] *are also fundamentally different. These differences matter in that they determine the existing nature and potential transformative role of the telecommunications sector in Africa. Universal service policy suitable for Africa must be defined and analysed on its own terms* (Marcelle, 1998, 3).

In this regard, any meaningful, made-in-Africa definition of universal service tailored to South Africa's communications market necessarily requires an examination of the applicability and importance of each of the three universal service elements.

The availability of communications services appears to represent a waning universal service concern. Many developed countries have achieved high teledensity levels due to the proliferation of mobile communications (ITU, 2013f, 1). Many developing countries also enjoy high mobile teledensity (ITU, 2013f, 1). The focus of many emerging economies on universal access to communications services has often bypassed any desire to realise universal service to communications services, particularly its historical objective of installing one phone per fixed address.

The accessibility of communications services represents a well-trodden universal service concern. Most developed countries have achieved significant levels of access to basic communications services (Schement & Forbes, 1999, 179-183). Having satisfied this essential concern, public policy makers in developed countries have expanded the accessibility debate to include other communications services, particularly broadband services. As the FCC noted:

> *Some countries with well-developed telecommunications infrastructure have expanded their universal service support programs to include advanced services such as Internet access in schools and libraries and affordable access to rural health care providers* (FCC, 2006b, 2-3).

Many developing countries continue to focus on the delivery of access to basic voice communications services. As the five precedents from South America, Asia and Africa and other examples illustrate, developing countries have generally made significant progress towards improving the accessibility of basic communications services to substantial portions of their populations over the past 25 years. Technological advancements such as mobile telephony, VoIP services and fixed local loop[46] platforms and the completion of high capacity submarine communications cables have made it more feasible and more cost effective to roll out communications services to historically disenfranchised areas, often in the form of community pay telephones or regional telecentres. As such, great strides appear to have been made in realising this element of universal service in the communications markets of many developing countries.

---

[46] Infra, note 19. Although some distinctions may be made in specific cases, the terms 'local loop' and 'last mile' connectivity are considered as synonyms for the purpose of this study.

Competition has been a key driver in the realisation of universal service to communications services in many countries. Yet increasingly complex commercial environments also challenge future implementation of universal service to communications services in many countries. Beyond a proliferation of the number and types of competitors in most domestic communications markets, the rapid proliferation of communications technologies has expanded the number and types of communications delivery channels in most countries. Multiple vendors of multiple technologies using multiple delivery platforms expand the complexity of business for operators, complexity of choices for consumers and complexity of regulation for public sector authorities. The depth and breadth of regulatory practices and public policies required to police private sector actors and proactively implement universal service to communications services under such commercial conditions may strain the capacity and capability of many regulatory authorities. Young institutions in developing countries with less experience and fewer resources than their more established, better resourced counterparts in developed countries may struggle to discharge their mandates in such fast-moving commercial conditions.

The nature of access discrimination in the communications markets of developing countries may also differ substantially from such discrimination in the communications markets of developed countries. While access to communications services for hearing-impaired, speech-impaired and sight-impaired people represents an important public policy concern, the extent of discriminatory access to communications services in many emerging markets extends far beyond physical disabilities. A wide range of less visible socio-economic disabilities such as poverty, insufficient education, lack of basic amenities such as electricity and absence of basic infrastructure such as public transportation systems can affect access to communications services. In addition to communications policies that address physical disabilities, policy makers in developing countries need to give wider consideration to these more ubiquitous forms of disadvantage which are not as prevalent in developed countries.

The affordability of communications services appears to represent an ascending universal service concern in both developed and developing countries. The World Summit on Information Society's Working Group in Internet Governance confirms that *'both concepts of universal access and universal service look at the issue of need as distinct from ability to pay'* (World Summit on Information Society, 2004, 15). In the

United States of America, high user costs have been established as one of the principal reasons for a lack of access to communications services by the remaining 6% of the American population without phones (Schement & Forbes, 1999, 188-192). High costs have also raised concerns about the affordability of communications services in developing countries (Comninos et al, 2010, 20-33; Snead, Sousa & Whyman, 2010, 6; ICASA, 2005a, 3-27; McLeod, 2005a, 40; Steenkamp, 2005, 1). Based on such studies, the affordability of communications services may represent the most significant barrier to extending universal service to phoneless segments of society in developed and developing countries alike.

Technology plays an important part in the affordability of communications services. Technological advancements have lowered the costs of communications equipment and services.[47] Technological advancements have also increased the ability of operators and service providers to bundle multi-level, multi-product pricing solutions that often generate savings for specific consumers by tailoring specific communications solutions and services to specific consumer needs within specific packages. Such flexibility is a mixed blessing for regulatory authorities. As a positive development, the market's ability to support price points for a wide range of communications services enables regulators to target specific policies for specific products and services that achieve specific universal service goals. Rather than enforcing broad subsidies from urban centres to rural areas, for example, regulatory authorities may advance universal access on a demographic basis through subsidies from high margin, value added services to low margin, basic communications services. As a negative development, pricing flexibility enables market participants to play with costs and profit margins. Such practices challenge the ability of regulators to set parameters that encompass all price points and package configurations.

### 2.5.2 Public Policy precedents

Much can be learned from experiments with universal service and access in the communications markets of South America, Asia and Africa. Universal service and access policies and programs in the communications markets of Brasil, Chile, Peru, Malaysia and Uganda support 10 specific insights (broadly divided into political,

---

[47] Infra, sections 4.2.3 and 8.3.2.

policy and financial lessons) and three broader conclusions that may influence consideration of universal service and access policies and programs in South Africa's communications market.

#### 2.5.2.1 Political lessons

The nature of the regulatory environment appears to make a material difference to the successful implementation of universal service and access policies in developing markets. The most successful models appear to share four common ingredients. First, strong support from a central government which champions universal service to communications services as key national public policy priority. Second, the creation or existence of a relatively well funded and well organised administrative agency to establish key policy objectives and monitor implementation of such objectives. Third, significant use of private market dynamics (competitive tenders, reverse auctions) to set policy implementation costs. Fourth, heavy reliance on private market participants to implement established policy in the most cost effective, efficient and transparent manner. The least successful model (Malaysia) is notable for the absence or weak presence of these ingredients.

#### 2.5.2.2 Policy lessons

Universal access likely represents the favoured public policy to promote access to communications services in many developing countries. In each precedent, universal access represented the principal policy objective. In some instances, universal access represented an initial step towards realisation of broader universal service. In other instances, universal access represented the preferred means to realise a standard suite of available, accessible and affordable communications services deemed by policy makers to be sufficient, by itself, to meet the nascent communications requirements of under serviced communities in domestic communications markets.

Investment in some form of a consultative process likely improves the effectiveness of universal service policies in increasing the availability, accessibility and affordability of communications services in developing markets. At the outset, collaboration enables stakeholders to collect information and refine policy goals to more accurately match market conditions

and community needs. Furthermore, collaboration identifies obstacles and remedies for such obstacles prior to program implementation. Finally, collaboration achieves consensus among stakeholders that ultimately increases buy in during consequent program implementation efforts. Investment in such collaborative efforts appears to achieve such gains in at least three of the five precedents considered by this study.

Introduction of specific and realistic program targets along with prescriptive and transparent performance criteria likely improves the efficiency and effectiveness of attendant public policies. In some precedents, program performance exceeded targets. In other precedents, program performance failed to achieve targets. In either circumstance, the ability to benchmark program performance and evaluate reasons for the success or failure of such performance not only held relevant actors accountable for their role in the policy implementation process but also enabled such actors to affirm or adjust their conduct or program parameters to account for such performance.

Use of a diffuse range of policies or programs seems to enhance the realisation of universal service objectives in the communications markets of developing markets. The regulatory authority's ability to control tariffs, notably through cross-subsidies, capped long distance charges and asymmetrical interconnection rates, appears to represent an important regulatory tool. The regulatory authority's ability to manipulate license conditions, notably through twinning, issue of multiple licenses and imposition of universal service obligations in new license terms, appears to represent a meaningful regulatory tool. The relevant authority's ability to award subsidies likely represents a significant regulatory tool. Although BTO, BOO and similar arrangements were not applied in any case study, the cumulative effect of tariff controls, licensing practices and subsidies largely achieved the same effect as traditional project finance schemes.

#### 2.5.2.3 Financial lessons

Five important conclusions may be extrapolated from five different aspects of the financing of universal service and access policies and programs in the five precedents, namely: control of funds; source of funds; calculation of fund subsidies; purpose of funds; and allocation of funds. Four of five precedents relied on a distinct special purpose fund to underwrite universal service

ambitions in domestic communications market. This trend appears consistent with prevalent use of such a fund in the communications markets of other developing and developed countries. The consolidation of financial resources targeted for universal service efforts into a single fund engenders several advantages, notably transparency, accountability and centralisation, without any apparent disadvantages.

In four of five precedents, the universal service fund relied on compulsory operator contributions to finance relevant policies and programs. This arrangement suggests that policy makers in developing countries prefer to use indirect rather than direct means of taxation to fund universal service objectives in domestic communications markets. Since compulsory operator contributions effectively redistribute profits earned by operators in commercially viable territories towards funding services in marginal territories, the cost of this redistribution is ultimately passed through to consumers through higher prices. Setting aside competitive advantages obtained from operational and financial efficiencies, the generation of profits is, at least in part, derived from higher prices and higher penetration levels often endemic to urban territories. As such, use of a revenue-linked contribution formula increases the payment burden on more profitable operators and, consequently, increases the tax burden on consumers in more profitable territories.

This implicit cross-subsidy between consumers of communications services may represent the optimal allocation of fiscal responsibility for the realisation of universal service in the communications markets of developing countries for two principal reasons:

- Many other sources of finance, such as license fees and interconnection fees, often distribute subsidy costs to consumers on an across-the-board basis without regard for the type or amount of communications services used by such consumers. Similarly, funding derived from the national fiscus burdens the entire population[48] with responsibility for paying for universal service objectives without regard for the use or benefits of communications services enjoyed by such taxpayers.[49]

---

[48] Although some low income groups may not pay any income tax, they pay various forms of indirect tax and also benefit from government services such as roads and health care services funded from the fiscus.

[49] Low income groups often do not benefit from communications services (supra, section 2.4.1).

- Revenue-based operator contribution schemes impose an indirect ‘pay as you go’ tax that not only targets consumers who specifically use and benefit from communications services but also varies according to the amount of value obtained by such consumers from such services. High spend consumers and users of high margin value added services contribute proportionately more to operator profits and therefore universal service funding than low spend consumers and users of low margin, basic communications services.

Revenue-linked operator contribution schemes therefore appear to represent an effective, equitable and targeted means of raising funds to realise universal service in the communications markets of developing markets.

The flexibility of revenue-linked operator contribution schemes represents another competitive advantage over other forms of funding to realise universal service in the communications markets of developing countries. Revenue-linked operator contributions to universal service funds vary as operator profits vary under changing communications market conditions. This variability ensures that such contributions, at all times, do not undermine the commercial viability of an operator’s business.

Fixed amount contributions, such as those associated with license fees, do not retain the same degree of flexibility. Such contributions may, in the event of any short term or significant market adversity, challenge the commercial viability of an operator’s business. While the basis of revenue-linked contributions and the amount of fixed contributions may be altered to account for long term shifts in market conditions, the former formula adds more flexibility to account for intermittent market fluctuations without rewriting regulatory requirements.

The five precedents suggest that subsidy formulas which front load the use of market determinants to set subsidy levels and back load financial risks onto market participants to establish performance incentives appear to represent optimal subsidy structures. Among variations of subsidy structures across the five precedents, Brasil and Malaysia offered the most generous terms for private sector operators, essentially eliminating all financial risks for undertaking universal service projects in specific areas. Peru and Malaysia

used subsidy structures which encouraged operators to front load capital and operating costs while Malaysia's subsidy formula discouraged operators from optimising revenue-generating opportunities by plugging gaps between costs and revenues. While some market determinants were used in the evaluation of funding proposals in every country, subsidy structures which involved market determinants early in the subsidy calculation process and included market risks for operators subsequent to the allocation of subsidies appear to maximise the public sector's ability to influence market activities on a cost effective basis.

Beyond subsidy structures, the five precedents suggest that the private sector represents the most effective arbiter of absolute subsidy levels. In every country, some form of a competitive tender process was used to award universal service concessions to qualified operators. In three countries, direct market participation was used (reverse auction, lowest bid) to set subsidy levels. In two countries, less direct market determinants were used to set subsidy levels. In each instance of direct market participation, the subsidy level was substantially below initial estimates. While public sector authorities may therefore estimate subsidy levels, these precedents suggest that competition among private sector market participants represents the best method to determine the optimal amount of subsidy required to implement universal service objectives in the communications markets of developing countries.

Beyond these specific political, policy and financial insights, each precedent supports three broader conclusions:

- Private sector actors are best placed to deliver communications services. In each of the five countries, the appalling state of communications services during the monopoly periods of state owned national network operators condemns state-driven delivery of communications services and indicts conflict-riddled public policy makers who failed to articulate or enforce universal service obligations against such operators in such markets.[50]

[50] Supra, section 2.4.

- Competition between communications network operators and service providers improves the availability and accessibility of communications services. This phenomenon is not unique to the five countries highlighted as precedents herein, with similar outcomes supported by broader studies (Fuentes-Bautista, 2001, 2-31; Petrazzini & Clark, 1996, 4; Mody & Tsui, 1995, 179-198; Straubhaar, McCormick, Bauer & Campbell, 1995, 225-244).

- Public sector intervention is required to remedy continued defects in the delivery of universal service following communications market liberalisation efforts, at least in developing countries. In each of the precedents, the privatisation of state owned communications network operators and introduction of competitive market conditions improved the depth and breadth of communications services. However, such improvements did not sufficiently remedy the absence of basic communication services in significant segments of society. Public sector intervention was required to remedy this market failure.[51]

Each precedent also hints at the optimal form of partnership needed between public sector agents and private sector market participants to realise universal service to communications services. In the majority of cases, policy makers pursued implementation strategies based on:

> *. . . extensive reliance on market forces to determine and allocate subsidies, minimal regulatory intervention, simple and relatively expeditious processing and effective government leadership* (Wellenius, 2002, 27).

In each country, public sector authorities acted as catalysts for private sector implementation of universal service policies. Yet the effectiveness of public policy makers as such catalysts rested on their willingness to accommodate private sector interests in at least three important ways. First, regulatory authorities created market-friendly projects that identified opportunities, invested in market research, calculated commercial return requirements and estimated subsidy levels required by private sector actors to realise such projects. Second, regulatory authorities conducted market-friendly tenders that clearly defined project parameters, license requirements and bidding rules. Third, regulatory authorities structured market-friendly packages that bundled territories (geographically and economically) and

---

[51] Supra, section 2.4.

empowered private sector actors to bid for multiple licenses that enhanced return opportunities. Although a conspicuous public sector hand shepherded the invisible private sector hand to realise universal service to communications services in each country, the path followed a well-worn market road.

While regulatory agencies encouraged private sector actors to realise the objectives of universal service policies through market-friendly practices, most regulatory agencies retained significant power to compel private sector actors to deliver some minimum standard of communications service as part of such policies. Beyond facilitating universal service projects, regulatory authorities in three countries imposed some form of universal service obligations on operators as part of their license conditions. Absent market participation in any incentive program, moreover, Malaysia's regulatory authority could also compel operators to provide communications services to specific under serviced areas. These precedents therefore suggest that a 'carrot and stick' approach that balances collaboration with coercion represents the preferred means of realising universal service objectives in the communications markets of developing countries.

## 2.6 CONCLUSION

The historic growth of the concept of universal service from a private sector initiative into a pillar of public policy in the regulation of communications markets reflects an overarching consensus that access to some form of communications services represents an essential prerequisite to living in our interconnected world. Contemporary consideration of universal service also suggests that the range of constituencies in need of access to basic communications services extends far beyond rural areas to include, *inter alia*, low income areas, ethnic minorities, women, youth and disabled people. Many countries have adopted a fairly standard suite of solutions in their efforts to deliver such services to such constituencies. Developing countries have also placed an emphasis on universal access to communications services as a key public policy objective, sometimes as a stop-gap policy prior to realisation of universal service and sometimes as a policy substitute for universal service.

While the stage of development of a country's communications market may affect the objectives of universal service and access policies, international precedents overwhelmingly suggest that public sector intervention is required to achieve universal service and access to communications services in most markets. Where the most

naked ambitions of universal service have been achieved in specific communications markets, the introduction of public policies to remedy lingering market failures or promote particular market developments represents a legitimate public sector intervention into private market activities. In every circumstance, however, these precedents suggest that private sector market principles and private sector market actors represent the optimal means to structure and implement such policies and programs, respectively. The nature of the regulatory environment and its relationship to the commercial environment may, therefore, significantly influence the utility and performance of universal service and access policies in communications markets.

This chapter considers the definitions and origins of universal service and access and the application and relevance of universal service and access policies and programs in international communications markets. It highlights lessons learned from the performance of such policies and programs in international markets that should be considered in any discussion of universal service and access ambitions in South Africa. The chapter also establishes the important role played by public sector intervention (or lack of intervention) in the success or failure of universal service and access priorities in domestic communications markets. Given this foundation, Chapter 3 discusses the regulatory environment of South Africa's communications market as a necessary precursor to examination of potential policies and programs that may accelerate the realisation of universal service and access to communications services in the country.

# CHAPTER 3

# REGULATORY ENVIRONMENT OF SOUTH AFRICA'S COMMUNICATIONS MARKET

## 3.1 INTRODUCTION

Chapter 2 established the foundation for an informed discussion of universal service and access in South Africa's communications market by delineating the origins and definitions of universal service and access in international communications markets. It compiled case studies from a representative sample of developed and developing countries to compare and contrast the divergent utility, relevance and performance of universal service and access policies and programs in different communications markets. Based on such discussions, the chapter identified key lessons that may inform consideration of universal service and access policies and programs in the context of South Africa's communications market.

Among such lessons, the nature of influence exerted by public sector actors on the activities of private sector actors appears to be a critical factor in the success or failure of universal service and access policies and programs in domestic communications markets. Although the characteristics of regulations and regulatory agencies vary widely by country, such regulations and agencies generally manifest two phenomena. On the one hand, regulations and regulatory agencies undoubtedly influence market behaviour (Vass, 2007; Kay, 1999). On the other hand, the specific effects of such influence on market behaviour vary widely by country and industry (Vass, 2007; Kay, 1999). Any considered discussion of universal service and access in South Africa's communications market, therefore, needs to examine the extent to which the Government of South Africa has influenced market behaviour and the effects of such influence in relation to the realisation of universal service and access in the domestic communications market. This chapter addresses such imperative by tracking the evolution of the regulatory environment in South Africa's communications market between 1958 and 2013, particularly during the period between 1993 and 2013, to identify key developments which may have affected or continue to affect the implementation of universal service and access policies and programs in the country.

The chapter divides discussion of the Government of South Africa's regulatory influence over the domestic communications market into three distinct periods: the monopoly period, the managed liberalisation period and the convergence period.

- Monopoly period

  A monopoly period between 1958 and most of 1996 characterised by a lack of desire to create fixed line competition and tolerance of a captured regulatory regime.

- Managed liberalisation period

  A managed liberalisation period between late 1996 and 2005 characterised by determined efforts to introduce fixed line competition and sustain an independent regulatory authority.

- Convergence period

  A convergence period commencing 2006 and concluding upon publication of the Government of South Africa's current ICT policy review characterised by a push to accelerate competition and refine the regulatory environment to capture benefits arising from the convergence of communications delivery platforms.

The regulatory perspectives adopted by the Government of South Africa during each policy period necessarily affected, positively or negatively, the delivery of universal service and access to communications services in South Africa. As such, this chapter defines the primary characteristics of the Government of South Africa's policy perspectives under each policy period, including the nature of enabling policies, legislation and regulations, as well as the mandate and policy actions of various public policy agents empowered thereunder.

The chapter culminates with analyses of the effects of such actors and actions on the realisation of universal service and access to communications services in South Africa. Actors or actions that impeded such ambitions which have not been rectified by the Government of South Africa are identified as continuing obstacles which require discussion as part of current policy deliberations designed to realign the regulatory environment to address exigencies in a 'post-convergence period'. Actors or actions that advanced universal service and access ambitions are similarly flagged for further consideration as part of such deliberations.

Chapter 3 does not discuss every facet of the regulation of South Africa's communications market. It limits examination of the regulation of South Africa's communications market to key legislation, policies and public sector participants most likely to have affected or affect the realisation of universal service and access to communications services in South Africa. Other legislation which affects South Africa's communications market, such as the *Electronic Communications and Transactions Act, 2002, Number 25 of 2002* (South Africa, 2002a), the *Regulation of Interception of Communications and Provision of Communication-Related Information Act, Number 70 of 2002* (South Africa, 2002b) and the *Competition Act, Number 89 of 1998* (South Africa, 1998a), are considered only to the extent that such statutes have affected or may affect the Government of South Africa's efforts to deliver universal service and access to communications services in the country.

## 3.2 MONOPOLY PERIOD

From 1958 to 1996, the provision of communications services in South Africa was governed by the *Post Office Act, Number 44 of 1958* (South Africa, 1958) (hereinafter referred to as the *'Post Office Act'*) and various amendments thereof. This law essentially enforced a monopoly in favour of a state operated telecommunications operator that would remain in force and effect until the advent of democracy in South Africa. Key features of this 'monopoly period' are described in succeeding paragraphs of this section.

### 3.2.1 The *Post Office Act, Number 44 of 1958*

The *Post Office Act* defined the legal framework for regulation and delivery of communications services in South Africa for 38 years. This legislation established four important regulatory parameters that explicitly shaped the growth of South Africa's nascent communications market:

- Section 78(1) of the *Post Office Act* conferred to the Postmaster General the exclusive privilege to construct and operate communications infrastructure and provide communication services in South Africa. This authority underpinned the monopoly over the delivery of communications services enjoyed by the Department of Posts and Telecommunications for many years.

- Sections 78(1)(b) and 78(2) of the *Post Office Act* empowered the Postmaster General to license third parties to construct and operate private communications networks. This authority underpinned the subsequent issue of licenses to other market participants such as private communications network operators and mobile communications network operators in later years.

- Section 78(1)(a) of the *Post Office Act* enabled railway companies to build and operate telegraph lines independent of the Postmaster General's authority over communications services in the country. This limitation on the Postmaster General's powers underpinned the roll out of a private communications network by Transnet, South Africa's state owned transportation services monopoly.

- Section 78(2) of the *Post Office Act* empowered the Department of Posts and Telecommunications with an inspection authority. This administrative power underpinned the subsequent regulation of third party service providers licensed under the authority of the Postmaster General and represented an early division of responsibilities between policy making and policy enforcing functions in the regulation of South Africa's communications market.

During the 38 year statutory monopoly period covered by the *Post Office Act*, regulation of South Africa's communications services vested nominally at all times with the Minister of Posts and Telecommunications and subsequent incarnations thereof as statutory head of the Department of Posts and Telecommunications and successor departments. However, this legislation also gave the Postmaster General and successively a Director General a wide range of powers over this Department that included responsibility for administration of communications services and regulation of the precise form and pricing of communications services in the country. Essentially, the Postmaster General was not only the principal agent charged with the provision of communications services in South Africa but also the principal agent charged with the licensing and regulation of such services under the nominal authority of the Minister of the day.

By virtue of this arrangement, the Government of South Africa effectively sanctioned a self-regulating, industry-oriented environment in the domestic communications market similar to arrangements found in France, Germany and Mexico (South Africa, 1995, Chapter 5). The Government conceded such circumstance in its discussion of regulatory structures in the 1995 *Green Paper:*

> *The only circumstances in which no distinct regulatory structure has been established are in the case of a state monopoly (usually a state department), in which case the functions of operator and regulator coincide* (South Africa, 1995, 23).

It acknowledged the weaknesses inherent to this arrangement:

> *. . . such a structure could be, or it could be perceived to be, less objective than a separate organisational entity in resolving conflict between the national operator and other parties, especially where the national operator is state owned* (South Africa, 1995, 29).

The Government of South Africa would eventually make a half-hearted effort to correct these deficiencies without disturbing underlying provisions of the relevant legislation which preserved and protected existing monopoly market conditions.

### 3.2.2 The *Post Office Amendment Act, Number 85 of 1991*

The central tenets of the *Post Office Act* that guided the regulation and delivery of communications services in South Africa went largely undistributed for over 33 years. Concerned with the overlapping regulatory and commercial functions of the Department of Posts and Telecommunications and aware of shifting public policy precedents in other countries,[52] however, the Government of South Africa ultimately took several steps to separate these distinct functions through amendments to the original legislation.

On 5 June 1991, the Government promulgated the *Post Office Amendment Act, Number 85 of 1991* (South Africa, 1991) (hereinafter referred to as the *'Post Office Amendment Act'*). This legislation altered terms of the *Post Office Act* to facilitate the transfer of responsibility for delivery of postal services and communications services from the Department of Posts and Telecommunications to two Government-owned public companies. Responsibility for the conduct of postal services was transferred to South African Post Office Limited. Responsibility for the conduct of communications services was transferred to Telkom SA Limited.

---

[52] Such as communications policy in Great Britain where provision of post and communications services was transferred from a government department to a newly created public corporation on 1 October 1969 pursuant to the *Post Office Act, 1969*. Post and communications services were subsequently separated pursuant to the *British Telecommunications Act, 1981* which created British Telecommunications, a statutory corporation. The *Telecommunications Act, 1984* reconstituted this entity as British Telecommunications plc and commenced a staggered privatisation process which culminated with divestiture of the final tranche of government-held shares (except for a golden share) in July 1993 (British Telecommunications plc, 2006, 1-5).

Such legislation realised two principal reforms. From a market perspective, it represented an important step towards creating a legal environment conducive to the privatisation of the delivery of communications services in South Africa (South Africa, 1996c, Chapter 10). From a regulatory perspective, it established communications policy and postal policy as separate areas of public interest, a prescient distinction given the radically different public policy and private market considerations that would eventually preoccupy actors in each arena.

Yet these reforms failed to cure the malaise of self-regulation and regulatory capture[53] endemic to the governance of South Africa's communications market. Responsibility for supervising the regulation of communications services and responsibility for supervising the delivery of such services remained in the same hands. While the *Post Office Amendment Act* stripped the Department of Posts and Telecommunications of responsibility for providing communications services, the Minister of Post and Telecommunications continued to wear two hats as the ultimate arbiter of regulatory affairs and service provision. On the one hand, the Minister retained responsibility for regulating South Africa's communications market through the Postmaster General and Department of Posts and Telecommunications, albeit without the burden of delivering underlying services (South Africa, 1991). On the other hand, section 3(6) of the amended *Post Office Act* stipulated that:

> *The powers and duties of the State as a member and shareholder of each successor company* [Telkom SA Limited and the South African Post Office Limited] *shall be exercised and performed by the Minister* (South Africa, 1991).

As such, the Minister continued to set public policy and otherwise regulate Telkom on behalf of the Government of South Africa while also setting Telkom's corporate policy and guiding Telkom's corporate conduct on behalf of its sole shareholder, the Government of South Africa.

---

[53] 'Regulatory capture' or 'industry-orientation' occurs when any regulatory authority effectively becomes an agent for the regulated responsibility and acts in the interest of the regulated responsibility rather than the public interest. For a broader discussion of regulatory capture, see Jaffe, 1956, as well as Gonenc, Maher & Nicoletti, 2000. For a specific discussion of regulatory capture in South Africa's communications market, see Cohen, 2002.

This arrangement placed the Minister of Posts and Telecommunications in an inextricable conflict of interest. For example, the Minister needed to deal with tariffs under both areas of accountability. As the Government's designated shareholder representative, the Minister retained a fiduciary duty to act in the best interests of Telkom which favoured high tariffs and continued monopoly conditions that promoted profits and protected Telkom's market share. As the Government's designated policy maker, however, the Minister retained a statutory duty to act in the public interest which favoured low tariffs and the introduction of competition that promoted the proliferation of available, accessible and affordable communications services. By virtue of this conflict-riddled, non-arm's length governance structure, the Government of South Africa sanctioned regulatory capture.

### 3.2.3 Transition to the managed liberalisation period

The regulatory capture endemic to South Africa's communications market would go unchecked until the advent of democratic elections in South Africa. In the build-up to such elections, a broad spectrum of stakeholders would debate solutions to resolve such flaws as part of the transformation agenda driving the introduction of democratic society in South Africa. Building upon discussions held at the Convention for a Democratic South Africa (CODESA)[54] and guided by the Multi-Party Negotiating Process (MPNP),[55] the Centre for the Development of Information and Telecommunications Policy held a symposium in July 1993 that recommended creation of a communications sector policy forum (Khumalo, 2001, 184).

Based on subsequent agreement among a representative commission appointed by this symposium, the National Telecommunications Forum (NTF) was established in November 1993. The NTF was mandated to engage a wide range of stakeholders from Government, business, labour, operators, manufacturers, civic groups, academia, professional associations and user constituencies in a far reaching consultative process designed to generate meaningful public policy solutions for reforming South Africa's communications market (Horwitz, 1999, 217).

---

[54] The CODESA was the multi-party political forum convened to bring together various political parties and members of civil society to confirm the core principles for a new constitution for South Africa and structure of a transitional government to mark the end of minority white rule and introduction of democracy in South Africa (Barnes & De Clerk, 27). For further information, see Barnes & De Klerk, 2002, 26-33.

[55] The MPNP was the name given to the multi-party political forum that assumed CODESA's mandate after the collapse of the CODESA process (Barnes & De Klerk, 29). For further information, see Barnes & De Klerk, 2002, 26-33.

Although ideally positioned to be catalyst for the first substantive review of South Africa's communications market in nearly 40 years, the NTF never lived up to its mandate. With the arrival of the first democratically elected Government of South Africa, political stakeholders and business interests would usurp the NTF and represent the central catalysts to usher in the next phase of development of South Africa's communications market. The 'monopoly period' soon gave way to the 'managed liberalisation' period in South Africa's communications market.

## 3.3 MANAGED LIBERALISATION PERIOD

Inauguration of the first democratically elected Government of South Africa in April 1994 harbingered introduction of a policy of managed liberalisation of South Africa's communications market. The origins of this policy may be found in broad-based grassroots consultations commencing in 1994 that culminated with a sweeping overhaul of legislation by 2001. Reforms enacted within this seven year window would repudiate the policies and practices of the previous monopoly period and usher in a new era of arm's length regulation and competition in South Africa's communications market known as 'managed liberalisation period'.

The transition from the monopoly period to the managed liberalisation period involved extensive consultations between diverse ranges of divergent stakeholders. While the NTF was created as a catalyst to drive such consultations, the new democratically-elected Government of South Africa would ultimately revert to parliamentary tradition[56] and employ a more structured consultation process in the form of consultative papers that ultimately led to a complete reworking of South Africa's communications laws and fundamental realignment of South Africa's communications market. The succeeding paragraphs of this section describe the substance and impact of such papers and laws.

### 3.3.1 The National Telecommunications Forum

The National Telecommunications Forum[57] never realised its intended mandate as the catalyst for restructuring South Africa's communications market. This failure was largely attributable to its crisis of credibility with the Government of South Africa. Within the new administration, the NTF was viewed as *'dominated by private operators with their own vested commercial interests'* (Thorne, 1998, 3) and lacking

---

[56] Use of 'green papers' and 'white papers' to develop policy and legislation is an established tradition in many Westminster-model parliamentary democracies. For example, see Canada, 2008a, 1; 2008b, 1.

[57] Supra, section 3.2.3.

sufficient grasp of various sensitivities surrounding Telkom's proposed privatisation (Khumalo, 2001, 184). Yet the NTF's impotence may have been exacerbated by the inexperience of South Africa's new managers:

> *Government failed to intervene either through reflecting on and resolving different positions in the forum, or by exercising their* [sic] *right as a democratically elected Government to make a decision in the public interest. This eventually led to a walk out by unions and civics over the critical issue of the sale of a percentage of telecom* [sic] *to a private operator* (Thorne, 1998, 3).

For whatever reasons, the new Government of South Africa ultimately sidelined the NTF and introduced a more structured forum for consultations built around a series of policy papers that invited public consultation into the formulation of South Africa's new communications policies.

### 3.3.2 The *Green Paper on Telecommunications Policy*

On 7 July 1995, the Minister of Posts, Telecommunications and Broadcasting, published a *Green Paper* as the basis for advancing consultations towards publication of a white paper on South Africa's new communications policy (South Africa, 1995). While the Minister acknowledged the contribution of the National Telecommunications Forum, among others, in formulating many of the questions found in this document (South Africa, 1996c, 1), he sidelined the NTF as the central communications policy coordinating forum by creating the National Telecommunications Policy Project (NTPP) to drive the policy development process towards publication of a white paper to define South Africa's new communications policy (South Africa, 1996c, 2).[58]

Based on feedback from the *Green Paper* process, the Department of Posts, Telecommunications and Broadcasting released two papers on 7 November 1995 which supported three broad market reforms. First, private sector expertise was needed to address Telkom's operational and financial inefficiencies. Second, immediate reforms were required to introduce shareholders from previously disadvantaged communities into the ownership structures of South Africa's communications companies. Third, the regulatory framework governing South Africa's communications market required a major overhaul to include introduction of an independent regulatory authority (Horwitz, 2001, 6).

---

[58] Supra, sections 3.2.3 and 3.3.1 and infra, section 3.3.3.

In November 1995, the Minister of Posts, Telecommunications and Broadcasting convened a National Colloquium on Telecommunications Policy (NCTP) to enable stakeholders to discuss key issues arising from submissions to the *Green Paper* (South Africa, 1996c, 2). This chamber *'reached consensus on all issues with the exception of the issues affecting Telkom's ownership and monopoly position'* where members of the labour movement dissented against the NCTP's consensus for introduction of a strategic partner (South Africa, 1996c, 21). The Colloquium referred these latter two issues to an Eminent Persons Group selected from Colloquium delegates (South Africa, 1996c, 21).

The NCTP was succeeded by an NTF Plenary Conference on 5 February 1996 (South Africa, 1996c, 1). Similar to the outcome of the NCTP proceedings, however, NTF participants reached consensus on all issues except those related to market structures and Telkom's partial privatisation (Khumalo, 2001, 184). Recommendations of the NTF Plenary Conference were incorporated into a third draft of a proposed white paper prior to its submission for approval to the Minister of Posts, Telecommunications and Broadcasting and the Cabinet of the Government of South Africa (South Africa, 1996c, 1).

### 3.3.3 The *White Paper on Telecommunications Policy*

Having facilitated consensus among broad-based constituencies across South Africa's society on almost every aspect of communications policy reform except Telkom's market position and privatisation, the Government of South Africa moved deliberately towards enacting a new communications policy framework. On 15 March 1996, the Minister of Posts, Telecommunications and Broadcasting unveiled the *White Paper on Telecommunications Policy* (hereinafter referred to as the '*White Paper*') as *'a statement of Government policy on the future development of telecommunications in South Africa'* (South Africa, 1996c, 4). The *White Paper* recommended extensive reforms which may be broadly classified into three categories of concerns: market reforms; regulatory reforms; and universal service[59] (South Africa, 1996c, 3).

[59] Infra, Chapter 5 for specific consideration of universal service in the context of communications services in South Africa.

In terms of market reforms, the Government of South Africa identified competition as a cornerstone for realising a host of public policy objectives in the domestic communications market, including stimulation of economic and social development, improvements to the quality of services, empowerment of previously disadvantaged individuals and realisation of universal service (South Africa, 1996c, Chapter 4). The *White Paper* defined a limited period of exclusivity for Telkom to enable the monopolist to attract investment and expertise from an international strategic equity partner sufficient to rehabilitate its infrastructure, improve its service standards, expand its product offerings and otherwise prepare itself for the arrival of market competition (South Africa, 1996c, Chapter 2). The *White Paper* also proposed to deregulate the delivery of Customer Premises Equipment (CPE), permit competition in the domestic long distance market and facilitate private interconnection agreements between different market players pursuant to a regulatory approval process guided by an independent communications regulatory authority (South Africa, 1996c, Chapter 10). Essentially, the *White Paper* proposed to terminate Telkom's monopoly and introduce competition into South Africa's communications market through a managed liberalisation process.

In terms of regulatory reforms, the Government of South Africa divorced responsibility for policy development from policy implementation in respect of the domestic communications market. The Minister of Posts, Telecommunications and Broadcasting and the Department of Posts and Telecommunications retained responsibility for setting policy and administering relevant legislation, but regulation of South Africa's communications market and management of South Africa's radio frequency spectrum except broadcasting services frequency bands was vested in a new independent statutory regulatory authority called the South African Telecommunications Regulatory Authority (SATRA) (South Africa, 1996c, Chapter 10). As the *White Paper* asserted: *'all regulatory functions undertaken by Telkom in the past are now removed from Telkom's authority and are vested in the Regulator'* (South Africa, 1996c, 14). In the medium term, the *White Paper* envisaged an integrated communications regulatory authority governing the communications and broadcasting industries (South Africa, 1996c, Chapter 5).

Two events intervened to shape the substance of legislation flowing from the *White Paper*. The first event was widely anticipated by stakeholders. On 22 March 1996, the Government of South Africa promulgated the *Former States Posts and Telecommunications Reorganisation Act*, *Number 5 of 1996* which integrated the

post and telecommunications departments of the former Transkei, Bophuthatswana, Venda and Ciskei territories and all enterprises and land used by the same into Telkom SA Limited and the South African Post Office Limited, respectively (South Africa, 1996e). Promulgation of this statute enabled subsequent legislation to address South Africa's communications market on a holistic basis without any exceptions attributable to apartheid.

The second event was not widely anticipated by stakeholders. On 28 March 1996, Jay Naidoo, formerly Minister without Portfolio in charge of implementation of the *Reconstruction and Development Programme* (ANC, 1994) in the Office of the President replaced Pallo Jordan as Minister of Posts, Telecommunications and Broadcasting as part of a broader Cabinet shuffle (Intekom, 2005, 1) effected to coincide with the transition from a Government of National Unity to an ANC-dominated administration (Thorne, 1998, 4). This leadership change increased political intervention in the policy development process, for the Minister *'introduced a new bold approach to policy formulation in the sector'* which included *'a shift from the politics of compromise towards a more interventionist approach on behalf of the ANC'* (Thorne, 1998, 4).

In the exercise of this philosophy, the Minister of Posts, Telecommunications and Broadcasting intervened in the legislative drafting process to dilute the nature of certain *White Paper* recommendations intended for implementation in the draft communications statute. Such intervention was notable in two particular areas:

> *His first move was to intervene in the Telecommunications White Paper before it became an Act of Parliament, most notably, by reducing the role of the Regulator in policy formulation, which was deemed the responsibility of Government, and secondly, lifting the time limit on telecoms* [sic] *monopoly, which was placed under the Ministers* [sic] *discretion* (Thorne, 1998, 4).

Further changes emphasised the role of South Africa's communications market as a catalyst for realisation of the Government's *Reconstruction and Development Programme* (Thorne, 1998, 4), a view consistent with work undertaken by the new Minister of Posts, Telecommunications and Broadcasting in his previous portfolio.

### 3.3.4 The *Telecommunications Act, Number 103 of 1996*

On 15 November 1996, the consultative process that began in the dying days of apartheid with the NTF and culminated over three years later with publication of the *White Paper* (South Africa, 1996c, 4) ended with promulgation of the *Telecommunications Act, Number 103 of 1996* (South Africa, 1996b) (hereinafter referred to as the '*Telecommunications Act*').[60] As the centrepiece of the Government of South Africa's managed liberalisation policy, this legislation regulated every facet of South Africa's communications market except certain broadcasting activities (Thorne, 1998, 4).

Consistent with the three categories of concerns highlighted by the *White Paper*, the *Telecommunications Act* focused on effecting three predominant public policy objectives: market reforms; regulatory reforms; and universal service.[61] In terms of market reforms, the *Telecommunications Act* broke Telkom's monopoly over the delivery of Public Switched Telecommunication Services (PSTS) and introduced other provisions to stimulate competition in various market segments. In terms of regulatory reforms, the legislation established a regulatory framework for South Africa's communications market based on two pillars: a licensing scheme and a regulatory scheme which divided responsibilities between the Minister of Posts, Telecommunications and Broadcasting and an independent regulatory authority.

#### 3.3.4.1 Advent of competition

The *Telecommunications Act* effected sweeping and significant market reforms, principally by opening South Africa's communications market to previously unprecedented levels of competition. Section 34(1) of the *Telecommunications Act* enabled any party to apply for any license to provide any type of communications service. However, section 34(2) of the *Act* permitted such applications only upon the invitation of the Minister of Posts, Telecommunications and Broadcasting, effectively giving the Government of South Africa control over the timing and form of any competition. The term 'managed liberalisation' therefore reflected the Government of South Africa's

---

[60] Certain provisions of the *Telecommunications Act* came into operation on 21 February 1997 and 13 June 1997 pursuant to exercise of various conditions precedent provided for in the legislation (South Africa, 1996b).

[61] Infra, sections 5.2 to 5.4 for further consideration of universal service in terms of South Africa's communications market.

management of this radical transformation of South Africa's communications market from a largely monopolist environment to a competitive marketplace through a deliberate, staged approach rather than any 'big bang' event.

The most obvious consequence of this market reform was the breaking of Telkom's monopoly over the provision of public switched telecommunication services. In this regard, the *Telecommunications Act* enacted the bulk of recommendations of the *White Paper*. While section 34 of the *Telecommunications Act* permitted the entry of competition to Telkom in the Public Switched Telecommunication Services (PSTS) market segment, among other market segments, section 36(3) of the *Act* awarded a limited exclusivity period to Telkom to enable the monopolist to rehabilitate its flagging operations and prepare for competition.

Greater competition was also envisaged for the Mobile Cellular Telecommunication Services (MCTS) market segment. Section 37(2)(b) of the *Telecommunications Act* contemplated the licensing of additional MCTS market participants. This law also facilitated private interconnection agreements between communications services providers, governed by the independent regulatory authority, which enabled participants to negotiate market-related terms for commercial relationships based on market-dictated supply and demand dynamics.

The *Telecommunications Act* further contemplated greater competition for the Value Added Network Services market segment. Historically, Telkom leased lines to third party vendors by agreement pursuant to the exercise of its monopoly powers granted by section 78(2)(a) of the *Post Office Act*. Vendors would subsequently use the capacity of these leased lines to provide value added network services such as Internet access and managed data services. Section 37(2)(b) of the *Telecommunications Act* allocated VANS licenses to these vendors, subject to certain conditions. While section 40(1)(a) of the *Telecommunications Act* conferred a VANS License to Telkom, section 40(1)(b) therein granted similar licenses to a myriad of private sector vendors that provided VANS prior to enactment of the new legislation. Such new licenses were issued according to terms of the license holders' previous agreement with Telkom, amended as required to comply with the new law.

At the same time, the *Telecommunications Act* imposed some limitations on competition in the VANS market. Section 40(2) of the *Act* required VANS vendors to use Telkom facilities to provide their services. Section 40(3) therein prohibited VANS vendors from carrying voice telephony until otherwise determined by the Minister of Communications. Pursuant to section 40(4) of the *Act*, VANS vendors were prohibited from ceding, assigning, subleasing or alienating their facilities or rights until otherwise determined by the Minister of Posts, Telecommunications and Broadcasting.

The *Telecommunications Act* expanded the scope of operational abilities but not commercial opportunity for Private Telecommunication Networks (PTNs). Overturning historical restrictions imposed by the *Post Office Act*, section 41(4) of the new law stipulated that *'a private telecommunication network shall not be restricted to the carrying of voice only or data only or to any other such limited use'* (South Africa, 1996b). Consistent with the proprietary purpose of such networks acknowledged by the *White Paper*, however, section 41(5) therein prohibited any PTN operator from reselling spare capacity or otherwise alienating the use of its PTN facilities until otherwise determined by the Minister of Posts, Telecommunications and Broadcasting.

Following recommendations of the *White Paper*, the *Telecommunications Act* also facilitated competition in other aspects of South Africa's communications market. Consistent with the public policy objective outlined in section 2(e) of the *Act* to *'encourage the development of a competitive and effective telecommunications manufacturing and supply sector'* (South Africa, 1996b), the new law promoted competition for the provision of communications equipment by manufacturers and other suppliers, notably through deregulation of the market for Customer Premises Equipment.

#### 3.3.4.2 Licensing scheme

To augment key market reforms, the Government undertook sweeping and significant regulatory reforms through a licensing scheme which confirmed the Government's authority to regulate the provision of domestic communications services. Section 32(1) of the *Telecommunications Act* stipulated that:

> *. . . no person shall provide telecommunication service except under and in accordance with a telecommunication service licence issued to that person in terms of this Chapter* [of the Act] (South Africa, 1996b).

As illustrated in Table 3.1, section 33(1)(a) of the *Act* enumerated eight kinds of communications services which required licenses.

**Table 3.1**

**Key license categories under the Telecommunications Act**

| | |
|---|---|
| **Public switched telecommunication services (PSTS)** | Public switched telecommunication services constitute the *'plain old telephone service'* provided by national telephone companies using fixed line networks (Janssen, 2014b, 1). In parlance common to the communications industry, a 'fixed line' represents any stationary cable used to facilitate communication across any communications system, typically comprising copper wire or optical fibre cable (Janssen, 2014c, 1). |
| **Local access telecommunication services** | Local access telecommunication services constitute communications service provided within a finite area defined by license that needed to interconnect with other communications services in other areas to extend the boundaries of its service beyond its prescribed geography. |
| **International telecommunication services** | International telecommunication services constitute any communications service provided in South Africa that interconnected with any communications service in any other part of the world. |
| **National long distance telecommunication services** | National long distance telecommunication services constitute the domestic equivalent of international telecommunication services by offering telecommunication services between geographically distinct areas within South Africa but not beyond. |
| **Mobile cellular telecommunication services (MCTS)** | MCTS constitute the opposite of public switched telecommunication service by offering wireless telecommunication services using communications technologies based on radio wave signal transmissions rather than any fixed line delivery platform. |
| **Value added network services (VANS)** | VANS constitute any service which add value to any communications transmission by means of any kind of technological intervention that acts on the content, format, protocol or any other similar aspect of any signal associated with any communications transmission as well as any access or interaction with any means for storing or retrieving any data and any managed data network service (Janssen, 2014d, 1). |
| **Private telecommunication networks (PTN)** | PTNs constitute networks operated principally for private and proprietary purposes. |
| **Public pay telephone services** | Public pay telephone services constitute non-residential telecommunication services provided by any PSTS operator on a pay-as-you-go basis. |

Source: Adapted from South Africa, 1996b.

Some of the eight categories of licenses did not operate as stand-alone entitlements:

- The legislation granted every PSTS Licensee the authority to provide national long distance telecommunication services, international telecommunication services, local access telecommunication services and public pay telephone services, among other offerings such as fixed mobile services, without the need for separate licenses.

- The legislation enabled every Mobile Cellular Telecommunication Service (MCTS) licensee and Value Added Network Services (VANS) licensee to provide their core services without any need to hold a Public Switched Telecommunication Service (PSTS) license, National Long Distance Telecommunication Service license or International Telecommunication Service license.

- The law also stipulated that public pay telephone services may be provided by other license holders as part of their service.

Cumulatively, the *Telecommunications Act* therefore created four distinct, stand-alone categories of licenses (PSTS licenses, PTN licenses, MCTS licenses and VANS licenses) with every other license category subsumed within these four core license categories.

Beyond these eight categories of licenses, the Government of South Africa adopted a 'catch all' approach to ensure its ability to exercise discretion in the regulation of the provision of communications services in the country under the *Telecommunications Act*. On the one hand, section 33(1)(b) of the law enabled the Government *'to prescribe'* other kinds of communications services and categories of licenses beyond the eight enumerated types of service (South Africa, 1996b). On the other hand, section 33(2) of the legislation enabled the regulatory authority to exempt certain services (beyond the eight enumerated categories) from any licensing requirement. As such, the new law essentially required every provider of communications services to obtain a license but permitted exemptions beyond the enumerated types of licenses at the discretion of the new regulatory authority.

The licensing requirements of the new law superseded any licenses held under preceding legislation. Any party that lawfully provided communications services pursuant to the *Post Office Act* was required to apply for a new license issued pursuant to the new regulatory framework promulgated by the *Telecommunications Act*. However, the new law avoided any regulatory vacuum by conferring deemed licenses to incumbent communications services providers, subject to certain conditions. Through such legal provisions, the Government facilitated a relatively smooth transition from the old regulatory framework to its new licensing scheme.

#### 3.3.4.3 South African Telecommunications Regulatory Authority

South Africa's new licensing regime was implemented under the auspices of a new regulatory framework which fundamentally transformed the way in which the Government of South Africa policed the domestic communications market. The *Telecommunications Act* replaced a non-arm's length, conflict-riddled regulatory framework centred around the Minister of Posts, Telecommunications and Broadcasting, the Postmaster General and the Department of Communications with a more transparent framework that affirmed the policy making role of the Minister of Posts, Telecommunications and Broadcasting but vested responsibility for regulation and implementation of such policies to an autonomous regulatory authority called the South African Telecommunications Regulatory Authority (SATRA).

Creation of this power sharing arrangement between the policy making function and policy enforcement function was a critical recommendation of the *White Paper*. Such autonomy was also consistent with global best practices. The International Telecommunication Union's 1995 *African Green Paper: Telecommunication Policies for Africa* called for an independent regulatory body to govern communications markets (ITU, 1995, 109-138). As signatory to the World Trade Organization's *Fourth Protocol to the General Agreement on Trade and Services* (which governs basic telecommunications) (WTO, 1997, 1), South Africa followed policy parameters mandated thereunder (WTO, 1996, 1) which prescribed the separation of regulatory authority from suppliers of market services. Moreover, the *Protocol on Transport, Communications and Meteorology in the Southern African Development Community* required member states to establish independent regulatory authorities in domestic communications markets (SADC, 1996, 10/4).

Characterisation of South Africa's new communications regulatory authority as an independent agency may have been somewhat of a misnomer. The ITU acknowledged that '*independence*' represented:

> *. . . a concept that is most refracted through the lens of political culture. What one government may consider vital in terms of independence, another may consider impractical, unwise or even impossible* (ITU, 2002, 152).

Although the *Telecommunications Act* confirmed that SATRA '*shall be independent and impartial in the performance of its functions*', it established the right of the Minister of Posts, Telecommunications and Broadcasting to issue SATRA with policy directions and compelled SATRA to conduct its business in accordance with such directions. Moreover, appointment of SATRA personnel was subject to the Minister's approval. SATRA was also beholden to the Minister for financial support, securing its funding from the National Assembly based on recommendations of the Minister of Posts, Telecommunications and Broadcasting and the Minister of Finance. As such, politics exerted a significant influence over SATRA's business, personnel and financial standing.

SATRA's governance and reporting structures countered some political pressure points. Following the same institutional framework employed in 1993 to create the Independent Broadcasting Authority (IBA),[62] SATRA was governed by a Council comprised of a chairperson and three to five councillors appointed by the President of South Africa on the advice of the Portfolio Committee on Communications of the National Assembly (PCC). SATRA also filed an annual report directly with the National Assembly. The ability of the Minister to influence the selection of SATRA's governing body and the substance of SATRA's annual report was somewhat muted through application of this parliamentary process.

*The Telecommunications Act* vested SATRA with the task of advancing 17 broad public policy objectives articulated therein.[63] Beyond this general mandate, however, this legislation charged SATRA with four significant regulatory responsibilities: frequency spectrum management in tandem with the IBA; certain licensing responsibilities in tandem with the Minister; development of interconnection guidelines; and universal service enforcement.[64] SATRA would not have long to implement its mandate. Having opened its doors in February 1997, SATRA was legislated out of business barely three years later.

---

62 See the *Independent Broadcasting Authority Act, Number 153 of 1993* (South Africa, 1993c).

63 While this study subsequently deals with some of these objectives where they relate to the regulation of universal service and access to communications services (infra, sections 5.2 to 5.4), discussion of these objectives *in toto* is beyond the scope of this study. For further consideration of such objectives, see the *Telecommunications Act, Number 103 of 1996* (South Africa, 1996b).

64 Infra, sections 5.2 to 5.4 for consideration of the regulatory authority's responsibilities regarding enforcement of universal service obligations.

SATRA's short tenure was filled with mixed results.[65] One of SATRA's most successful accomplishments was to help define the relationship between policy making and policy enforcement. As part of a court case brought by Telkom to challenge the validity of SATRA's efforts to establish interconnection guidelines between operators, the High Court of South Africa ruled that:

> *. . . the function of the Minister is to prescribe policy. The function of the Authority is to regulate, inter alia, by making regulations.*
>
> *The Minister does not have a free hand in dictating policy. She must consult the Authority and other interest groups.*
>
> *Similarly, the Authority does not have a free hand to regulate. It must do so within the bounds set by the policy directions. In such a scheme, it would indeed be strange that the Minister would be limited in her power to lay down policy directions, policy being the field where she is supposed to be paramount, but unfettered in her power to withdraw regulations, the making of which lies within the competency of the Authority. . . . As a pure legality, her act of withdrawing the guidelines was invalid*.[66]

This precedent not only firmly established the basis for an independent regulatory agency but perhaps strengthened consideration of the autonomy required of an independent regulator during creation of the Independent Communications Authority of South Africa as SATRA's successor.

#### 3.3.4.4 Independent Communications Authority of South Africa

On 1 May 2000, the Government of South Africa promulgated the *Independent Communications Authority of South Africa Act, Number 13 of 2000* (hereinafter referred to as the *'ICASA Act'*) which dissolved SATRA and the Independent Broadcasting Authority and created the Independent Communications Authority of South Africa. ICASA derived its authority from four statutes. Pursuant to section 4 of the *ICASA Act,* the duties and powers conferred upon SATRA under the *Telecommunications Act* and upon the IBA under the *Independent Broadcasting Authority Act, Number 153 of 1993* (South Africa,

---

[65] For a general review of SATRA's performance, see, *inter alia*, Love, 2008 and White, 2002.

[66] *Telkom South Africa Limited v ICASA, Mandla Langa NO, Wireless Business Solutions (Pty) Ltd and the Minister of Communications* (TPD, 19 March 2001, case no 109014/2000, unreported.

1993c) (hereinafter referred to as the '*IBA Act*') and the *Broadcasting Act, Number 4 of 1999* (South Africa, 1999a) (hereinafter referred to as the '*Broadcasting Act*') were transferred to ICASA. In addition to authorities available under these three *'underlying statutes'* as defined by the *ICASA Act*, the new regulatory authority acquired various proprietary powers under through *ICASA Act* that expanded its powers beyond those previously reserved for SATRA and the IBA.

Beyond fulfiling the vision for an integrated communications regulatory authority envisaged by the *White Paper*, the rationale for this legislation was principally three-fold. First, increasing convergence between communications technologies escalated the need for a holistic regulatory approach:

> *With rapid technological developments and challenges of convergence in the fields of broadcasting and telecommunications facing the industry, the merger between SATRA and IBA was inevitable* (Matsepe-Casaburri, 2000, 1).

Second, creation of a single regulatory authority avoided duplication of responsibilities for radio frequency spectrum allocations between two separate regulatory bodies (South Africa, 2000). Third, amalgamation of separate regulatory institutions into a single entity realised significant operational and financial efficiencies (ICASA, 2005b, 1).

Section 3(1) of the *ICASA Act* created the regulatory authority as a juristic person which, pursuant to section 3(3) therein, constituted an *'independent'* body *'subject only to the Constitution and the law.'* Indeed, section 3(3) of the *ICASA Act* required ICASA to '*be impartial*' and '*perform its functions without fear, favour or prejudice'* while section 3(4) therein required ICASA to function '*without any political or commercial interference*'. Such provisions not only preserved the autonomy accorded SATRA but followed growing international precedent for such arrangements.[67]

ICASA assumed six key regulatory responsibilities under its statutory mandate which are broadly summarised in Table 3.2:

---

[67] The number of independent communications regulatory authorities grew from 13 in 1990 to 112 by 2001 (ITU, 2001b, 1).

**Table 3.2**

**Key ICASA regulatory responsibilities**

| | |
|---|---|
| **Rule-making and policy development** | ICASA makes regulations and policies governing South Africa's broadcasting and communications markets. |
| **Licensing** | ICASA adjudicates major license applications and subsequently issues communications and broadcasting services licenses to successful applicants. |
| **Enforcement and compliance** | ICASA monitors and enforces compliance with applicable rules, regulations, policies and licenses by participants in South Africa's communications and broadcasting markets. |
| **Dispute resolution** | ICASA adjudicates disputes and complaints brought against holders of licenses issued under relevant legislation. |
| **Frequency spectrum** | ICASA is responsible for planning, controlling and managing South Africa's radio frequency spectrum. |
| **Consumer protection** | ICASA guards against unfair business practices, poor quality services and harmful or inferior products in South Africa's communications and broadcasting markets. |

Source: Adapted from ICASA, 2005b, 1.

While governance, personnel and administrative structures applicable to SATRA were largely carried over to ICASA, the ability of the Minister of Posts, Telecommunications and Broadcasting to meddle in the operational and financial affairs of the regulatory authority was diminished in several important ways. In terms of human resources, ICASA was empowered to appoint its administration without any requirement for ministerial approval of such appointments, an important erosion of discretionary ministerial authority (South Africa, 2000). In terms of financial affairs, moreover, ICASA was empowered to submit its budgets directly to the National Assembly without any requirement for ministerial approval of such budgets, another important erosion of discretionary ministerial authority (South Africa, 2000).

Having assumed the regulatory reins from SATRA in May 2000, however, ICASA would have less than a year to establish its own policies and priorities before the Government of South Africa would radically alter the structure of the domestic communications market. The Government's decision to amend the country's communications laws and adopt new policy directives to underpin a second phase of its managed liberalisation policy would require ICASA to implement its mandate under very different conditions than those circumstances that challenged its predecessor.

### 3.3.5 The *Telecommunications Amendment Act, Number 64 of 2001*

Nearly five years following the proclamation of the *Telecommunications Act,* the Government of South Africa embarked upon the second phase of its managed liberalisation policy. As with earlier reform efforts, this process commenced with consultations with broad-based constituencies and culminated with promulgation of new legislation. Such efforts achieved several significant public policy objectives that fundamentally transformed regulatory structures and market conditions in South Africa's communications environment.

The consultation process was launched in early 2001. On 2 February 2001, the Ministry of Posts, Telecommunications and Broadcasting convened the Second National Telecommunications Colloquium to gather views from key stakeholders related to the continued restructuring of South Africa's communications market (Matsepe-Casaburri, 2001e, 1). Based on feedback from this Colloquium and other inputs, the Cabinet of the Government of South Africa approved a communications sector policy on 14 March 2001:

> *. . . the purpose of which is to ensure increased access, lower input costs and bridge the digital divide. The policy will also create a stable telecommunications market environment, a predictable regulatory regime and optimum conditions for the Initial Public Offering of Telkom* (South Africa, 2001a, 1).

On 23 March 2001, Dr. Ivy Matsepe-Casaburri, the Minister of Posts, Telecommunications and Broadcasting, exercised her statutory authority pursuant to section 5(4)(a) of the *Telecommunications Act* and published for comment a set of draft policy directions which established key parameters for the continued managed liberalisation of South Africa's communications market. Acceleration of competition in the Public Switched Telecommunication Services (PSTS) market segment and escalation of measures to deliver communications services to under serviced areas featured prominently, among other policies, in the draft directions (Matsepe-Casaburri, 2001a, 3-21).

In terms of the acceleration of competition in the PSTS market segment, the March 2001 draft directions introduced the opportunity for a second national operator (SNO) to compete against Telkom in the PSTS market (Matsepe-Casaburri, 2001a, 6). In terms of the delivery of communications services to under serviced areas,

the March 2001 policy directions included provisions to enable Small, Medium and Micro Enterprises (SMMEs) and cooperatives to provide communications services to areas with low teledensity (Matsepe-Casaburri, 2001a, 7-8).

The Minister of Posts, Telecommunications and Broadcasting subsequently published a binding set of policy directions on 23 July 2001 (Matsepe-Casaburri, 2001b, 3-9) which made some changes to the draft directions. The teledensity threshold for qualifying under serviced territories was changed from *'less than 1%'* (Matsepe-Casaburri, 2001a, 6) to *'up to 5%'* (Matsepe-Casaburri, 2001b, 1), thereby expanding the prospective scope of areas eligible to be served by under serviced area licenses. Various changes were effected to the SNO opportunity which would be revisited in a subsequent set of policy directions published by the Minister of Posts, Telecommunications and Broadcasting on 21 August 2001 (Matsepe-Casaburri, 2001c).

Just over three months later (on 19 November 2001), the Government of South Africa promulgated the *Telecommunications Amendment Act, Number 64 of 2001* (South Africa, 2001b) (hereinafter referred to as the '*Telecommunications Amendment Act*'). Beyond codifying the Minister of Communications as successor to the Minister of Posts, Telecommunications and Broadcasting, this legislation served three principal purposes. First, it expanded the range of licenses available under the relevant legislation. Second, it adjusted regulatory measures to account for the impact of technological advancements on market dynamics. Third, it accelerated opportunities for competition in South Africa's communications market. Further particulars about the nature and impact of the *Telecommunications Amendment Act* are described in the succeeding paragraphs of this section.

#### 3.3.5.1 Amendments to the licensing scheme

The *Telecommunications Amendment Act* accelerated market competition by creating three new license categories which are identified and described in Table 3.3:

**Table 3.3**

**New license categories of the Telecommunications Amendment Act**

| | |
|---|---|
| **Carrier of carrier services** | Carriers of carrier provide wholesale international bandwidth to domestic communications network operators and facilitate gateway services by international operators onto domestic communication networks. |
| **Multimedia services** | Multimedia services constitute data, video and various forms of static or interactive media provided through data streaming that typically relies on broadband communications network transmission capabilities. |
| **Under serviced area telecommunication network (USATN)** | USATNs deliver communications services within a designated geographic area with less than 5% teledensity through any type of communications service but need to interconnect with other operators to deliver services outside such designated area. |

Source: Adapted from South Africa, 2001b.

As a result of such legislative amendments, 11 distinct categories of telecommunication services were explicitly licensed by the enabling legislation. Specifically, the eight license categories originally contemplated by the *Telecommunications Act* were augmented by three new license categories introduced by the *Telecommunications Amendment Act*. Given the continued ability to bundle four types of license categories into several other principal license categories, however, such amendments effectively recognised seven stand-alone license categories comprised of the four original stand-alone categories augmented by the three new license categories.

#### 3.3.5.2 Impact of technology

Beyond the introduction of new licensing categories, the growing influence of technology on South Africa's communications policy and delivery of communications services in South Africa was explicitly acknowledged through amendments to the objectives of the *Telecommunications Act*. Section 2(r) of the amended *Telecommunications Act* established a new public policy objective to *'promote and facilitate convergence of telecommunication, broadcasting and information technology'* while section 2(s) therein further established a public policy objective to *'develop the Information, Communication and Technology (ICT) strategy for the Republic, in order to bridge the digital divide'* (South Africa, 1996b).

Efforts to realise these new objectives were reflected in several specific provisions of the amended *Telecommunications Act*. For example, the public policy rationale behind introduction of the Carrier of Carriers license category and the Multimedia Services license category was explicitly attributed to

*'technological changes, particularly the convergence of technologies'* (Matsepe-Casaburri, 2001d, 1). Other amendments accounted for greater commercial opportunities available to communications services providers through technological advancements. Telkom and the Second Network Operator (SNO) were deemed to hold 1800 MHz frequency band licenses and third generation radio frequency spectrum licenses while the Mobile Cellular Telecommunication Services (MCTS) operators were entitled to apply for such licenses under the amended legislation (South Africa, 1996b). Such changes accounted for the availability of new radio frequency spectrum to support the delivery of more sophisticated communications services, particularly data and video streaming products, previously unavailable as commercial services in South Africa.

#### 3.3.5.3 Acceleration of competition

Notwithstanding the creation of new license categories and the recognition of the growing convergence of communications technologies, the most significant effect of the *Telecommunications Amendment Act* was to accelerate opportunities for competition in South Africa's communications market. In relation to the Public Switched Telecommunication Services (PSTS) market segment, the amended legislation fixed the date for termination of Telkom's monopoly as 7 May 2002 and established key terms for the SNO's entry into the market, finally facilitating competition in this segment. In relation to the Mobile Cellular Telecommunication Services (MCTS) market segment, the amended legislation relaxed cross-ownership rules which stimulated competition in this segment. In relation to the Value Added Network Services (VANS) market segment, the amended legislation enabled VANS vendors to use communications facilities provided by the Second Network Operator (SNO) as well as Telkom as a conduit for their services, thereby increasing competition and supplier choice in this segment.

Other legislative tinkering stimulated competition by changing the nature of commercial relationships between market participants. Sections 43 and 44 of the amended *Telecommunications Act* improved the importance of market-related imperatives on the negotiation and pricing of interconnection agreements. More importantly, section 89(1) of the amended *Telecommunications Act* contemplated introduction of number portability by

2005 which would compel communications service providers to permit any customer to switch to any competitor without losing their telephone number, thereby increasing competition to poach and retain customers. Equally important, section 89C(1) of the amended *Act* contemplated carrier pre-selection which would enable any communications services subscriber to pick and choose which long distance communications services provider to connect its national and international long distance calls, respectively, thereby increasing competition in those arenas.

The amended *Telecommunications Act* would define key regulatory structures and competitive conditions in South Africa's communications market for just over three years. In 2004, the Minister of Communications would exercise her discretion to issue a set of policy determinations that radically accelerated opportunities for market competition in South Africa's communications market. Such determinations would also fundamentally reshape ICASA's regulatory priorities in the years ahead.

### 3.3.6 Policy determinations

On 3 September 2004, the Minister of Communications unveiled various policy determinations which fundamentally altered the scope of commercial opportunities and regulatory requirements for the Mobile Cellular Telecommunication (MCTS) market, Private Telecommunication Network (PTN) market, public pay telephone market and Value Added Network Services (VANS) market (Matsepe-Casaburri, 2004b, 1). Apparently as a result of significant pressure from President Thabo Mbeki and his advisory council (Barron, 2005, 6; Els, 2005, 56), these determinations introduced sweeping regulatory changes which reduced costs, escalated competition, increased supplier choice and expanded commercial opportunities in these market segments. The principal effects of such policy determinations on each market segment are summarised as follows:

- In terms of the MCTS market, the Minister of Communications improved opportunities for MCTS operators to reduce costs by enabling them to provide their own backhaul network[68] or choose between Telkom and any other operator, such as the Second Network Operator (SNO), to provide such services as of 1

[68] Supra, notes 19 and 46.

February 2005 (Matsepe-Casaburri, 2004b, 1; 2004c, 3). As a result of this policy change, MCTS operators were well positioned to reduce operating costs, either by self-providing their own last mile connectivity or by driving down the price paid for such connectivity by bargaining with Telkom, the SNO or others.

- In terms of the PTN market segment, the Minister of Communications empowered PTN operators to resell any spare capacity and otherwise alienate their facilities for purposes beyond proprietary requirements effective 1 February 2005 (Matsepe-Casaburri, 2004b, 1; 2004c, 3). This determination fundamentally changed the economic dynamics of PTNs by allowing increasing supply and introducing competition into the pricing of communications services in South Africa (Matsepe-Casaburri, 2004b, 1).

- In term of the public pay telephone market segment, the Minister of Communications issued several determinations which opened this market segment to the licensing of new vendors as of 1 February 2005 (Matsepe-Casaburri, 2004b, 1; 2004c, 3). Such determinations effectively facilitated new market entrants and acceleration of competition in this market segment.

- Prospectively the most radical impact of the Minister of Communications' policy determinations was reserved for the VANS market. Effective 1 February 2005, the Minister permitted VANS to be provided by any communications facilities. The Minister also expanded the scope of permitted VANS to include the delivery of voice transmissions using any communications protocol. Finally, the Minister permitted VANS vendors to resell or otherwise cede use of their facilities for non-proprietary purposes (Matsepe-Casaburri, 2004b, 1; 2004c, 3-4).

Some industry players interpreted the Minister of Communication's policy determinations to permit VANS vendors to self-provide their own communications infrastructure which would have achieved a 'big bang' market liberalisation on 1 February 2005 (News, 2005, 1). Indeed, one supplier estimated savings of 30% to 40% on phone bills arising from increased efficiencies (Emerick, 2005, 7). ICASA remained concerned with the prospective impact of this interpretation of the policy determinations and sought clarification from the Minister of Communications (ICASA, 2004f, 1). The Minister quickly quashed any hopes of VANS vendors for the freedom to self-provide facilities by approving ICASA regulations that limited the ability to self-provide facilities to the MCTS market (ICASA, 2005c, 3-7). It seems

> that the Minister was not prepared to relinquish her ability to 'manage' the liberalisation of South Africa's communications market. Yet the Minister's policy determinations would ultimately provide the legal basis for the courts to compel such a 'big bang' in the future.[69]

The Minister of Communication's cautious approach to the introduction of competition in the domestic VANS market should not be seen as a reflection of the Government of South Africa's adversity to competition in South Africa's communications market. Since inception of the managed liberalisation policy, the Government of South Africa not only broke Telkom's historic commercial monopoly in the Public Switched Telecommunication Services (PSTS) market but accelerated competition in the Mobile Cellular Telecommunication Services (MCTS) market, Value Added Network Services (VANS) market and public pay telephone market. The Government also broke Telkom's regulatory monopoly and established successive independent regulatory authorities that operated pursuant to a transparent, if flawed, regulatory regime. Such achievements established a solid foundation for further reforms that would occur under the subsequent 'convergence period' in South Africa's communications market.

## 3.4 CONVERGENCE PERIOD

The Government of South Africa long recognised the commercial and regulatory impact of technology on the development of public policy in South Africa's communications market. On several occasions, the Minister of Communications noted '*the convergence of broadcasting, telecommunications, information technologies and new media*' and highlighted the need '*to balance the progressive possibilities of convergence of technologies with the unintended consequences that can widen the digital divide if not managed properly*' (Matsepe-Casaburri, 2003a, 2). The Minister also signalled that the appropriateness of public policy objectives and means used to implement such objectives '*have to be reconsidered in the light of convergence and technological trends*' (Matsepe-Casaburri, 2003a, 5). It is therefore not surprising that the Government sought to capture and control the impact of technological developments to advance its public policy priorities in the domestic communications market. Such ambitions were undertaken through a legislative agenda that defines the 'convergence period' in South Africa's communications market.

---

[69] Infra, section 4.3.4.

The *Electronic Communications Act, Number 36 of 2005* (South Africa, 2006c) (hereinafter referred to as the *'Electronic Communications Act'*) was the principal means by which the Government of South Africa sought to use technology developments to achieve public policy ends. The culmination of a brief public consultation period but lengthy legislative drafting process, this law fundamentally realigned regulatory relationships and commercial structures in South Africa's communications market by shifting market conditions away from a vertically structured, technology based environment towards a horizontally structured, services based environment and tweaking regulatory relationships that historically caused friction between policy making and policy enforcement functions. Subsequent and proposed amendments to this law have not fundamentally altered this realignment.

### 3.4.1 Consultation process

Unlike the Westminster-based consultation process used to inform previous revisions to South Africa's communications laws, the Government of South Africa used an expedited consultation process to develop further legislation to govern the conduct of communications services in the country. Many of the key public policies and regulatory refinements included in statutory reforms that ultimately define the convergence period in South Africa's communications market were formulated during this consultation process. Key features of this consultation process are described in succeeding paragraphs.

The consultation process formally began in July 2003 when the Minister of Communications convened a National Convergence Policy Colloquium to develop a convergence policy and regulatory framework to address the commingling of telecommunication, broadcasting and information technologies in South Africa (South Africa, 2003a, 3-5). The Colloquium recognised that:

> *The convergence of technologies has challenged current legislative and regulatory frameworks. There is a need for policy makers to respond, to ensure that regulations and policies enhance the development of cross-sector applications, services and businesses.*
>
> *Technological advances over the last 10 years have brought about major shifts in the role that information and communications technologies play in our lives and society* (South Africa, 2003a, 3).

Consistent with this view, the *Final Report of the National Convergence Policy Colloquium* (South Africa, 2003a) (hereinafter referred to as the *'Final Report'*) presented to the Minister of Communications on 28 July 2003 recommended sweeping changes to the regulatory framework and commercial structure of South Africa's communications market at least as revolutionary, if not more, as the fundamental changes introduced by the *Telecommunications Act* nearly 10 years earlier. Conference participants collectively recommended a wholesale shift away from a vertically structured, technology based licensing regime to a horizontally structured, services based licensing framework (South Africa, 2003a, 7). Conference participants also recommended strengthening the autonomy accorded to the independent regulatory authority.

The *Final Report* recommended scrapping the 11 defined classes of communications services licences in favour of four tiers of licenses as shown in Table 3.4:

**Table 3.4**

**Proposed license categories under National Convergence Policy Colloquium**

| | |
|---|---|
| **Network facilities** | Network facilities, such as communications infrastructure, fixed lines, mobile communications facilities, public payphone facilities, submarine cables, switching centres and other infrastructure or hardware which delivered network application and content application services. |
| **Network services** | Network services, such as bandwidth services, broadcasting distribution services, mobile cellular communications services, access application services, space services and other services which provided basic connectivity and bandwidth to support application services. |
| **Application services** | Application services, such as public switched telecommunication services, public cellular services, Internet Protocol (IP) telephony, public payphone services and public switched data services provided by application service providers (ASPs). |
| **Content application services** | Content application services, notably satellite broadcasting, subscription broadcasting, terrestrial free-to-air television programs, terrestrial radio broadcasting content and other types of application services which contained content. |

Source: Adapted from South Africa, 2003a.

The *Final Report* also recommended different classes of licenses within each tier of licenses (South Africa, 2003a, 20, 22). Individual licenses were required of principal market participants while class licenses were allotted to niche players or providers of limited services. Frequency licenses were required to obtain radio spectrum while certain types of content services required service providers to notify the regulatory authority of their activities (South Africa, 2003a, 23).

The regulatory framework advocated by the *Final Report* shifted focus away from the licensing of the type of technology used by license holders to deliver communications services to the type of communications services delivered by license holders irrespective of technology. As the *Final Report* noted:

> *Technological neutrality means that any license should define the service to be provided rather than the use of a particular type of technology or infrastructure to be used as the delivery mechanism* (South Africa, 2003a, 8).

Such a radical realignment of South Africa's communications licensing regime was only possible due to technological advancements underpinning the convergence of communications platforms. As the *Final Report* further noted and recommended:

> *Convergence allows the same services whether broadcasting, telecommunications or data to be delivered over fixed or wireless technologies, which previously had been regulated separately. These technology distinctions should be discontinued* (South Africa, 2003a, 8).

Beyond market reforms effected by a new licensing framework, the *Final Report* recommended changes to the regulatory framework governing South Africa's communications market. Colloquium participants endorsed the role of a single, independent regulatory authority with greater regulatory clout and a clear division of responsibilities between policy making and policy enforcement functions:

> *The* [new communications] *policy should separate the roles and jurisdiction of government, the regulator and other authorities with regard to licensing and regulatory functions. The regulator should have final determination with regard to licensing and regulation* (South Africa, 2003a, 8).

Yet Colloquium participants sought to narrow the focus of an empowered regulatory authority. The *Final Report* suggested that the regulator concentrate on '*issues of content, technical regulation, cross-ownership and licensing'* (South Africa, 2003a, 17) with minimum interference in market play beyond encouraging competition:

> *There is a need to change the regulatory regime to "light touch" with emphasis on self-regulation, co-regulation, encouraging effective competition, fair and equal access, faster and more efficient processes with a strengthened and well-resourced regulatory agency* (South Africa, 2003a, 23).

The Colloquium's disposition towards a horizontally structured, services based licensing framework and more autonomous, more focused regulatory authority were central tenets of the subsequent legislative drafting process undertaken by the Government of South Africa as it navigated its way towards a new 'convergence period' in the domestic communications market.

### 3.4.2 Convergence Bill, 2004

Within six months of its receipt of the *Final Report of the National Convergence Policy Colloquium*, the Government of South Africa sought to turn its public policy recommendations into law. A draft *Convergence Bill, 2004* (South Africa, 2003b) was approved by the Cabinet of the Government of South Africa on 3 December 2003 (South Africa, Department of Communications, 2003a, 1). The Department of Communications confirmed a brief public comment period on the same date (South Africa, Department of Communications, 2003b, 1).

The proposed legislation largely followed the recommendations of the *Final Report of the National Convergence Policy Colloquium*. To expedite ratification, the *Convergence Bill, 2004* complemented existing legislation. It accounted for the amended *Telecommunications Act* in terms of the communications market. It accounted for the *IBA Act* and *Broadcasting Act* in terms of the broadcasting market. Finally, it accounted for the *ICASA Act* in terms of the governance of both of these markets.

The Department of Communications received 65 submissions in response to its call for comments on this legislation (Matsepe-Casaburri, 2004a, 2). Analyses and reworking of the terms of the draft legislation along with conduct of the April 2004 national elections (Alvarez-Rivera, 2004, 1) delayed further consideration of such legislation for the remainder of year. Indeed, the *Convergence Bill, 2004* would be supplanted by a much more radical successor with a similar name.

### 3.4.3 Convergence Bill, Number 9 of 2005

Having comfortably earned re-election, the ANC-dominated Government of South Africa turned its attentions back to South Africa's communications market in 2005. Based on Cabinet approval a month earlier (South Africa, 2005c, 1), the Minister of Communications tabled the *Convergence Bill, Number 9 of 2005* (hereinafter referred to as the '*Convergence Bill*') on 16 February 2005 for consideration by the National Assembly of South Africa (South Africa, 2005a). This legislation fundamentally rewrote the regulatory rules for South Africa's communications market. Unlike its predecessor, the *Convergence Bill* claimed paramount statutory authority over South Africa's communications market by proposing to repeal, in their

entirety, the *Telecommunications Act* and the *IBA Ac*t. The Bill also proposed to effect substantial amendments to the *Broadcasting Act* and *Sentech Act, Number 63 of 1996* (South Africa, 1996a) (hereinafter referred to as the '*Sentech Act'*).

The *Convergence Bill* was divided into 13 principal chapters which governed every facet of South Africa's communications market. The paramount policy purpose of this legislation was to '*provide for the regulation of communications in the Republic in the public interest'* (South Africa, 2005a). The licensing framework embodied in the *Convergence Bill* generally followed recommendations of the *Final Report of the National Convergence Policy Colloquium* and prevailing Government policy thought (Matsepe-Casaburri, 2003a, 4) by adopting a four tier, horizontally integrated, technology neutral, services based licensing framework that distinguished between network services, communications services, content services and application services. The legislation also distinguished between individual and class licenses largely in accordance with the *Final Report*'s recommendations.

The *Convergence Bill* confirmed the standing of South Africa's communications and broadcasting industries as regulated markets and adopted the 'catch all' licensing requirements and exemption provisions of the *Telecommunications Act* to account for the new licensing framework. The regulatory relationship between the Minister of Communications and the regulatory authority remained largely undisturbed from prevailing arrangements. The Minister of Communications acquired some new discretion under the new legislation, particularly regarding licensing issues.

The *Convergence Bill* generally received a hostile reception from private sector stakeholders. Lawyers highlighted technical deficiencies and legal flaws in the legislation (Els, 2005, 56). Competition advocates cited provisions of the new legislation that allegedly stunted competition, notably terms that discouraged infrastructure investment by regulating returns on key services (Geldenhuys, 2005, 49). Some industry participants opposed the shift away from a services based licensing regime to a technology based licensing regime, arguing that '*the rate of technology innovation has always exceeded the rate of legislative innovation*' and that '*technology-linked licensing would place excessive burdens on the legislative and regulatory authorities*' (Ensor, 2005b, 4).

The *Convergence Bill* also became a battleground for reworking relationships between public sector stakeholders. ICASA and the Minister of Communications disagreed over expanded entitlements granted to the executive function under the proposed legislation. ICASA`s representative claimed that the law would permit the Minister to make '*serious inroads into the authority's functional independence'* (Ensor, 2005a, 1). The Competition Commission and ICASA disagreed over potential amendments to the policing of competition matters shared by the organisations under the incumbent legislation. Both ICASA and the Competition Commission sought to freeze out the other organisation and claim exclusive jurisdiction over such matters (Ensor, 2005a, 1).

The Portfolio Committee on Communications took note of such stakeholder concerns. The Committee subsequently rewrote many aspects of the proposed legislation and removed *'much of the constitutionally controversial changes to the regulation of the sector'* (Lewis, 2007, 202). Given its efforts, the Committee changed the name of the draft legislation to the *Electronic Communications Bill, Number 9 of 2005* (South Africa, 2005a) (hereinafter referred to as the *'Electronic Communications Bill').* Under this name, the draft legislation would ultimately become law in South Africa (South Africa, 2006c).

### 3.4.4 The *Electronic Communications Act, Number 36 of 2005*

Following the Government of South Africa's expedited consultation period and lengthy legislative drafting process, the *Electronic Communications Act* was promulgated on 18 April 2006. As envisaged by earlier draft legislation, this law effectively repealed incumbent legislation and set forth its principal objective to:

> *. . . promote the convergence of the broadcasting, broadcasting signal distribution and telecommunications sectors and to provide the legal framework for convergence of these sectors* (South Africa, 2006c).

To achieve this objective, this legislation not only addressed strategic policy considerations but also operational policy considerations. Table 3.5 highlights the key considerations contemplated by the new law:

**Table 3.5**
**Key policy features of the Electronic Communications Act**

| Strategic policy considerations | Operational policy considerations |
|---|---|
| Market analysis | Regulations |
| Consumer issues | Licensing |
| Competition | Interconnection |
| Content and technology | Number portability |
| Universal service[70] | Facilities leasing |
| | Carrier pre-selection |
| | Equipment standards |

Source: Adapted from South Africa, 2006c.

Collectively, the *Electronic Communications Act* heralded the arrival of a platform for a horizontally integrated, technology neutral licensing framework that profoundly affected commercial conditions in South Africa's communications market.

The *Electronic Communications Act* united disparate licensing frameworks for communications services, broadcasting services and broadcasting signal distribution into a harmonised licensing regime. For the communications industry, the law condensed the four tiers of licensed telecommunications activities contemplated by draft law into two categories: Electronic Communications Network Services (ECNS) and Electronic Communications Services (ECS) with application services and content services eliminated as separately regulated activities. For the broadcasting and signal distribution industries, the law added the provision of broadcasting services and use of radio frequency spectrum as licensable activities.

Following precedent established by the draft legislation, the law distinguished between individual and class licenses[71] in respect of communications and broadcasting services and recognised a broad range of exempt activities in the communications and broadcasting industries which did not require application or registration for any license but remained governed, in certain instances, by general provisions of the legislation. Table 3.6 identifies and describes the key licensing categories introduced by the *Electronic Communications Act*:

---

[70] Infra, sections 5.2.2 and 5.2.3 for further information about the universal service aspects of this legislation and the ways in which it modified the mandate and operation of the Universal Service Agency and the Universal Service Fund.

[71] Individual licenses are commonly referred to as I-ECNS and I-ECS licences to distinguish from class licenses. Such distinctions are not material to this study and, therefore, no distinction is made between individual or class licenses in this study in any discussion of licenses held by market participants.

**Table 3.6**
**Electronic Communications Act licensing regime**

| Category | Electronic communications network service license | Electronic communications services license | Broadcasting services license |
|---|---|---|---|
| **Individual** | Enterprises may operate a proprietary network and/or lease a third party network on a national or provincial basis. | Enterprises may provide communications services over proprietary networks or third party networks that use numbers from the National Numbering Plan. | Enterprises that provide broadcast services on a commercial, national or public basis. |
| **Class** | Enterprises may operate a proprietary network and/or lease a third party network on a localised basis, typically at a district or municipal level. | Enterprises may provide communications services over proprietary networks or third party networks except for voice services that require numbers from the National Numbering Plan. | Enterprises that provide special broadcast services (such as low power radio broadcasters and community broadcasters). |
| **Exempt** | Enterprises operating networks of limited socio-economic importance may be exempt from licensing subject to application and approval for such exemption by ICASA. | | |

Source: Adapted from Comninos et al, 2010, 8; Esselaar & Stork, 2010, 64-73.

Examples of communications services contemplated by Electronic Communications Services (ECS) licenses include: voice services; VoIP; Internet access; hosting; protocol conversion; Virtual Private Networks (VPNs); and Multi-Protocol Labelling Systems (MPLS).

The radical realignment of licensing arrangements in South Africa's communications and broadcasting markets required an equally radical realignment of regulations governing such licenses. Existing licenses were required to convert to the new licensing framework within two years, while previously unregulated activities captured by the new legislation remained exempt from regulation until ICASA introduced an applicable licensing scheme for such activities. In this regard, the legislation required ICASA to repeal or amend existing regulations to conform to new statutory requirements within two years of promulgation of the *Electronic Communications Act*.

Beyond this review process, ICASA's mandate and powers required reconsideration due to regulatory implications arising from realisation of South Africa's 'converged' communications market. The fruits of this reconsideration would be embodied in a complementary piece of legislation called the *Independent Communications Authority of South Africa Amendment Act, Number 3 of 2006* (South Africa, 2006a) (hereinafter referred to as the *'ICASA Amendment Act').* This law would materially amend ICASA's powers, duties and functions.

### 3.4.5 The *ICASA Amendment Act, Number 3 of 2006*

In tandem with the *Electronic Communications Act,* the Government of South Africa developed complementary legislation to account for changes to ICASA's mandate and powers foreseen by promulgation of this legislation. Following a public consultation period and parliamentary review process,[72] ICASA's new mandate and powers would ultimately be realised through the *ICASA Amendment Act.* This law fundamentally redefined ICASA's mandate, powers, resource allocations and governance structures. The legislation not only united regulatory responsibilities for communications services, broadcasting services and signal distribution under ICASA but also added regulatory responsibility for the postal sector to ICASA's mandate. ICASA's autonomy to make communications regulations was expanded to match the degree of independence it enjoyed in relation to its regulation of broadcasting services in South Africa.

In exercising its newfound regulatory responsibilities, ICASA was granted significant new powers to conduct inquiries, investigations and inspections. ICASA was given authority to adjudicate a wide range of market matters and conduct market review studies (South Africa, 2006a). ICASA also won greater authority to regulate competition matters through dispute settlement and market power determinations (South Africa, 2006a). To effect and enforce such powers, a Complaints and Compliance Committee was supported by inspectors empowered with quasi-police powers under the *Criminal Procedure Act, Number 51 of 1977* (South Africa, 1977). In this regard, the inquiry, investigative and inspection powers accorded to ICASA under the *ICASA Amendment Act* largely mirrored the substantial authorities accorded to the postal regulator under the *Postal Services Act, Number 124 of 1998 (*South Africa, 1998b).

The *ICASA Amendment Act* also effected substantial amendments to ICASA's governance structures and functions. The appointment process for ICASA's governing body was modified. A performance monitoring system and record keeping requirements increased the transparency and accountability of the organisation's activities.

---

[72] This law originated as the *Independent Communications Authority of South Africa Amendment Bill, Number 32 of 2005* (South Africa, 2005d) tabled before the National Assembly of South Africa on 20 September 2005.

### 3.4.6 The *Electronic Communications Amendment Act, Number 37 of 2007*

It took the Government of South Africa a little over two years before it tinkered with the contents of the *Electronic Communications Act*. The *Electronic Communications Amendment Act, 2007, Number 37 of 2007* (South Africa, 2008) (hereinafter referred to as the '*Electronic Communications Amendment Act'*) is a one page amendment to the original legislation but carries significant consequences. The purpose of this amendment was threefold:

> . . . [to] *provide for the facilitation of strategic interventions by government in the electronic communications sector in order to reduce the cost of access to information, communication and technology;*
>
> *AND* . . . [to confirm the state's intention*] to expand the availability of access to information, communications and technology infrastructure on [a] wholesale basis at cost orientated rates and services to operators in the Republic;*
>
> *AND . . . to facilitate the efficient licensing of public entities* (South Africa, 2008).

This legislation was published by the Portfolio Committee on Communications on 17 September 2007 (Werksmans, 2007, 1) and received little comment prior to promulgation on 8 January 2008 (South Africa, 2008) despite concerns over its constitutional validity (Werksmans, 2007, 1).

### 3.4.7 Electronic Communications Amendment Bill, 2011

The Government revisited the amended *Electronic Communications Act* in 2011 through the *Electronic Communications Amendment Bill, 2011* (hereinafter referred to as the *'Electronic Communications Amendment Bill of 2011'*) published on 4 November 2011 (South Africa, 2011a). This proposed amendment represented a broader reform of the original 2005 Act than the 2007 amendment. The Bill touched upon many aspects of the regulation of South Africa's communications market which may be broadly divided into policy, regulatory and administrative matters.

In terms policy matters, the *Electronic Communications Amendment Bill of 2011* significantly strengthened the powers of the Minister of Communications at the expense of ICASA. The *Bill* required the regulatory agency (and the universal service agency) to act in accordance with Ministerial policy directions. Such agencies were only required to consider such policy determinations under existing legislation (South Africa, 2006a). The *Bill* also vested the Minister of Communications with control over planning and management of the radio frequency spectrum and limited ICASA's function to the licensing of radio frequency spectrum. A National Radio Frequency Spectrum Management Committee was established to advise the Minister of Communications on radio frequency spectrum matters.

The *Electronic Communications Amendment Bill of 2011* further limited ICASA's role in policy development by creating a Broadband Inter-Governmental Implementation Committee to advise the Minister of Communications on broadband policy and implementation of the national broadband policy for South Africa. At the same time, the *Bill* gave ICASA greater flexibility to publish regulations to identify market segments with ineffective competition and determine that specific market participants have significant market power (SMP) sufficient for ICASA to impose pro-competition conditions on such market participants with the power to amend the conditions to maintain and promote a competitive market.

In terms of regulatory matters, the *Electronic Communications Amendment Bill of 2011* tinkered with the application process, approval protocol and ownership requirements governing licenses. From a statutory perspective, the *Bill* aligned distinctions between individual and class Electronic Communications Services (ECS) licenses with the same distinctions for Electronic Communications Network Services (ECNS) licenses. From an administrative perspective, the *Bill* eliminated the need for ICASA to issue invitations to apply for individual ECS licenses, thereby aligning the process for both class and individual license categories. The *Bill* also reduced from 60 days to 10 days the period within which ICASA has to issue any class license.

From a licensing perspective, the *Electronic Communications Amendment Bill of 2011* affected license holders in four ways. ICASA's prior approval was now required to transfer control of any individual license, a power ICASA generally enjoyed under the *Telecommunications Act*. The *Bill* restricted a person to holding a maximum of two class licenses at any time. The *Bill* limited the exemptions from

licensing requirements to citizens of South Africa or legal entities registered in South Africa. The *Bill* enabled ICASA to restrict and regulate the rights of way available to all Electronic Communications Network Services (ECNS) license holders during the roll out of communications networks to ICASA-approved license holders.

In terms of other administrative matters, the *Electronic Communications Amendment Bill of 2011* updated deficiencies in the construction of the original legislation. The *Bill* included a new definition of 'historically disadvantaged person' presumably to align the *Electronic Communications Act* with the requirements of the *Broad-Based Black Economic Empowerment Act, Number 53 of 2003* (South Africa, 2003c). The *Bill* also rectified various drafting defects in provisions related to interconnection, facilities leasing and competition matters (Thornton, 2011, 1) as well as various but not all grammatical and spelling mistakes (Bowman, 2011, 1).

The *Electronic Communications Amendment Bill of 2011* attracted immediate criticism. The GSM Association, an influential industry body, expressed significant concern over the transfer of responsibility for the management of radio frequency spectrum from a regulatory agency to a policy making body (Wilson & McLeod, 2011, 1). As with the 2007 amendment, law firms raised concerns over the constitutional validity of the proposed 2011 amendments (Wilson & McLeod, 2011, 1). The Department of Communications subsequently withdrew the *Electronic Communications Amendment Bill of 2011* on 23 November 2011, nineteen days after its original publication and prior to expiry of the 30 day consultation period (SabinetLaw, 2011, 1; South Africa, 2011b). The Government acknowledged the need *'to allow further consultation within the government on the contents of the Bill'* but emphasised the importance of reforms and its commitment to re-introduce proposals in the near term (Mahlong, 2011, 1).

### 3.4.8 Electronic Communications Amendment Bill, 2012

Approximately seven months after withdrawal of the *Electronic Communications Amendment Bill of 2011*, the Government published the *Electronic Communications Amendment Bill, 2012* (South Africa, 2012a) (hereinafter referred to as the *'Electronic Communications Bill of 2012'*) and invited comments thereon (South Africa, 2012b, 1). In May 2013, the Cabinet of the Government of South Africa approved submission of the *Electronic Communications Amendment Bill of 2012* for consideration by the National Assembly of South Africa (St Francis Chronicle, 2013,

1). The proposed legislation resurrects or modifies many of the proposals contemplated by its predecessor (South Africa, 2011a), albeit with modifications to previous proposals in some areas and new proposals in other areas. [73]

In terms of policy matters, the *Electronic Communications Amendment Bill of 2012* resurrects the principal tenets found in its eponymously named predecessor (South Africa, 2011a), particularly with regard to policy directions and the Broadband Inter-Governmental Implementation Committee. Unlike its predecessor, however, the proposed legislation does not intend to create a National Radio Frequency Spectrum Management Committee but a new agency called the Spectrum Management Agency (SMA) to discharge a broad range of responsibilities related to controlling, planning, administering, managing and licensing use of the radio frequency spectrum in South Africa.[74] ICASA's responsibilities are limited to the assignment of radio frequency spectrum for non-government uses. In terms of regulatory matters and administrative matters, the *Electronic Communications Amendment Bill of 2012* resurrects the principal tenets found in its eponymously named predecessor (South Africa, 2011a), particularly in regards to license conditions, albeit with some modifications.[75]

### 3.4.9 ICASA Amendment Bill, 2010

In addition to amendments to the *Electronic Communications Act,* the Government of South Africa sought to amend ICASA's roles and responsibilities through various pieces of proposed legislation. The *Independent Communications Authority of South Africa Amendment Bill, 2010* gazetted on 25 June 2010 (South Africa, 2010c) (hereinafter referred to as the '*ICASA Amendment Bill of 2010*') was the first Government effort to amend the *ICASA Amendment Act*.

The *ICASA Amendment Bill of 2010* largely sought to clarify relationships between public sector actors involved in shaping the nature of South Africa's communications market. The proposed legislation addressed relationships within

---

[73] Supra, section 3.4.7.

[74] This proposal is consistent with the Government of South Africa's position in the *White Paper on Broadcasting* (South Africa, 1998c) but potentially inconsistent with the Government of South Africa's position in the *National Radio Frequency Spectrum* Policy (South Africa, 2010b).

[75] For example, the initial proposal to require ICASA to issue class licenses within 10 days (South Africa, 2011a) was increased to 30 days in the subsequent proposal (South Africa, 2012a).

ICASA and between ICASA and the Complaints and Compliance Committee (CCC) established five years earlier under the *ICASA Amendment Act*. It also established a Tariff Advisory Council to advise ICASA on various aspects of tariffs in South Africa's communications market and otherwise research, review and promote ways to reduce communications costs.

The *ICASA Amendment Bill* sought to tighten the Government's control over ICASA. The proposed law enabled the Minister of Communications to assign specific responsibilities to ICASA councillors; required the ICASA Chairperson to perform any function requested by the Minister from time to time; obligated ICASA to implement Ministerial policy and policy directions; and clarified the roles of the National Assembly and the Minister of Communications in the evaluation of the performance of ICASA councillors. The proposed legislation also gave the Minister of Communications the authority to nominate members of the CCC in consultation with the National Assembly (previously ICASA's sole authority) and empowered the CCC to make enforceable decisions (previously the CCC only made recommendations to ICASA which had the authority to made decisions).

The *ICASA Amendment Bill of 2010* never became law. Likely in view of significant opposition from many public interest groups,[76] the Government allowed the proposed legislation to fade away and become a historic document. As with the Government's management of amendments to the *Electronic Communications Act*, however, many of the policy goals contained in the *ICASA Amendment Bill of 2010* would resurface in subsequent eponymously named proposals.

### 3.4.10 ICASA Amendment Bill, 2012

Approximately 18 months after publication of the *ICASA Amendment Bill of 2010*, the Government of South Africa published the *Independent Communications Authority of South Africa Amendment Bill, 2012* (South Africa, 2012c) (hereinafter referred to as the *'ICASA Amendment Bill of 2012'*). Gazetted on 23 November 2012, the proposed law incorporates many of the features of its earlier predecessor, but also incorporates some important new reforms in the Government's efforts to reshape South Africa's communications market. Among new reforms, the proposed law transforms the Complaints and Compliance Committee into a Complaints and

[76] See BizCommunity, 2010, 1; Da Silva, 2010, 1; Jones, 2010a, 1; Media Monitoring Africa, 2010, 1-14; and Muller, 2010, 1.

> Compliance Commission appointed by the Minister of Communications. New reforms also clarify the relationship between ICASA and the Competition Commission and unify existing legislation with the *Electronic Communications and Transactions Act, 2002, Number 25 of 2002* (South Africa, 2002a).
>
> The period for comment on the *ICASA Amendment Bill of 2012* expired on 10 January 2013 and the Cabinet of the Government of South Africa subsequently approved submission of the proposed legislation for consideration by the National Assembly of South Africa in May 2013 (South Africa, 2013a; St Francis Chronicle, 2013, 1) alongside the *Electronic Communications Amendment Bill, 2012* (South Africa, 2012a).

The Government of South Africa has maintained an active legislative agenda in its efforts to reform South Africa's communications market. Taken together, the *Electronic Communications Act* and *ICASA Amendment Act* culminated the Government's realignment of South Africa's communications market from a vertically structured environment with distinct 'silos' of licenses based on types of technologies used by license holders to a horizontally structured environment with licenses based on the types of services provided by license holders. The convergence of the licensing of South Africa's communications market with the broadcasting services market and broadcasting signal distribution market furthered the shift to a services based (rather than technology based) regulatory environment. Changes to ICASA's structure accounted for its new mandate and responsibilities in this reshaped landscape.

Subsequent efforts by the South African Government to change the original provisions of such transformative legislation may be broadly divided into two types of amendments. On the one hand, many of the proposed amendments appear to address administrative concerns or process-related concerns which may be viewed as ordinary efforts to streamline and improve public sector activities. On the other hand, many of the proposed amendments appear to alter the roles and responsibilities of key public sector actors which may be viewed as extraordinary efforts to redistribute the power balance among such players in favour of Government-controlled institutions.

In the 10 year span of the managed liberalisation period (1996 to 2005) and subsequent convergence period (2006 to present), the Government of South Africa effected more sweeping changes to the domestic communications market than in the entire 38 year span of the monopoly period (1958 to 1996). Beginning with the introduction of competition and creation of an independent regulatory authority in the

monopoly period and culminating with unification of the regulation of the communications, broadcasting services and broadcasting signal distribution markets in the convergence period, the Government materially changed the way in which communications services were delivered and regulated in South Africa. Beyond influencing commercial arrangements and regulatory relationships and explicitly dealing with universal service considerations in the country's communications market,[77] such changes necessarily affected, positively or negatively, the realisation of universal service and access to communications services in South Africa. As such, the impact of policy shifts from the monopoly period to the convergence period and the Government's drive to reform communications legislation therein requires further consideration to determine the effect of these developments on the delivery of universal service and access to communications services in South Africa.

## 3.5 LESSONS FOR UNIVERSAL SERVICE AND ACCESS IN SOUTH AFRICA'S COMMUNICATIONS MARKET BASED ON KEY CHARACTERISTICS OF THE REGULATORY ENVIRONMENT

The Government of South Africa's public policies in the domestic communications market have come full circle in the past 50 years. Once a defender of Telkom's hegemony and non-arm's length regulation during the monopoly period, the Government transformed into an advocate of competition and arm's length regulation by the convergence period. It now appears poised to reclaim some of the power and position enjoyed under the monopoly period, albeit in different guises.

Despite the accompanying metamorphosis of public policy perspectives, the Government's intervention in South Africa's communications market consistently sought to affect two spheres of activity which may be broadly described as 'regulatory structures' and 'commercial structures'. The preponderant influence of policy developments in these two areas of South Africa's communications market likely affected the implementation of universal service and access to communications services in South Africa. Moreover, the residual effects of such policies and practices in these two areas likely impact future prospects for the delivery of universal service and access to communications services in South Africa as part of any realigned 'post-convergence' communications market conditions arising out of the Government's national ICT policy review.

---

[77] Infra, sections 5.2 to 5.4.

### 3.5.1 Regulatory structures

The evolution of regulatory structures in South Africa's communications market affected the realisation of universal service and access to communications services in South Africa while current regulatory structures likely impact the future development of such policies in the country. Universal service and access to communications services do not appear to have been policy priorities during the monopoly period. While universal service and access to communications services gained ground as paramount public policy priorities in the managed liberalisation period and subsequent convergence period, lingering defects in regulatory frameworks and regulatory relationships in South Africa's communications market suggest continued obstacles to the delivery of universal service and access to communications services in South Africa without the introduction of further public policy interventions that remedy such defects.

#### 3.5.1.1 Regulatory capabilities

During the monopoly period, a largely passive regulatory framework institutionalised conflicting relationships, promoted regulatory capture and reduced the scope of opportunities and obligations for enforcement actions against private sector market actors in South Africa's communications market. Universal service and access to communications services were not public policy priorities during apartheid. Given the entrenched conflicts of interest between the Minister's fiduciary duty to act in Telkom's best interest (profits) and statutory duty to act in the public interest (available, accessible and affordable services), it is doubtful that the regulatory regime would have given rise to the political will or institutional capacity to effectively implement, monitor or enforce non-commercial public policy obligations on private sector market participants that adversely affected profits or undermined market protections. As such, regulatory capture endemic to the regulatory framework of the monopoly period in South Africa's communications market not only discouraged consideration of non-commercial public policy initiatives such as universal service and access but also likely limited any capability to implement such policies in any event.

The new regulatory framework introduced to reform South Africa's communications market during the managed liberalisation period and refined by the Government of South Africa under the subsequent convergence period diminished but did not eliminate this conflict of interest. Some critics (Els, 2005, 56; Geldenhuys, 2005, 49*)* highlight concerns based on:

> *. . . the policy failure arising from the Government of South Africa's continued conflicted position as a telecommunications policy maker and Telkom shareholder'* (Els, 2005, 56; Geldenhuys, 2005, 49*).*

Yet Telkom's circumstances are not unique in the world. Numerous examples exist of continued state involvement in the ownership of communications companies. China Mobile, the world's largest mobile phone operator, is a state owned company (Branigan, 2010, 1). Australia has created a state owned national high speed broadband wholesale network (NBN, 2012, 1). Brasil has resurrected the state owned national communications company to build a national broadband network.[78] Indeed, the sustained deterioration of global economic conditions since 2008 has renewed interest in the concept of 'state capitalism' and merits of state owned enterprises (Flores-Macias & Musacchio, 2009, 1). As such, the South African Government's continued ownership of a material interest in Telkom presents an inherent conflict of interest that may be managed, as elsewhere in the world, by a competent regulatory framework that balances competing policy priorities arising from such circumstances.

Several significant safeguards were implemented by the Government of South Africa as part of its regulatory reforms of the country's communications market to severely curtail the naked conflict of interest that existed under the monopoly period. The delegation of regulatory powers to an independent regulatory authority represents the most significant safeguard introduced as part of the Government's managed liberalisation policy. The regulatory authority's compliance, enforcement and inspection powers and relatively transparent procedures, *inter alia*, removed much of the historical conflict of interest that existed under the monopoly period. The regulatory authority is supported by an institutional framework with the capability (but not necessarily the capacity or commitment) to respond to public interest needs, monitor market activities

---

[78] Supra, section 2.4.3.1.1.

and enforce compliance actions against private sector market actors (including Telkom) in areas of public interest such as universal service and access to communications services.

The new regulatory framework introduced to regulate South Africa's communications market during the managed liberalisation period and refined under the convergence period also favours consideration of public policy initiatives. The division of responsibilities between policy making and regulation making authorities establishes policy development as an institutional priority. It frames a policy development process that supports greater consideration of public policy issues such as universal service and access in the regulation of South Africa's communications market.

#### 3.5.1.2 Regulatory relationships

The presence of a regulatory framework that accounts for the role of public policy in South Africa's communications market does not necessarily mean that such public policy has been developed, monitored or enforced within such a framework. This result depends on the presence of a functional framework. The history of South Africa's communications market suggests that the regulatory framework adopted during the managed liberalisation period and refined under the convergence period is plagued by dysfunctional relationships that have repeatedly resulted in missteps and missed opportunities that ultimately affected the implementation of universal service and access to communications services in South Africa (Sibinda, 2008, 212-227; Horwitz & Currie, 2007, 445-462).

South Africa's communications regulatory authorities have never lived up to their promise. SATRA never realised its intended role as a responsive regulatory authority. A combination of inexperienced and inadequate human resources, financial constraints, political interference and pushback from market participants rendered SATRA a weak and ineffectual authority unable to fulfil many of the central regulatory functions essential to realisation of key public policy priorities (Gillwald, 2001b, 87-88). While ICASA overcame many of SATRA's deficiencies and challenges, the regulatory authority continues to be dogged by political and legal challenges (Magcawas, 2013, 1; Matote, 2013, 1; Mulligan, 2013, 1; Sibinda, 2008; 212-227; Horwitz & Currie, 2007, 445-462;

Bidoli, 2003, 1) as well as internal deficiencies which have limited its ability to achieve its full statutory capabilities (Comninos et al, 2010, 1-40; Media Monitoring Africa, 2010, 1-14; Thornton, 2009, 21-30; Lewis, 2010, 21-22, 24). Consideration of public policies such as universal service and access necessarily suffer from the absence of an effective regulatory agency.

South Africa does not have a truly independent communications regulatory authority. The *White Paper on Telecommunications Policy* envisaged a new governance framework underpinned by an autonomous communications regulatory authority that exercised its independence in three critical ways:

> *Independence has three aspects: independence from the operational organisation(s) responsible for building and operating the public telecommunications infrastructure and providing telecommunications services (e.g. Telkom); independence from other interested parties, such as industrial interests in the telecommunications sector; independence from the Government in dealing with its mandated functions, once the general framework of telecommunications policy has been set* (South Africa, 1996c, 26).

This vision of a truly independent communications regulatory authority has never materialised in South Africa. Among other concerns, the scope of discretionary authority accorded to the Minister of Communications and the subsequent exercise of such authority has undermined ICASA in each facet of its independence. Ministerial influence has engendered at least two significant market consequences which may have adversely affected the opportunity to advance public policy priorities in South Africa's communications market, including universal service and access.

On a macro-economic level, ICASA's vulnerability to external influences and ongoing turf wars between public sector stakeholders may have undermined market certainty and eroded market confidence that consequently reduced investor confidence and diminished market investments. Attracting and maintaining investment in South Africa's communications market is a key public policy priority articulated by the South African Government as early as the *Green Paper on Telecommunications Policy*:

> *The development of the telecommunications facilities and services that our country needs requires many participants and the investment of large sums of money. For this to be possible it is essential that clear policies be developed for the telecommunications environment and that a clear and solid legal and regulatory environment be established to implement those policies in an orderly and effective manner* (South Africa, 1995).

Realisation of universal service and access to communications services are stunted without adequate private sector investment in South Africa's communications market.

On a regulatory level, public policies often rely upon implementation channels controlled by private sector actors adverse to public sector interference with their commercial activities. As such, monitoring and enforcement of compliance with such public policies requires a vigilant and sufficiently empowered regulatory authority. ICASA's political impotence relative to other policy making authorities may have undermined its credibility and integrity as an independent regulatory authority. Such impotence has consequently reduced ICASA's ability to monitor and enforce public policies such as universal service and universal access with private sector actors in South Africa's communications market.

As a result of inadequate consideration of the practicalities of power sharing between policy making institutions and the regulatory authority, enabling laws which heralded a radical shift in the regulatory structure of South Africa's communications market fell short of their ambitions (South Africa, 2006a; 2006c; 2001b; 2000; 1996b). Without a doubt, the proactive regulatory platform unveiled as part of the Government's managed liberalisation of South Africa's communications market exponentially escalated consideration of policies that advanced the public interest, including universal service and access, relative to the depraved indifference to public interest demonstrated by the passive regulatory platform of the monopoly period. Without a doubt, the proactive regulatory platform created by the Government's managed liberalisation policy exponentially increased the capabilities, capacity and commitment of public policy actors, notably the newly created regulatory authority, to effect and enforce such policies relative to the emasculated capabilities, limited capacity and widespread indifference of public policy actors of the monopoly period. Such progress simply failed to realise its potential due to politically-driven environmental deficiencies.

Ironically, the heightened importance of public policy imperatives within the radically realigned regulatory structure of the managed liberalisation period in South Africa's communications market created turf wars between policy making authorities and the regulatory authority which, due to the absence of clearly defined power sharing parameters in enabling legislation, eroded the capacity, capability and credibility of the regulatory authority. In this regard, the passive regulatory authority constrained by regulatory capture in the monopoly period was, to some extent, replaced by a regulatory authority constrained by 'political capture' in the managed liberalisation period. Such political capture and attendant fallout not only distracted policy makers from public interest priorities such as universal service and access to communications services but also sacrificed their collective ability to implement policies and programs to fulfil such priorities.

The ability of policy makers to exercise such significant influence over the core activities of the independent regulatory authority was perhaps the deliberate intention of the National Assembly of South Africa. Indeed, the Minister of Communications alluded to such intent during formulation of the *Telecommunications Act* (Thorne, 1998, 4). The vesting of such broad discretionary power in the Minister of Communications is not unique to public policy making structures: many other countries accord public policy makers similar, if not greater, discretionary powers under similar or less stringent governance structures (ITU, 2002, 1). Exercised judiciously, such broad discretionary powers may indeed stimulate reform and positive public policy outcomes. However, the failure of South Africa's enabling legislation to establish sufficient parameters for the application of such broad discretionary powers and the consequent application of such powers to encroach upon the regulatory authority's business clearly represents a public policy planning failure by the Government of South Africa.

Power sharing arrangements which underpin the division of responsibilities between the Minister of Communications and the regulatory authority may require reconsideration and reform to improve the effectiveness of the regulatory authority (Comninos et al, 2010, 1-40; Sibinda, 2008, 212-227; Gillwald, 2001a; 2001c). ICASA's Chairperson concedes that '*this duality has at times given rise to real and serious concerns*' in 2005 (McLeod, 2005b, 14). Prospective reforms may include substantial revisions to current arrangements that curb the '*complex and overly broad oversight role'* (Cohen, 2002, 28) that the Minister of Communications and other public policy agents enjoy over activities of the regulatory authority:

> *Considerably more profile needs to be given to the issue of interaction with the executive over core regulatory functions. . . . the current dualism between the two* [needs to] *be revisited, and more importantly, revised. Few, if any, possibilities to reverse . . .* [any] *regulatory capture exist without that tie being simplified – not in operation – but by practically addressing the essence of the problem* (Cohen, 2002, 27).

A direct reporting relationship between the independent regulatory authority and the National Assembly of South Africa may strengthen the appearance of independence: '[t]*he fact that the Minister tables ICASA's annual report in Parliament does little to counter perceptions of ministerial influenc*e' (Cohen, 2002, 27). Alternative funding arrangements which give ICASA greater *'control over the way in which monies are raised and how those are apportioned'* beyond parliamentary appropriations may strengthen such independence (Cohen, 2002, 27). Beyond enhancing the ability of regulatory agencies such as ICASA to implement their statutory mandate and otherwise discharge their statutory obligations (ITU, 2002, 1), a more autonomous funding mechanism would '*mitigate the reluctant capture thesis, at least to some degree, by removing the potential for manipulation that exists in the "dualist" decision-making model'* (Cohen, 2002, 28).[79]

The South African Government has shown little appetite to enhance ICASA's autonomy. Proposed amendments embodied in the *Electronic Communications Amendment Bill of 2012* and the *ICASA Amendment Bill of 2012* as well as previous amendments made to the *Electronic Communications Act* suggest that the Government intends to take a much more proactive role in the regulation of South Africa's communications market. The 'political capture' that commenced in the managed liberalisation period appears destined to continue in the post-convergence period.

There is significant opposition to pending legislative proposals. Critics have charged that such proposals not only undermine ICASA's independence but expropriate its powers to bodies more directly under Government control (Mawson, 2012a, 1). '*ICASA may as well pack its bags and go home*' says one lawyer, as the Minister of Communications will once again '*be poacher and gamekeeper*' (Mawson, 2012a, 1). SOS Support Public Broadcasting, a broad-based public

---

[79] ICASA's inability to manage the administration and collection of license fees does not bode well for the Agency's ability to assume any additional financial responsibilities. For examples of such troubles, see: Magcawas, 2013, 1; Motote, 2013, 1; and Mulligan, 2013, 1.

interest group, claims that such Government policy moves are an effort to bring ICASA under the control of the Department of Communications (Jones, 2010a, 1; Muller; 2010, 1; Skinner, 2010, 1) which itself is under significant scrutiny (Parker, 2013, 1; Mail & Guardian, 2010, 1). Other critics have challenged the constitutional validity of such proposals (Mawson, 2012a, 1).

Without any far reaching rewrite of the regulatory duopoly currently shared between the Minister of Communications and the independent regulatory authority, at least three improvements to the enabling legislation may remedy some of the deficiencies of current arrangements. First, enabling legislation should clearly articulate boundaries between policy making activities and regulation making activities to avoid any 'turf war' over overlapping public policy interests which may be approached from both policy making and policy implementation perspectives. The Government has acknowledged:

> *. . . a need for a common understanding of the role of the policy-maker and the regulator, derived not only from how each one views her or himself and how each one views the other, but one that was conscious of a role within the context of a nation. The needs of a national should be paramount among the players* (Matsepe-Casaburri, 2003b, 3).

Second, enabling laws should impose stringent requirements for coordination and consultation between relevant policy making authorities and the regulatory authority. The Government has acknowledged that '*management of the relations between the policy-maker and the regulator is also important*' (Matsepe-Casaburri, 2003b, 3). Finally, enabling legislation should vest the regulatory authority with greater powers to counterpunch any efforts by other public policy stakeholders to thwart its influence. Such powers should include the administrative means to resist any encroachment into ICASA's jurisdiction or ICASA's exercise of its statutory mandate and the political means to exercise greater influence in the policy making deliberations of the Minister of Communications.

### 3.5.2 Commercial structures

The evolution of the Government of South Africa's communications policies fundamentally altered commercial structures in South Africa's communications market in at least two important ways. First, the Government's new regulatory framework introduced opportunities for competition within the country's

communications market while successive amendments to this framework accelerated such opportunities. Second, the Government's new regulatory framework acknowledged the role of technology in the country's communications market while successive amendments to this framework accelerated the ability of market participants to deploy different technologies across different delivery platforms.

#### 3.5.2.1 Competition

Beyond radical realignment of the regulatory structure governing South Africa's communications market, the Government's managed liberalisation policy radically realigned the commercial structure of South Africa's communications market by introducing opportunities for competition. Indeed, at least 10 of the 17 public policy objectives enumerated in the *Telecommunications Act* were achievable only through the assumed presence of competition in South Africa's communications market. The *Electronic Communications Act* anticipates further opportunities for competition. The presence of competition is an important bellwether of the viability of numerous public policies, notably universal service and access. As ICASA's Chairperson (at the time) noted:

> *Amidst all the sound, fury and hype that normally accompanies* [sic] *telecoms reform, it is often easy to forget the rationale for reforming or liberalising telecoms in the first place. Very simply put, we are trying to ensure a competitive telecom market with the belief that greater competition will lead to more affordable and better telecommunication services for all our people and, consequently, bridge the digital divide* (Langa, 2001b, 1-2).

The presence of monopolies in communications markets generally inhibit universal service and access (Shehadi, 2004, 1-22; Brands & Leo, 1998, 14-19). The absence of competition in South Africa's communications market during the monopoly period supports this proposition. The Department of Posts and Telecommunications that implemented the apartheid policies of its paymasters to the detriment of universal service and access[80] also lacked any market incentive to advance the goals of universal service or universal access in South Africa's communications market. As the successor monopolist, Telkom resisted the introduction of profit-eroding, non-commercial public

[80] Infra, sections 1.2, 5.3.1.1.1, 7.3.2 and 7.3.3.

policies into South Africa's communications market (such as universal service and access) absent compulsion by regulation.[81]

The advent of competition in South Africa's communications market gave significant impetus to the realisation of universal service and access objectives. By enlarging the number of participants and expanding the scope of services permitted to be offered by such participants, the Government likely increased the availability and accessibility of communications services in South Africa:

> *Free and open competition benefits individual consumers and the global community by ensuring lower prices, new and better products and services, and greater consumer choice than occurs under monopoly conditions.* (FCC, 2005, 1).

Indeed, '*overwhelming evidence*' suggests that competition in communications markets '*leads to . . . higher levels of telecom penetration*' as '*not one single country in the world that has maintained a state monopoly over telecom* [has] *succeeded in developing ICT'* (Shehadi, 2004, 2). Any increase in the availability and accessibility of communications services necessarily benefits previously disenfranchised constituencies and advances universal service and access to communications services in the country.

Introduction of competition in communications markets generally lowers the price of products and services. In the United States of America, for example, the FCC concludes that:

> *Experience has demonstrated that free and open competition benefits individual consumers and societies as a whole by ensuring lower prices. . . . In an open market, producers compete to win customers by lowering prices. . . .* (FCC, 2005, 1).

A World Bank study arrives at a similar determination:

> *Regulatory reforms that inject more competition in markets for services and network industries are, in turn, instrumental in forcing operators to improve efficiency and pass on the lower production costs to users* (Rossotto, Sekkrat and Varoudakis, 2003, 6).

---

[81] Ibid.

Case studies from the Americas and Europe relevant to South Africa's historic circumstances affirm such conclusions. In Mexico, for example, a newly created regulatory authority terminated the historic monopoly of the national phone company which led to a fragmentation of market share among new operators that stimulated competition, spurred innovation and lowered prices which allowed '*lower-income people to have access they didn't enjoy before*' (Gage, 2002, 1). In Europe, newly created regulatory authorities in France and Germany terminated long standing monopolies enjoyed by France Telecom SA and Deutsche Telecom GmbH, respectively, creating more competitive marketplaces which '*caused the price of phone calls to drop 10-50 percent around the world*' (Gage, 2002, 1).

Any decrease in the price of communications services in South Africa most necessarily benefits predominantly poor, previously disenfranchised constituencies. As such populations were historically overlooked by or unable to afford the services of the incumbent monopolist, the provision of communications services to such constituencies therefore advances the ambitions of realising universal service and access to communications services in South Africa. Indeed, further opportunities to accelerate competition for the provision of communications services facilitated by the *Electronic Communications Act*, notably through cross-competition between traditional communications companies, broadcasting firms and VANS operators, may advance the availability, accessibility and affordability of communications services in South Africa, including universal service and access to previously disenfranchised populations.

#### 3.5.2.2 Technology

As part of its realignment of the regulatory and market structures of the country's communications market, the Government of South Africa was sensitive to the impact of technology advancements in the fields of information and communications technologies. Such sensitivity recognised the unique impact of technology on the regulation of communications markets:

> *As in many other industries, the legal and policy issues arising in the telecommunications industry are in part driven by its special economic and technological circumstances. Technology influences the economics of providing service, which, in turn set the tone regulation of the industry. . . . regulators have long struggled to keep pace with the rapid and profound technological changes that have transformed the economics of the telecommunications industry* (Brands & Leo, 1998, 1).

In South Africa, the *White Paper on Telecommunications Policy* recognised the public policy challenges arising from such technological changes and shifting economic dynamics:

> *. . . because of the inherent flexibility of telecommunication technologies it has become increasingly difficult to define particular market segments or services and establish viable boundaries around them* (South Africa, 1996c, 6).

As a result of such circumstances, the *White Paper* proposed a governance framework which accommodated the impact of technology on public and private sector market participants:

> *. . . in implementing the provisions of the new market structure, the Regulator should, when possible, try to move with technology rather than against it. If the Regulator moves too far out of step with the opportunities created by technology, it may be difficult to enforce rules and may indirectly encourage extra-legal actions by parties within the sector. And without a combination of enforcement and voluntary compliance, the consensus will break down* (South Africa, 1996c, 6).

The radical reforms embodied in the *Telecommunications Act* and the *Telecommunications Amendment Act* as well as various policy determinations (Matsepe-Casaburri, 2004b, 1; 2004c, 3-4) accounted, to a degree, for the effects of new technologies. One of the principal purposes of the *Electronic Communications Act,* however, was to account for even greater commercial and regulatory effects arising from the convergence of ICT between previously disparate delivery platforms in different industries.

The Government of South Africa's sensitivity to the impact of technology on the delivery of communications services likely established opportunities for the realisation of universal service and access in the domestic communications market during the managed liberalisation period and convergence period. The

Government's continued sensitivity to such matters favours the acceleration of such opportunities during any post-convergence period. Specifically, technology advancements appear to have created commercial opportunities and regulatory options that increase the availability, accessibility and affordability of communications services in South Africa.

Technology advancements have increased the range of tools and delivery channels available to communicate, notably through mobile communications platforms and broadband technology solutions. In South Africa, the *Telecommunications Act* and *Telecommunications Amendment Act* leveraged such technological advancements to increase the availability and accessibility of communications services in three significant ways. First, new license categories enabled new market participants to increase the number of channels for delivering communications services. Second, new radio frequency spectrum licenses enabled incumbent market participants to increase the breadth or depth of channels for delivering communications services. Third, competition between a greater number of market participants using a greater number of technologies and delivery platforms likely escalated the roll out of communications services in South Africa.

Technology also plays a central role in the affordability of communications services, often by lowering equipment and delivery costs which ultimately reduce consumer tariffs. The economic rationale for this correlation is simple:

> *In a competitive market, a seller's only hope for short-term economic profit is to cut costs without diminishing the quality of the product. Thus, a competitive firm is always searching for new processes and cheaper materials. Competition is therefore often associated with rapid technological innovation* (Brands & Leo, 1998, 15-16).

In Australia, for example, the Competition and Consumer Commission attributed a significant reduction in the cost of phone calls to technology and attendant competition:

> *The price reductions are attributable to technological change and the growth in competition in the Australian telecommunications market over the past several years both on a facilities and an access basis* (ACCC, 2001, 1).

By enacting legislation which not only empowers market participants to adopt new technologies and but also facilitates greater competition between larger numbers of market participants using different technologies, the Government of South Africa at least laid the foundation for opportunities to improve the affordability of communications services in South Africa.[82]

Technology has also increased the range of regulatory options available to public policy actors in their quest to realise specific public policy objectives such as universal service and access to communications services in South Africa. The previous monolithic market permitted policy influence over a national operator using fixed line technology. The current converged environment offers regulatory authorities the opportunity to influence a number of market participants using a number of technologies. Regulatory authorities enjoy greater flexibility to 'mix and match' specific policies with specific implementation tools, often based on different technologies applied to different market actors, to achieve specific public policy objectives in specific circumstances. Such flexibility may enable public policy actors to design more optimal solutions to advance public policy objectives, such as universal service and access to communications services in South Africa.

The role of technology in South Africa's communications market is likely to escalate in the near to long term which should further enhance the availability, accessibility and affordability of communications services in the country. The increasing scope of new technologies (such as VoIP, fixed wireless solutions, 3G and 4G platforms) as well as the decreasing cost of such technologies and equipment bodes well for the continued proliferation of affordable communications services in South Africa. Yet enabling legislation needs to permit the full benefits of such technological advancements to permeate the market. As a critical success factor for the acceleration of universal service and access to communications services in South Africa, any substantive overhaul of the regulatory structure of the country's communications market should include opportunities for private sector actors to expand their delivery of communications services through new channels and new products in accordance with the most efficient, cost effective commercial means without any heavy handed regulatory impediments imposed by public sector actors.

---

[82] Infra, sections 4.2.3 and 8.3.2. Empirical evidence suggests that the absolute price of communications services in South Africa has declined by a substantial measure in recent years but prices may remain unjustifiably high relative to international benchmarks (Comninos et al, 2010, 20-35; Horwitz & Currie, 2007, 445-462).

It is easy to overlook the sheer scope of the radical reformation of South Africa's communications market undertaken by the Government of South Africa through its managed liberalisation and convergence policies. Perhaps the pace of reforms has been too slow (Lewis, 2007, 198; Els, 2005, 56). Perhaps the processes used to implement reforms have been flawed or executed poorly by public policy agents (Emerick, 2005, 7). Yet the Government of South Africa faced substantial systemic challenges as it embarked on its initial market liberalisation efforts. As the USAASA's representative notes:

> *. . . if Government wanted to liberalise, they had to liberalise slowly by ensuring that Telkom did not lay off a lot of people all at once. Most people are not aware that. Telkom identified all the redundant staff and said next year we will reduce our staff by 5,000. Then they would take these 5,000 people and pay them for the year in which they don't work.* [These employees] *will still get their salary from Telkom but they go to what they call a "Centre for Learning Workers" to learn a trade. They did that a lot. A lot of people stayed for the whole year not going to work in order to convince the unions. That was one of the difficulties.*
>
> *Would Telkom have the ability to have 5,000 people not adding value at all? Go back to what was happening in South Africa. Whenever you employed a white technician in South Africa in telecommunications, more often than not you also employed a driver to drive the car and an assistant to go onto the ladder. So at the end of apartheid in 1990 when Telkom corporatised they had to be ruthless because most of the young people coming in either didn't need a driver and most of the technicians did not need someone to go to the ladder. Telkom had to deal with that. So over the first two to three years of the ANC Government, it was going to be very difficult for them to be able to do so because of the unions and their role in the ANC.*
>
> *So one has to look at the constraints within Government. . . . We need to make Telkom artificially profitable by ensuring they are the only guys out there in the market. They needed money to pay for all changes. And the union was extremely powerful in Telkom* (Bate, 2014a, 2).

However imperfectly, the Government of South Africa prepared private sector market participants and public sector policy agents alike for the subsequent convergence of competition and regulation in a fast moving, technologically changing communications marketplace in ways that would have been almost certainly impossible to achieve without the radical restructuring of South Africa's communications market since the end of the monopoly period. The current round of policy reforms will hopefully address many of the deficiencies and imperfections of the current regulatory framework in a forthcoming 'post-convergence period'. But

such revisions and refinements represent the next incremental steps in policy reforms made possible by the journey initially undertaken by the Government to fundamentally realign the regulatory environment of South Africa's communications market at the end of the monopoly period.

## 3.6 CONCLUSION

This chapter traces the evolution of successive pieces of legislation which have radically realigned the regulatory and commercial structures of South Africa's communications market between 1958 and 2013, particularly during the period between 1996 and 2013. It identifies key benefits and challenges arising from such transformation. In terms of the regulatory environment, the shift from the passive governance platform of the monopoly period to the proactive governance platforms of the managed liberalisation and convergence periods significantly enhance opportunities to advance public policy objectives such as the realisation of universal service and access to communications services. Legislative reforms fundamentally changed the functions of regulatory authorities and challenged the capabilities and capacities of such authorities to effect and enforce policies and programs aimed at achieving such objectives. In terms of the commercial environment, the introduction of competition and accommodation of technological advancements accelerated opportunities for the realisation of universal service and access to communications services by extending the range of delivery channels, enlarging the number of market participants and enhancing the range of regulatory options available to public policy actors to advance related public policy objectives.

As with any radical realignment of governance structures, teething problems which limited the full impact of this transformation often diminish as actors gain experience and acquire confidence with their roles in the governance platform. However, the adverse fallout from turf wars among public policy actors in South Africa's communications market will only end through decisive action by the Government to remedy ambiguities within enabling legislation. Nevertheless, opportunities to identify and implement public policies, such as the realisation of universal service and access to communications services, appear much greater under South Africa's current communications market governance framework than previous regimes.

The Government of South Africa's radical realignment of the regulatory environment of the domestic communications market changed the nature of relationships between public sector actors that affected opportunities for the realisation of universal service and access to communications services in the country. This radical realignment of regulatory structures also changed the nature of relationships between private sector actors that similarly affected opportunities for the realisation of universal service and access to communications services in South Africa. As such, Chapter 4 defines the primary characteristics of commercial conditions in South Africa's communications market between 1993 and 2013. It isolates dynamics that may have influenced the realisation of universal service and access to communications services during this period and may affect the future implementation of universal service and access policies and programs in South Africa.

# CHAPTER 4

# COMMERCIAL ENVIRONMENT OF SOUTH AFRICA'S COMMUNICATIONS MARKET

## 4.1 INTRODUCTION

Chapter 3 described the evolution of the regulatory environment of South Africa's communications market between 1958 and 2013, particularly the period between 1993 and 2013. It identified key public sector developments which may have affected or continue to affect the implementation of public sector policies and programs designed to improve the availability, accessibility and affordability of communications services. Yet public policy is not made in a vacuum. It is not implemented in a vacuum. In many communications markets, universal service and access policies and programs designed by public sector actors typically require the involvement of private sector actors, generally through collaboration, cooperation, coercion or a combination of these means.[83] As such, private sector actors tend to heavily influence the success or failure of policies and programs to realise universal service or access to communications services as they avoid, adopt or adapt such policies and programs to suit their own purposes, often in ways intended by policy makers but sometimes in ways unintended by them. Any consideration of universal service and access in South Africa therefore necessitates consideration of the commercial environment of the domestic communications market.

This chapter examines and evaluates the commercial environment of South Africa's communications market between 1958 and 2013, particularly the period between 1993 and 2013. It identifies primary market characteristics which may have affected and may continue to affect the implementation of universal service and access policies and programs in the country. It considers key commercial conditions, market segments and the nature of profit-seeking participants prevalent in South Africa's communications market during this period to determine their historic or potential role in the acceleration (or frustration) of the roll out of available, accessible and affordable communications services. At the same time, this chapter does not discuss every facet of commercial conditions in South Africa's communications market. It limits its examination of the commercial environment to those conditions most likely to have

---

[83] Supra, sections 2.3 and 2.4 for discussion of such matters in international communications markets and infra, sections 5.2 to 5.4 for consideration of such matters in South Africa's communications market.

affected and most likely to continue to affect the realisation of universal service and access to communications services in South Africa.

## 4.2 MARKET CONDITIONS

Market conditions affect the availability, accessibility and affordability of communications services in many ways. In South Africa, key indicators such as subscriber penetration and infrastructure investment suggest the widespread availability, accessibility and affordability of communications services.[84] Yet South Africa may be home to some of the highest communications prices in the world and high prices generally discourage the availability, accessibility and affordability of communications services (Comninos et al, 2010, 1-40; Horwitz & Currie, 2007, 445-462). Moreover, opportunities to implement universal service and access to communications services in South Africa may vary by market segment, with some segments of South Africa's communications market well suited to driving the implementation of policies and programs to realise universal service and access and other segments less suited to driving the implementation of such policies and programs. The subsequent paragraphs of this section assess the availability, accessibility and affordability of communications services in South Africa from a commercial perspective.

### 4.2.1 Availability of communications services

South Africans have fundamentally changed the way they communicate with each other over the past two decades. The historic popularity of fixed line communications services has given way to the phenomenal popularity of mobile communications services. As a measurement of the availability of communications services per hundred of population in any area, teledensity is a useful benchmark of the overall pervasiveness of communications services. Table 4.1 highlights South Africa's teledensity and confirms the absolute number of subscribers and relative teledensity in each key market segment:

---

[84] Infra, sections 4.2.1 to 4.2.3 and 4.3.

**Table 4.1**
**Communications services subscribers by type of service, 2011**

| Market segment | Subscribers | Penetration (teledensity) |
|---|---|---|
| Fixed line market | 3,995,000 | 8% |
| Mobile market | 64,000,000 | 126% |
| Internet market | 10,871,000 | 21% |
| Fixed broadband subscriptions | 805,000 | 2% |
| Mobile broadband subscriptions | 2,695,000 | 5% |

Source: ITU, 2013a, 1; 2013b, 1; 2013c, 1; 2013d, 1; ITU, 2013d, 1; South Africa, Department of Communications, 2012a, 3; Telkom, 2012a, 5-48.

Fixed line teledensity has trended downwards from a high of 12% to 8% between 1996 and 2011 (ITU, 2013a, 1; Africa & Middle East Telecom-Week, 2012, 1; Comninos et al, 21-22) with the number of voice subscribers in the fixed line market declining largely due to mobile market substitution (Comninos et al, 2010, 9). Less than 20% of South African households (about 2.2 million subscribers) have a fixed line telephone, while only 15% and 9.8% of such households own a computer or have access to the Internet, respectively (ITU, 2013e, 1; Comninos et al, 2010, 23). Mobile teledensity has grown exponentially over the past two decades, rising from a negligible base in 1996 to reach 126% penetration in 2011 (ITU, 2013b, 1). Saturated mobile penetration is largely attributed to the ownership of multiple SIM cards by consumers, with estimates ranging between a 62% effective penetration rate based on a 2009 household survey (Comninos et al, 2010, 24-25) to a 71.6% effective rate based on various market inferences (Lewis, 2010, 16-17) to a 100% effective rate based on a 2011 analysis of African mobile market characteristics (GSMA, 2011a, 12).

Beyond the rise of mobile telephony and stagnation of fixed line telephony, the growing popularity of and demand for broadband services represents an increasingly important part of South Africa's communications environment. South Africa boasts approximately 2.7 million mobile broadband subscriptions and over 800,000 fixed line broadband subscriptions. The increased availability of broadband communications services in South Africa is underpinned by substantial infrastructure investment by key market participants. Mobile operators invested at least USD 11.3 billion on network infrastructure between 2000 and 2010 while Telkom spent about half that amount between 2005 and 2012 (BMI TechKnowledge, 2011a, 3).

### 4.2.2 Accessibility of communications services

Measured by the ability to access communications services within a five kilometre radius, accessibility is a useful benchmark of universal access. This criterion alleviates some of the weaknesses inherent in teledensity and penetration measurements since it accounts for access to community service payphones provided by network operators as well as other community-based communications services. It also accounts for the geographic distribution of communications services among any given population.

The accessibility of communications services has improved dramatically in South Africa in recent years. The proliferation of mobile communications services probably represents the single largest contribution to the increased accessibility of communications services in South Africa. Mobile voice (GSM) communications served 98.6% to 99% of the population by 2012 (Vodacom, 2012a, 26-39; MTN, 2011, 47). At the end of 2012, broadband communications services reached approximately 30% of South Africa's geography and 75% of South Africa's population (South Africa, Department of Communications, 2012a, 4).

### 4.2.3 Affordability of communications services

The affordability of communications services in South Africa remains subject to much debate. Although the absolute cost of communications services is dropping in South Africa,[85] the relative cost of communications services in South Africa compared to the cost of communications services in other countries remains high. Based on World Economic Forum data, ICASA highlights that South Africa was ranked 117th out of 140 countries in the world and 28th out of 32 African countries and 9th out of 12 SADC countries in terms of the affordability of mobile communications services in 2013 (ICASA, 2013f, 5).

The ITU ICT Price Basket (IPB) is a quantitative measurement of the prices of services (fixed telephone, mobile cellular and fixed broadband services) as a percentage of each country's average Gross National Income (GNI) per capita. This Basket provides insightful information on the cost and affordability of ICT services on

[85] For example, the cost of termination rates dropped 68% between 2010 and June 2013 (Goko & Mochiko, 2013, 4).

a comparative basis between countries globally. South Africa was ranked 70th internationally when the IPB Basket was first published in 2009 (ITU, 2009, 56) but slipped to 98th position by 2011 (ITU, 2012b, 77). The IPB metrics have remained relatively constant for South Africa despite an average 30% price decrease internationally in both developed and developing countries (ITU, 2012b, 71).

After several years or rising communications costs in South Africa relative to other markets, South Africa's standing has begun to improve in 2012. For example, South Africa's ranking in the Research in Africa (RIA) Pricing Transparency Index for prepaid mobile prices improved from 30th position in 2012 to 22nd place in 2013 (Gillwald, Moyo & Stork, 2012, i). Yet such research suggests that South Africa's communications costs continue to remain unacceptably high:

> . . . *the cheapest mobile prepaid product in South Africa is still nearly 7.5 times more expensive than the African continent's cheapest similar product, and still three times more expensive than the cheapest product available from a dominant operator in Africa* (Gillwald et al, 2012, i).

Despite absolute reductions in the cost of communications services in South Africa, therefore, no reasonable claim could be made that South Africa has truly addressed the affordability of communications services given pricing precedents in other (often less competitive but better regulated) African countries.[86]

As this overview shows, conditions in South Africa's communications market have fundamentally changed across the past two decades. The availability and accessibility of communications services have grown exponentially, due almost entirely to the proliferation of mobile communications services. While the affordability of communications services has decreased in absolute terms, the cost of such services relative to comparable costs in other markets remains high, suggesting that the affordability of communications services may represent a continuing barrier to the realisation of universal service and access to communications services in South Africa. Further consideration of the contributions of key market segments and market participants in delivering available, accessible and affordable communications services may provide insights into the likely role that such segments and participants may play in the acceleration or frustration of the realisation of universal service and access to communications services in South Africa in the years ahead.

---

[86] For further discussion of the pricing dynamics of South Africa's ICT market, see Gillwald et al, 2012.

## 4.3 MARKET SEGMENTS

South Africa is home to the largest, most developed and most advanced communications market in Africa (Africa & Middle East Telecom-Week, 2012, 1; InfoDev, 2012, 11; Comninos et al, 2010, 3; 20). Not surprisingly, this market is not a homogenous environment. Market conditions, including the availability, accessibility and affordability of communications services, are affected by different market segments and different players within each segment in different ways. As canvassed in Chapter 3, the *Electronic Communications Act* streamlined various licenses issued under previous legislation into three categories: Electronic Communications Network Services (ECNS) Licenses; Electronic Communications Services (ECS) Licenses; and Broadcasting Services Licenses. The transition from the historic licensing regime to the new licensing framework has been slow and cumbersome (Comninos et al, 3-16). Market conditions have been equally slow to reflect the realities and unlock the opportunities of the new licensing framework.

Companies holding Public Switched Telecommunication Services (PSTS) licenses, Mobile Cellular Telecommunication Services (MCTS) licenses and Private Telecommunication Network (PTN) licenses have transitioned into holding ECNS licenses with little effect on historical operations and new opportunities for expanded operations. Sentech Limited forfeited its Carrier of Carriers license while other companies providing carrier of carrier services have transitioned to the provision of such services under ECNS licenses as part of an expanding wholesale market segment. Companies providing multimedia services have transitioned to the provision of such services under ECS licenses. Companies holding Under Serviced Area licenses (USATN operators)[87] have either gone out of business or transitioned to activities under ECNS licenses and/or ECS licenses (Magcawas, 2013, 1). Two special purpose licenses appear to be dormant or to have fallen away.[88]

---

87 Supra, section 3.3.5.1 for discussion of the USAL licensing category and infra, sections 5.2.4 and 5.3.4 for discussion of the selection and performance of USATN operators.

88 Section 41(10) of the amended *Telecommunications Act* contemplated an education network subsequently called Edu-Net as a PTN while Section 41(11) of the same law contemplated a maritime and aeronautical radio services network as a PTN. No current information could be located for either of these entities.

As intended by the Government of South Africa, the *Electronic Communications Act* has enabled communications companies to expand the delivery of their services beyond the silos of services imposed by previous legislation. While the pace of such expansion has been slower than some expectations (Comninos et al, 2010, 3-16), South Africa's communications market now supports four key market segments with an increasing number of companies operating across such segments. Table 4.2 summarises key market segments and market players in South Africa's communications market in 2013:

**Table 4.2**
**Key market segments and market players in South Africa's communications market, 2013**

| Market segment | Key players |
|---|---|
| **Fixed line market** | Telkom SA Limited |
| | Neotel Proprietary Limited |
| **Mobile market** | Vodacom Proprietary Limited |
| | Mobile Telephone Network Proprietary Limited |
| | Cell C Proprietary Limited |
| | 8ta (Telkom SA Limited) |
| | Virgin Mobile South Africa Proprietary Limited |
| | Red Bull Mobile |
| **Infrastructure market** | Sentech Limited |
| | Telkom SA Limited |
| | Neotel Proprietary Limited |
| | Submarine cable companies |
| | SAT-3 |
| | SAFE |
| | SEACOM |
| | EASSy |
| | WAS |
| | Dark Fibre Africa Proprietary Limited |
| | Broadband Infraco Proprietary Limited |
| | FibreCo Telecommunications Proprietary Limited |
| | NLD Consortium |
| | Liquid Telecom Group |
| | Local government (numerous) |
| **VANS market** | Vodacom Proprietary Limited |
| | Mobile Telephone Network Proprietary Limited |
| | Neotel Proprietary Limited |
| | Cell C Proprietary Limited |
| | MWeb Connect Proprietary Limited |
| | Internet Solutions Proprietary Limited |
| | Vox Telecom Limited |
| | Numerous other players |

Source: Infra, sections 4.3.1 through 4.3.4.

Analyses of key characteristics of and major companies operating in each market segment may provide insights into commercial conditions that affected the success or failure of policies and programs which promoted the realisation of universal service and access to communications services in South Africa and may affect further implementation of such policies and programs in the years ahead.

### 4.3.1 Fixed line market

The fixed line market segment of South Africa's communications market represents the legacy of the Public Switched Telecommunication Services (PSTS) market[89] that operated in the country prior to introduction of the *Electronic Communications Act*. This market segment is in the midst of fundamental transition as fixed line operators convert their historically narrow role as providers of fixed line voice services into an expansive role as purveyors of a broad suite of fixed line services, particularly broadband services. Despite liberalisation of the market, the segment continues to suffer from a lack of robust competition between the two market players (Telkom and Neotel) who appear destined to play very different roles in South Africa's communications market in the years ahead.

#### 4.3.1.1 Segment characteristics

The fixed market segment is undergoing a radical realignment as Telkom and Neotel migrate away from providing voice services as a core product to providing a broad spectrum of communications services that include high speed broadband services and other value added data services that complement Plain Old Telephone Service (POTS).[90]

The number of fixed line voice subscribers is diminishing on an annual basis in South Africa. The number of Telkom fixed access lines steadily declined from 4.6 million in 2007 to 3.8 million in 2013, representing a compound loss rate of 3% per annum (McLeod, 2013b, 1; Telkom, 2012a, 34-35). The diminished availability and accessibility of fixed line voice services suggest that the fixed line voice market is not a key driver for further implementation of universal service to communications services in South Africa in the years ahead.

---

89 Supra, sections 3.2 and 3.3, particularly section 3.3.4.2.

90 For an overview of POTS, see Linux, 2005, 1.

At the same time, many fixed line voice subscribers are migrating to fixed line broadband communications services (Comninos et al, 2010, 21-29). There were around 850,000 Asynchronous Digital Subscriber Line (ADSL) connections out of a total of 3.5 million broadband connections in South Africa as of March 2012 (South Africa, Department of Communications, 2012a, 3). Indeed, fixed line broadband communications services have benefitted from a surge in capacity. The combination of investment in domestic broadband communications networks (fixed fibre optic cables and fixed wireless solutions) and completion or impending completion of several submarine communications cables[91] has dramatically increased the availability of communications bandwidth in major population centres in South Africa (Comninos et al, 2010, 17-19). As such, the increasing availability and accessibility of fixed broadband communications services may represent a key opportunity to expand the scope of universal service and access to communications services in the country.

According to the ITU IPB study, the costs of fixed voice telephony and fixed broadband communications services in South Africa are higher than the cost of mobile communications services in the country (ITU, 2012b, Chapter 3). Table 4.3 highlights the nature of such disparities:

**Table 4.3**
**South Africa ranking on ITU ICT price basket, 2008 to 2011**

| | | | Fixed | Mobile | Fixed broadband | |
|---|---|---|---|---|---|---|
| Year | Rank | Price basket values | % of GNI per capita | % of GNI per capita | % of GNI per capita | GNI per capita |
| 2008 | 70th | 4.2 | 4.7% | 2.6% | 5.5% | USD 5,760 |
| 2009 | 89th | 4.2 | 4.5% | 2.6% | 5.5% | USD 5,820 |
| 2010 | 99th | 5.0 | 4.9% | 4.6% | 5.7% | USD 5,760 |
| 2011 | 98th | 4.8 | 4.6% | 4.4% | 5.4% | USD 6,090 |

Source: ITU, 2012b, 77; 2011b, 31; 2010a, 58; 2009, Chapter 6.

As such, the relatively high prices of fixed line communications services in South Africa likely represent a continued obstacle to the implementation of universal service and access to such services in South Africa.

[91] Infra, section 4.3.3.2.3.

#### 4.3.1.2 Segment players

The fixed line segment of South Africa's communications market functions as a duopoly comprised of two licensed Electronic Communications Network Services (ECNS) operators. Telkom lost its monopoly over the provision of fixed line communications services in 2002 but continues to enjoy market hegemony in the fixed line segment (voice and broadband services). Neotel entered the market in 2005 but has struggled to erode Telkom's hegemony. Both companies face uncertain futures, albeit for different reasons.[92]

##### 4.3.1.2.1 Telkom SA Limited

In the past 55 years, Telkom SA Limited metamorphosed from a division of the Department of Posts and Telecommunications of the Government of South Africa into a partially privatised, dysfunctional State Controlled Enterprise (SCE) that may soon be reclaimed as a public enterprise by the Government. Along the way, Telkom lost its pre-eminent position as the sole provider of communications services to South Africans. It now struggles to define its precise role in South Africa's more complex and commercially competitive communications market.

Between 1958 and 1991, phone service was provided in South Africa by the Department of Posts and Telecommunications on a monopoly basis under the auspices of the Postmaster General duly empowered by the *Post Office Act*.[93] The Department of Posts and Telecommunications was not particularly adept at providing such services, even under monopoly conditions. By the late 1980s, the provision of communications services in South Africa lagged behind international standards, relying on increasingly antiquated technology and suffering from poor service delivery standards largely attributable to the Government's lack of capital and lack of access to technology due to international sanctions (Horwitz, 2001, Chapter 2). As a result of these pressures and various regulatory concerns,[94] the Government

---

92 Infra, this section 4.3.1.2.1 and section 4.3.1.2.2.

93 Supra, section 3.2.1.

94 Supra, section 3.2.2.

of South Africa followed prevailing public policy precedents in other countries[95] and transferred that part of the Department of Posts and Telecommunications which delivered communications services to a newly created crown corporation called Telkom SA Limited (South Africa, 1991).[96]

This new arrangement did not disturb the Government's *de facto* monopoly over provision of communications services in South Africa. Telkom more or less acquired the service provision powers and certain other powers accorded to the Postmaster General by section 78(1) of the *Post Office Act* under the amended legislation (South Africa, 1991).[97] The licensing of two mobile communications network operators in October 1993 (South Africa, 1993b) largely did not disturb Telkom's dominant market position, particularly given its continued monopoly over the provision of public switched telecommunications services, its ability to license by contract the business of any private telephone network and its substantial ownership in one of the two mobile communications network operators. The practical effect of such legislation (South Africa, 1991) was simply to transfer the Government of South Africa's monopoly off balance sheet from a Government department to a state owned enterprise (SOE).

The election of the first majority-rule Government of South Africa heralded an end to this monopoly. Leveraging authorities provided by the new *Telecommunications Act*, the Government of South Africa partially privatised Telkom through the sale of a 30% shareholding to Thintana Communications LLC (Thintana), a special purpose company representing SBC Communications Limited and Telekom Malaysia Berhad that included certain special rights attached to a Class B Share which gave such shareholders greater influence over Telkom's business (Telkom, 2005a, 1). As part of this sale, the parties also signed a Strategic Services Agreement which vested operational and managerial control over Telkom as well as the right to make certain appointments to Telkom's operating committee and Board of Directors to Thintana until May 2007, subject to certain conditions (Telkom, 2005a, 1).

---

95 Supra, note 52.

96 Supra, section 3.2.2.

97 The monopoly enjoyed by the Department of Posts and Telecommunications generally continued with Telkom except for provision of MCTS and a few other areas which remained within the purview of the Department of Posts and Telecommunications (South Africa, 1996c). As a corporation, Telkom effectively licensed third parties by way of contract.

Telkom subsequently became a public company. On 7 March 2003, the Government sold a 20% shareholding in Telkom to public investors through an Initial Public Offering (IPO) of shares on the Johannesburg Stock Exchange (JSE) (ticker symbol TKG) and listing of American Depositary Receipts (ADRs) on the New York Stock Exchange, Inc. (NYSE) (Telkom, 2005b, 1). The Government subsequently sold another 7.7% of Telkom shares into the market following this IPO (Telkom, 2005b, 1). As part of this process, Telkom sold over 100,000 shares to South African retail investors, including a substantial number of historically disadvantaged individuals through incentive and discounted share offerings (Telkom, 2005a, 1). Thintana subsequently sold 14.9% of its 30% Telkom interest to institutional investors through a private placement in June 2004 (Bonorchis, 2004a, 1; Masango, 2004a, 15). It sold its remaining 15.1% interest to the Public Investment Corporation SOC Limited (PIC), the Government of South Africa's state pension fund administration, in November 2004 (Masango, 2005, 1; Rose, 2005, 1).

By 2012, Telkom's shareholding was divided between public shareholders (58.3%) and non-public shareholders (41.7%). Major public shareholders included the PIC which held 10.5% of Telkom's shares, Allan Gray Proprietary Limited (asset managers) which held 5.4% of Telkom's shares and Investment Solutions Limited (asset managers) which held 2.1% of Telkom's shares. Non-public shareholders consisted of the Government of South Africa (39.8%) and Telkom treasury stock 2.0% (Telkom, 2012a, 6).

Telkom holds an Electronic Communications Network Services (ECNS) License and an Electronic Communications Services (ECS) License issued by ICASA in 2009 (ICASA, 2013a, 1) pursuant to the *Electronic Communications Act*. These Licenses grandfathered three franchises previously held by Telkom (which grandfathered entitlements that existed under earlier laws):

- Pursuant to section 36(1)(a) of the historic *Telecommunications Act*, Telkom held a Public Switched Telecommunication Service (PSTS) License for a renewable 25 year period commencing 7 May 1997 (South Africa, 1997a).

- Pursuant to section 40(1)(a) of the historic *Telecommunications Act*, Telkom held a Value Added Network Services (VANS) License for a renewable 25 year period effective 7 May 1997 (South Africa, 1997a).

- Pursuant to section 30(3)(a) of the historic *Telecommunications Act*, Telkom held a Radio Frequency Spectrum License for a renewable 25 year period effective 7 May 1997 (South Africa, 1997a).

While Telkom operates in nine different countries across Africa, its core market is South Africa which contributed 98.9% of revenues in 2012. Telkom has three main business units: the fixed line business (business division and residential division); the mobile business; and the international business. Telkom also holds interests in ancillary businesses involved in directory services, data services, data centres and corporate centres (Telkom, 2013a, 1; 2013b, 1; 2012a, 7, 22).

Telkom's business division provides a wide range of services to approximately 330,000 registered businesses in South Africa, including voice services, data network services, hosting and cloud services, broadband and Internet services, global services, convergence services and equipment and device sales. Telkom's residential division provides services to customer in their homes using Telkom's national fixed line network and mobile consumer brand. The services are a subset of the business portfolio and include voice services (calling plans and phones), broadband and Internet services, convergence services and equipment and device sales. Telkom's mobile business was launched in October 2010 and provides GSM and 3G/HSPA services over its own network and through roaming on the MTN network. The services were initially branded as 8ta but subsequently consolidated under the Telkom Business Mobile brand (Telkom, 2012a, 1; 2012b, 1).

Through section 36(3) of Telkom's Public Switched Telecommunication Services (PSTS) License, the Government of South Africa granted Telkom a five year exclusivity period to 2002 to prepare for the advent of competition, subject to a one year extension under certain conditions (South Africa, 1997a). In consideration of this exclusivity period, Telkom was

required to satisfy various performance obligations (including certain universal service requirements) or pay financial penalties (Telkom, 2004b, 1; 2004c, 1; South Africa, 1997a).

In the decade after these Government-imposed performance requirements, Telkom invested significantly to expand the availability and accessibility of communications services in South Africa. Telkom invested approximately USD 4.8 billion in capital expenditures between 2005 and 2012, including significant investment in the construction of its Next Generation Network (NGN) (Telkom, 2007, 24). It is an anchor investor in Afrolinque, the Southern Africa-Western Africa and South Africa-Far East submarine cable (SAT-3) spanning the length of the Atlantic Ocean along the western coast of Africa around South Africa and across the Indian Ocean to India and Malaysia (Telkom, 2002a, 1). The SAT-3 cable link uses Dense Wave Division Multiplexing (DWDM) which offers substantial opportunities to expand bandwidth capacity (Telkom, 2002a, 1). In August 2002, Telkom introduced ADSL service in key urban centres for its IP network which dramatically increased the ability of its networks to carry high speed data transmissions (Telkom, 2002b, 1).

Telkom stands at a crossroads in 2013. It sold its shareholding in Vodacom Proprietary Limited in 2008 to overcome provisions of a shareholders' agreement which restrained its ability to expand more aggressively into mobile markets in Africa (Mail & Guardian, 2009, 1). Yet its subsequent foray into Africa has been an unmitigated disaster.[98] Domestically, its mobile brand (8ta) collapsed after posting substantial losses (Speckman, 2013a, 1). Telkom admits that its mobile offering is not viable as a stand-alone business and appears to be on the brink of selling its mobile platform to MTN (McLeod, 2013a, 1). Telkom now admits that its decision to sell its Vodacom stake was '*one of the company's biggest mistakes'* (McLeod, 2013a, 1).

[98] Telkom bought 75% of Multi-Links Telecommunications Limited, a mobile operator based in Nigeria, for ZAR 1.96 billion in May 2007 and subsequently bought the remaining 25% shares for ZAR 1.224 billion in 2008 for a total investment of ZAR 3.18 billion. It subsequently sold the company for a ZAR 1 billion net loss in 2011. It has shelved any further plans to expand into Africa (Mawson, 2013b, 1).

Telkom is haemorrhaging fixed line subscribers (McLeod, 2013b, 1; Muller, 2013, 1). Its share price reached an all-time low in March 2013 (Mawson, 2013a, 1; Sharenet, 2013, 1) following a steep fall in June 2012 when talks to sell a 20% stake in Telkom to Korea's KT Corporation for approximately USD 400 million collapsed after the Government of South Africa expressed reservations with the transaction (Sharenet, 2013, 1; IT Web, 2012a, 1). A revolving door in the boardroom and executive suite has undermined stability, continuity, strategy and business performance (Mawson, 2013b, 1).

The Department of Communications was tasked with the presentation of a turnaround strategy for Telkom to Cabinet by September 2012. The delivery of this strategy has been delayed indefinitely (Mawson, 2013a, 1). Telkom installed a new management team in 2013 which launched a strategic review to identify potential options for the company (Mosote, 2013, 4; Weavind, 2013, 4). Given Telkom's ordeal in the past five years, however, the future of Telkom remains uncertain.

#### 4.3.1.2.2 Neotel Proprietary Limited

On 9 December 2005, the Second Network Operator was issued with a Public Switched Telecommunication Services (PSTS) License by the Government of South Africa to compete against Telkom (ICASA, 2005d). The arrival of this competitor represented the culmination of over four years of efforts by the Government of South Africa to break Telkom's statutory and subsequent *de facto* monopoly in the PSTS segment of the domestic communications market.

The SNO was subsequently christened Neotel Proprietary Limited. Videsh Sancharm Nigam Limited (subsequently renamed Tata Communications in 2007), the telecommunications business of the Tata Group of India (Economic Times, 2007, 1), was the anointed strategic partner and held 26% of Neotel's shares. The state owned enterprises of Transtel Communications Limited and Eskom Telecommunications combined to own 30% of Neotel's shares while a BEE partner called Nexus Communications Proprietary Limited held 19% of Neotel's shares. Two consortia involved in the bid process (CommuniTel and Two Telecom Consortium) were each allocated 12.5% of Neotel's shares (BMI TechKnowledge 2011b, 6). Tata

Communications subsequently acquired the interests of the state owned enterprises and Two Telecom Consortium to hold 68.5% of Neotel and make Neotel a direct subsidiary of Tata Communications (Dutta, 2011, 1; Economic Times, 2009, 1).

Neotel launched commercial operations in 2008 (Comninos et al, 2010, 21). Neotel provides fixed wireless CDMA and WiMax services (Comninos et al, 2010, 21) under a range of product offerings (Neotel, 2014, 1). Neotel had 100,000 consumer customers as of March 2012 (Odendaal, 2012, 1). Its 2,400 business customers, however, account for 90% of revenues (Odendaal, 2012, 1).

Neotel has invested heavily in its own fibre optic networks. By April 2008, the company had deployed over 12,000 km of fibre optic cables and established the foundation of its Next Generation Network (Van der Merwe, 2008, 1). Neotel is also a member of the NLD Consortium which is building a 5,000 km national fibre optic network.[99]

Along with proprietary infrastructure, Neotel relies on sharing agreements with other communications service providers to deliver its services. Neotel established a Right of Use (ROU) relationship with Broadband Infraco Proprietary Limited which enabled Neotel to provide national transmission services through Broadband Infraco's network. This arrangement was renewed in a new five year agreement in August 2012 (South Africa, 2012d, 1). Neotel also established relationships which gave Neotel access to South Africa's local loop and undersea cable connections (Mwanza, 2005, 76) to enhance its national delivery platform.

Despite the growth of its infrastructure capabilities and customer base, Neotel does not appear to have generated any material impact on universal service in South Africa. Most of Neotel's customers appear to represent urban users resident in areas already serviced by other operators, which suggests negligible impact on the availability and accessibility of communications services in South Africa. According to Dobek Pater,

---

[99] Infra, section 4.3.3.5.

analyst at Africa Analysis: *'In terms of the SA Government's vision for an SNO, this is coming very short of what the Government would like to see – a greater choice for all, or at least majority of consumer users – of telecoms services*' (Mawson & Tubbs, 2012, 23).

At the same time, Neotel may have contributed or might yet contribute to an increased affordability of communications services if its products and services undercut established Telkom prices. Empirical evidence suggests that such savings have yet to materialise (Comninos et al, 2010, 22).

Like Telkom, Neotel's future remains uncertain. Vodacom has reportedly made a ZAR 5 billion offer to acquire Neotel, although commercial terms remain unknown (Mochiko & Vecchiatto, 2013, 13). If concluded, the combination of Neotel with Vodacom would bring an end to the Government of South Africa's much vaunted plan for a Second Network Operator to an abrupt end within nine years of its inception.

### 4.3.2 Mobile market

The mobile market segment of South Africa's communications market represents the legacy of the Mobile Cellular Telecommunication Services (MCTS) market[100] that operated in South Africa prior to introduction of the *Electronic Communications Act.* This market segment was virtually non-existent in 1993. It has, however, grown rapidly over the past two decades to become the dominant segment of South Africa's communications market by number of subscribers and amount of revenues (Comninos et al, 2010, 24-29).

The mobile segment of South Africa's communications market remains a robust market dominated by two operators (Vodacom and MTN). Two minor operators (Cell C Proprietary Limited and 8ta/Telkom Mobile) and two marginal Mobile Virtual Network Operators (MVNOs)[101] round out market participants. Key players are expected to confront several challenges from the impending saturation of demand for voice services, but their newfound ability to offer a wide range of complementary products such as mobile broadband services and other value added solutions in the

---

[100] Supra, sections 3.3.4 and 3.3.4.2.

[101] A MVNO is '*a cell phone carrier . . . that typically does not have its own network infrastructure and licensed radio spectrum. Instead, a smaller MVNO has a business relationship with a larger mobile network operator (MNO). An* [sic] *MVNO pays wholesale fees for minutes and then sells the minutes at retail prices under its own brand'* (Fendelman, 2013, 1).

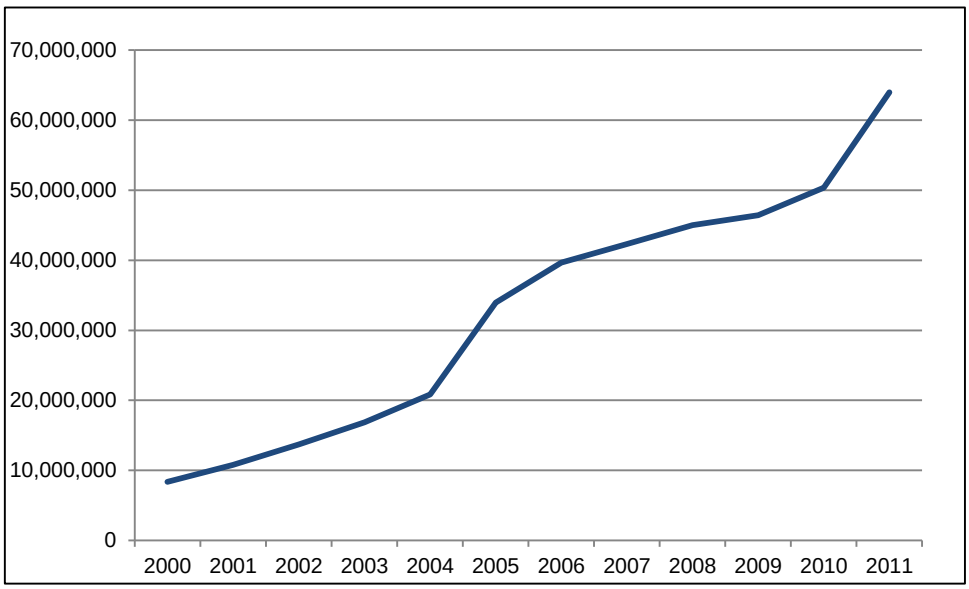
converged commercial environment of South Africa's communications market facilitated by the *Electronic Communications Act* is expected to sustain strong segment growth into the medium term.

#### 4.3.2.1 Segment characteristics

As with the fixed line market segment of South Africa's communications market, the mobile market segment is diversifying away from its traditional focus on the provision of voice services. The addition of a broad spectrum of communications services that includes high speed mobile broadband services and other Over the Top (OTT) services that complement traditional mobile voice services auger well for the future revenue streams of mobile market operators (Buthelezi, 2013b, 21; Goldstuck, 2013a, 12). The impending arrival of Long Term Evolution (LTE) services may enable mobile operators to offer high speed mobile data services comparable to fixed line broadband services (Speckman, 2013b, 20).

Figure 4.1 illustrates the number of mobile market subscriptions and growth of such subscriptions in South Africa between 2000 and 2011 through a multivariate graphical display:

**Figure 4.1**
**South Africa mobile telephony subscriptions, 2000 to 2011**




Source: ITU, 2013a, 1.

As Figure 4.1 shows, the number of mobile voice subscribers in South Africa has grown from 10.8 million in 2001 to 64 million in 2011, a 20.4% compound annual growth rate (ITU, 2013a, 1). Introduction of the *Regulation of Interception of Communications and Provision of Communication-Related Information Act, Number 70 of 2002* (South Africa, 2002b) slowed growth between 2007 and 2010 and required operators to restate subscriber numbers to comply with this legislation (Vodacom, 2010, 3).

Mobile voice communications services continue to represent the principal means through which South Africans communicate with each other. As shown earlier, mobile communications services are available and accessible to the majority of South Africans in the majority of South Africa. Growth in the breadth and depth of mobile teledensity over the past two decades (and decline in fixed line voice teledensity) confirm mobile communications services as the principal means through which universal service to communications services has been realised in South Africa in this period. Yet such penetration patterns also suggest that mobile communications services may not represent the ideal means to deliver universal service to the pockets of people and places remaining without communications services absent specific Government policies or programs that incentivise market participants to provide such services to these constituencies.

Mobile broadband services are expanding rapidly in South Africa. As of March 2012, there were approximately 3.5 million broadband subscribers in South Africa with over 2.5 million (69%) of such subscribers using 3G/HSPA mobile broadband connections (South Africa, Department of Communications, 2012a, 3). Most South Africans access the Internet through their mobile phones: '*Internet access via mobile devices comprised 89% of the* [I]*nternet access market and 81% of its revenues in 2012'* (Mochiko, 2013a, 14).

As with the fixed line segment of South Africa's communications market, the mobile segment has benefitted from a surge in capacity driven by domestic infrastructure investment and completion of undersea communications cables. Mobile operators are taking advantage of the availability of such last mile connectivity by rolling out Long Term Evolution (LTE) connectivity, with Vodacom launching the country's first LTE services in urban areas in December 2012 (IT Web, 2012b, 1). As with fixed broadband services, the

increasing availability and accessibility of mobile broadband services may represent a key opportunity to accelerate the delivery of universal service to communications services in South Africa. Given that prices paid for broadband communications services in South Africa continue to rank well above international norms,[102] however, the relatively high costs of mobile communications services are likely to constitute a continued obstacle to the implementation of universal service in South Africa.

#### 4.3.2.2 Segment players

The mobile segment of South Africa's communications market is an oligopoly comprised of four licensed Electronic Communications Network Services (ECNS) operators and two virtual mobile operators. Vodacom and MTN dominate the market and held approximately 52% and 33% market share, respectively, in 2012. Cell C held approximately 14% market share and 8ta (Telkom Mobile) held approximately 1% market share in 2012 (BusinessTech, 2013a, 1).

##### 4.3.2.2.1 Vodacom Proprietary Limited

Vodafone Group plc (Vodafone) is a London Stock Exchange listed company (ticker symbol VOD). It is one of the world's largest mobile phone companies with a widely held shareholder base (Vodafone, 2012, 3, 15). Vodafone owns Vodafone Holdings SA Proprietary Limited which owns 65% of shares of Vodacom Group Limited (Vodacom, 2012a, 106).

Telkom historically held a 50% interest in Vodacom but Vodafone increased its Vodacom shareholding to 50% with the acquisition of 15% of Telkom's shares from private equity firm Venfin Limited in 2007 (BMI TechKnowledge, 2011b, 1). Vodacom subsequently acquired an additional 15% of Vodacom's shares from Telkom in 2008 (BMI TechKnowledge, 2011b, 1) to reach its current 65% shareholding level. Telkom sold its remaining 35% shares into the market upon Vodacom's listing on the JSE in 2009 (BMI TechKnowledge, 2011b, 2). Among the free float, the Government of South

[102] See Table 4.3.

Africa holds 13.9% of Vodacom's shares. The balance of Vodacom's shares is predominately held by institutional investors including the PIC with 3.6% of Vodacom's shares (Vodacom, 2012a, 106).

Vodacom received one of the first two licenses initially awarded by the Government of South Africa to own and operate a mobile telecommunications network in the country. A National Cellular Telecommunications Service License was issued to Vodacom by the Postmaster General on 29 October 1993 (South Africa, 1993b) following a closed tender process conducted pursuant to his statutory authority under the *Post Office Act*. A Multiparty Implementation Agreement (MPIA) concluded on 30 September 1993 and gazetted on 29 October 1993 also imposed certain conditions on Vodacom, Telkom, MTN, the Postmaster General and the Government of South Africa represented by the Minister of Posts and Telecommunications (South Africa, 1993b).

The MPIA compensated for oversights in prevailing legislation (South Africa, 1958) by granting the Postmaster General certain powers to regulate the relationship between Telkom and Vodacom, including interconnection issues such as Telkom's provision of transmission infrastructure to Vodacom (South Africa, 1993b). Vodacom paid ZAR 100 million for its License and was required to pay 5% of its net operating revenues, based on a certain formula, as an annual licensing Fee (ICASA, 2002a). Vodacom was also obligated to pay a radio frequency spectrum license fee (ICASA, 2002a).

Following promulgation of the *Telecommunications Act,* Vodacom acquired two licenses which essentially transferred its previous entitlements into licenses accountable under the new legislative framework. Pursuant to section 37(1) of the *Telecommunications Act*, Vodacom obtained a Mobile Cellular Telecommunication Services (MCTS) License from ICASA to provide MCTS for a 15 year renewable period backdated to 29 October 1993 (ICASA 2004l). Pursuant to section 30 of this *Act*, Vodacom was deemed to hold a Radio License that included a Frequency Spectrum License which provided access to the 900 MHz spectrum for a 15 year renewable period backdated to 29 October 1993 (ICASA, 2004l).

Vodacom subsequently acquired access to additional radio frequency spectrum through two additional Frequency Spectrum Licenses incorporated into its amended Radio License (ICASA, 2004g). Pursuant to sections 3, 30, 37(1) and 48 of the amended *Telecommunications Act*, Vodacom obtained access to 3G spectrum through a Frequency Spectrum License issued by ICASA on 16 September 2004 (ICASA, 2004h) and 1800 MHz spectrum through a Frequency Spectrum License issued by ICASA on 29 October 2004 (ICASA, 2004i). On 16 January 2009, ICASA issued Vodacom with an individual Electronic Communications Services (ECS) License for a 15 year period and an individual Electronic Communications Network Services (ECNS) License for a 20 year period (Vodacom, 2010, 21) that consolidated its previous licenses in a manner consistent with the requirements of the *Electronic Communications Act.*

Vodacom was the first mobile operator in South Africa. Telkom had experimented with the provision of mobile telephony services in 1986 through the launch of the C450 analog communications platform developed by Siemens Telecommunications Proprietary Limited, the South African subsidiary of Siemens AG of Germany (MTN, 1997, 37; Cellular Online, 1999, 2). The delivery of this mobile communications service apparently fell within the scope of Telkom's monopoly over the provision of Public Switched Telecommunication Services (PSTS) in South Africa granted by the *Post Office Act,* as such service did not apparently warrant any separate license. The C450 network had a capacity of about 15,000 subscribers but industry sources estimate that it attracted about 12,000 subscribers by 1995 (MTN, 1997, 37). Vodacom acquired the C450 system in 1994 and subsequently migrated C450 subscribers onto its digital platform.

Through its licences, Vodacom provides a full range of GSM communications services including voice and data services, information services, emergency services, messaging services and operator-assisted services. In addition to providing services on its own network, Vodacom offers international and national roaming services to its subscribers (Vodacom, 2012a, 20). Vodacom launched 3G operations in 2004 which included Blackberry, an integrated wireless communications and personal data management resource (Vodacom, 2004a, 4). Vodacom signed the Vodafone Alliance Partner agreement in 2004 which enabled customers to access the Vodafone Live! offering (Vodacom, 2004a, 4).

Vodacom offers mobile voice services across the country with a portfolio of contract and prepaid plans. These are serviced through various distribution and service partners. Value added features offered include mobile banking (m-pesa), 'please call me' requests, the Vodacom4Less incentive scheme, international roaming and an applications store. Vodacom also has an enterprise-focused division branded Vodacom Business which provides voice and data services to a wide range of businesses, including specialised markets such as mHealth (for healthcare providers), machine-to-machine (telemetry), eEducation (a cloud based approach to solving education challenges) and unified communications and enterprise mobility (Vodacom, 2013a, 1; 2013b, 1; 2013c, 1).

Vodacom delivers of suite of communications-related services through various subsidiaries in South Africa. These subsidiaries are principally proprietary service providers, including the Vodacom Service Provider Company Proprietary Limited, Smartphone SP Proprietary Limited and Smartcall Proprietary Limited (Vodacom, 2005a, 1; 2005b, 1). Beyond South Africa, Vodacom International Holdings Proprietary Limited (Vodacom International) operates mobile networks in Tanzania, the Democratic Republic of Congo, Mozambique and Lesotho as well as the operations of Vodacom International Limited, Vodacom Business Africa and Gateway Carrier Services (Vodacom, 2012a, 22).

Vodacom is South Africa's largest mobile communications network as measured by the number of subscribers. As of 31 March 2012, Vodacom supported 28.9 million subscribers in South Africa, including 23.3 million prepaid customers (Vodacom, 2012a, 22). Vodacom's network reached more than 99% of South Africa's population (Vodacom, 2012a, 26) through 8,394 base transceiver stations (Vodacom, 2010, 136).

#### 4.3.2.2.2 MTN Group Limited

MTN Group Limited is a JSE listed (ticker symbol MTN) pan-African cellular communications services company. MTN Group is a widely held company. As of 31 December 2012, 68% of MTN Group shares were held by public shareholders with 16.9% owned by the PIC and approximately 13.7% held for the benefit of MTN employees (MTN, 2012a, 211; 2011, 44). MTN Group

Limited wholly owns Mobile Telephone Network Proprietary Limited which holds various licenses to conduct business in South Africa's communications market.

MTN received one of the first two licenses initially awarded by the Government of South Africa to own and operate a mobile telecommunications network in South Africa. A National Cellular Telecommunications Service License was issued to MTN by the Postmaster General on 29 October 1993 (South Africa, 1993b) following a closed tender process conducted pursuant to his statutory authority under the *Post Office Act*. MTN was also a party to the MPIA.[103] The MPIA, concluded on 30 September 1993 and gazetted on 29 October 1993, imposed certain conditions on MTN, Vodacom, Telkom, the Postmaster General and the Government of South Africa represented by the Minister of Posts and Telecommunications (South Africa, 1993b). MTN paid ZAR 100 million for its License and was required to pay 5% of its net operating revenues, based on a certain formula, as an annual licensing fee (ICASA, 2002b). MTN was also obligated to pay a radio frequency spectrum fee (ICASA, 2002b).

Following promulgation of the *Telecommunications Act*, MTN acquired two licenses which essentially transferred its previous entitlements into licenses accountable under the new legislative framework. Pursuant to section 37(1) of the *Telecommunications Act*, MTN obtained a Mobile Cellular Telecommunication Services (MCTS) License from ICASA to provide MCTS for a 15 year renewable period backdated to 29 October 1993 (ICASA 2004k). Pursuant to section 30 of the *Telecommunications Act*, MTN was deemed to hold a Radio License that included a Frequency Spectrum License which provided access to the 900 MHz spectrum for a 15 year renewable period backdated to 29 October 1993 (ICASA, 2004l).

MTN subsequently acquired access to additional radio frequency spectrum through two additional Frequency Spectrum Licenses incorporated into its amended Radio License (ICASA, 2004g). Pursuant to sections 3, 30, 37(1) and 48 of the amended *Telecommunications Act*, MTN obtained access to

---

[103] Supra, section 4.3.2.2.1.

1800 MHz spectrum through a Frequency Spectrum License issued by ICASA on 29 October 2004 (ICASA, 2004j) and 3G spectrum through a Frequency Spectrum License issued by ICASA on 2 February 2005 (ICASA, 2005e). On 15 January 2009, ICASA issued MTN with an individual Electronic Communications Services (ECS) License for a 15 year period and an individual Electronic Communications Network Services (ECNS) License for a 20 year period (ICASA, 2011b) that consolidated its previous licenses in a manner consistent with the requirements of the *Electronic Communications Act*. ICASA also issued MTN with five Radio Spectrum Frequency Licences on 30 September 2009 (ICASA, 2010).

MTN provides a full range of GSM communications services including voice and data services, information services, emergency services, messaging services and operator-assisted services (MTN, 2012a, 17). MTN also offers international and national roaming services to its subscribers. MTN completed roll out of its Enhanced Data Rates for GSM Evolution (EDGE) platform in 2005 (MTN, 2012a, 17) and launched 3G services in 2005 (MTN, 2004, 19). By November 2004, MTN launched MTN Loaded, an application service provider delivering content and access to web information through mobile phones, and introduced Blackberry as a personal data management resource (MTN, 2004, 6, 15).

MTN delivers its suite of communications-related services through various subsidiaries in South Africa. MTN's principal subsidiary is MTN Service Provider Proprietary Limited. MTN also owns 100% of another service provider called iTalk Cellular Proprietary Limited. Strategic investments include a 100% interest in MTN Network Solutions Proprietary Limited which is VANS provider of managed data services to the corporate market (MTN, 2012a, 212-213).

Beyond South Africa, MTN has business investments across 22 markets in the Middle East and Africa (MTN, 2012a, 2, 18, 75). It owns operating companies in Nigeria, Iran, Ghana, Cameroon, Côte D'Ivoire, Uganda, Syria and Sudan (MTN, 2012a, 46-47). In July 2006, MTN International (Mauritius) Limited acquired Lebanon based Investcom LLC which owned mobile operations in Benin, Cyprus, Ghana, Guinea Bissau, Liberia, Sudan, Syria, Yemen, Afghanistan and Guinea Republic (MTN, 2006a, 1).

MTN is South Africa's second largest mobile communications network as measured by the number of subscribers. As of 31 December 2012, MTN served 25.4 million subscribers, including 20.3 million prepaid customers who collectively represent about a 33% market share of South Africa's mobile communications subscribers (MTN, 2012a, 65). MTN's network reaches 98.6% of South Africa's population (MTN, 2012a, 49) through 6,514 2G sites and 2,873 3G sites (MTN, 2011, 47).

Beyond South Africa, MTN is Africa's largest mobile communications network operator (MTN, 2012a, 2). Consistent with its vision '*to be the leader in telecommunications in developing markets*' (MTN, 2004, 5), its business operations are increasingly focused on foreign territories in Africa and the Middle East. As of 31 March 2012, MTN served nearly 164 million subscribers beyond South Africa which placed total group subscriber levels above 189 million customers (MTN, 2012a, 2). Nearly 70% of MTN Group revenues in 2012 were earned from operations outside of South Africa, particularly Nigeria (29%) and Iran (9%) (MTN, 2012a, 4-5).

#### 4.3.2.2.3 Cell C Proprietary Limited

Cell C Proprietary Limited is a privately held company owned wholly by 3C Telecommunications Proprietary Limited (3C). As of 31 December 2012, 3C was majority (75%) owned by Oger Telecom (South Africa) Proprietary Limited, a subsidiary of Oger Telecom (South Africa) Holding Limited, a Bermuda registered private company owned, at least in the majority, by Saudi Oger Limited of Saudi Arabia (ICASA, 2013a, 1). CellSaf Proprietary Limited, a broad-based black empowerment company, holds the balance of 3C shares (Cell C, 2013, 1).

After resolution of a protracted tender process and subsequent legal challenges (Cellular News, 2001, 1; Cellular Online, 2001, 1-3), Cell C initially obtained two licenses and became the third MCTN operator to reach market in South Africa. Pursuant to section 37(1) of the *Telecommunications Act*, Cell C obtained a Mobile Cellular Telecommunication Services (MCTS) License from ICASA to provide MCTS for a 15 year renewable period effective 29 June 2001 (ICASA, 2001).

Pursuant to section 30 of the *Telecommunications Act*, Cell C was deemed to hold a Radio License that included a Frequency Spectrum License which provided access to the 900 MHz spectrum outside of the three metropolitan areas of Johannesburg, Cape Town and Durban and 1800 MHz spectrum on a national basis for a 15 year renewable period commencing 29 June 2001 (ICASA, 2001). Through these arrangements, Cell C became the first MCTS operator to simultaneously offer national GSM 1800 services and dual band services in South Africa.

Cell C paid ZAR 100 million for its MCTS License and was required to pay 1% of its annual revenues, based on a certain formula with permitted deductions, as an annual licensing fee (ICASA, 2001). Cell C was also obligated to pay a fee for receipt of its Frequency Spectrum License (ICASA, 2001). Cell C subsequently acquired access to additional radio frequency spectrum by amendment to its original Radio License (ICASA, 2005g; 2004g). Pursuant to sections 3, 30, 37(1) and 48 of the amended *Telecommunications Act*, Cell C obtained access to 3G spectrum through a Frequency Spectrum License issued by ICASA (ICASA, 2011; 2005g). In January 2012, ICASA issued Cell C with an individual Electronic Communications Services (ECS) License and an individual Electronic Communications Network Services (ECNS) License (ICASA, 2013a) that consolidated its previous licenses in a manner consistent with the requirements of the *Electronic Communications Act*.

Cell C's service offering is based on delivering GSM voice services as well as 3G, HSPA and HSPA+ data services. Cell C commenced an aggressive roll out of HSPA+ technology in 2010 (Cell C, 2010a, 1) and continues to roll out base stations in 2012 (MyBroadband, 2013a, 1). Cell C's national network now covers 97% of South Africa's population, with 3G and HSPA services available to 79% of the population (Cell C, 2013, 1).

Through its licences, Cell C provides a full range of voice and data services, information services, emergency services, messaging services and operator-assisted services (Cell C, 2013, 1). Cell C launched a multimedia messaging service in December 2004 (Cell C, 2004, 1) and has offered GPRS services since 2005 (Masango, 2004b, 1). In addition to providing services on its own network, Cell C offers international and national roaming services to its subscribers (Cell C, 2013, 1). Within South Africa, Cell C provides a suite of

communications-related services, principally through the Cell C Service Provider Company Proprietary Limited and a real estate holding company (Cell C, 2005, 3). Cell C focuses exclusively on the South African market, although Saudi Oger maintains other communication interests in the Middle East (Saudi Oger, 2013, 1).

Cell C has been at the vanguard of infrastructure management in South Africa's communications market. In June 2002, Cell C signed a roaming agreement with Vodacom which allows Cell C customers to roam on Vodacom's network (Brait, 2004, 3), thereby enabling Cell C to reach 95% of South Africa's population (Vodacom, 2005a, 1). The terms of this roaming agreement were revisited in April 2004 to Cell C's benefit and allow Cell C customers to roam on Vodacom's network for the remainder of its license period (Brait, 2004, 3). As part of a broader corporate reorganisation, Cell C subsequently sold its passive communications infrastructure to American Towers Corporation (ATC) for USD 430 million in November 2010 (Cell C, 2010b, 1; TechCentral, 2010, 1). Through this transaction, Cell C became the first South African mobile operator to outsource its passive communications infrastructure.[104]

Cell C is South Africa's third largest mobile operator as measured by the number of subscribers. As of April 2013, Cell C served 10 million subscribers who represent an approximately 14% market share of mobile communications subscribers in South Africa's communications market (MyBroadband, 2013a, 1). As of April 2013, Cell C's network comprised over 4,000 base transceiver stations (MyBroadband, 2013a, 1). Cell C expects to launch South Africa's first mobile virtual network enabler (MVNE)[105] in March 2014 through Mirage Telecom Proprietary Limited using software supplied by Comverse (McLeod, 2013c, 1).

Cell C's future as a stand-alone business remains uncertain in 2013. The Company's CEO has admitted that Cell C is engaged in '*exploratory talks'* to partner with other market participants in South Africa's communications

---

[104] MTN has entered into similar arrangements outside of South Africa in countries such as Côte d'Ivoire, Cameroon and Ghana (ECP, 2012, 1; Guide, 2011, 1).

[105] A MVNE is '*an organization that provides business infrastructure solutions to mobile virtual network operators (MVNO). Services include billing, administration, operations, base station subsystem support, operations support systems and provisioning for back-end network elements'* (Janssen, 2014e, 1).

market (Speckman, 2013c, 17). Given prospective corporate activity involving Telkom, Neotel and Vodacom, it may be difficult for Cell C to survive as a niche player in a consolidated commercial environment (Speckman, 2013, 17).

#### 4.3.2.2.4 8ta (Telkom SA Limited)

Telkom launched South Africa's fourth mobile network on 14 October 2010 under the auspices of Telkom's licenses (Telkom, 2010, 1). Originally marketed under the 8ta brand and targeting the consumer market, Telkom appears to have consolidated its mobile offering under the Telkom Mobile platform in 2013 (Telkom, 2012a, 1; 2012b, 1).

Telkom's mobile offering provides voice and data services over a unified 2G and 3G communications network (Telkom, 2010, 1). At the time of its launch, 8ta had constructed 800 base stations with plans to construct a further 3,200 base stations (Telkom, 2010, 1). A new call centre and IT systems were implemented for customer care (Telkom, 2010, 1). 8ta signed a national roaming agreement with MTN which enabled 8ta to offer voice and data services to more than 96% of South Africa's population at launch (Telkom, 2010, 1).

8ta was never a going concern. It incurred significant loses to gain negligible market share (Speckman 2013a, 1). It struggled to retain customers (McLeod, 2013b, 2). In March 2013, Telkom announced that it would '*progressively change the 8ta brand to Telkom Mobile'* (Speckman, 2013a, 1) but retain the 8ta brand in some form in some markets as part of the Telkom family of brands (Speckman, 2013a, 1). It does not appear that Telkom has invested in any further marketing of the 8ta brand as of 31 December 2013. Indeed, the future of Telkom's mobile offering, as with Telkom's corporate future, continues to be the subject of much speculation (Masote, 2013a, 4; Mochiko, 2013b, 16; Weavind, 2013, 4). Telkom's mobile offering may form an important piece in the likely reshuffling of relationships and roles among private sector actors in South Africa's communications market.

#### 4.3.2.2.5 Virgin Mobile South Africa Proprietary Limited

Virgin Mobile South Africa Proprietary Limited (Virgin Mobile) was established as a joint venture between Cell C and Virgin Media plc of the United Kingdom (BMI TechKnowledge, 2011b, 3). It is a mobile virtual network operator that launched its consumer services in June 2006 (BMI TechKnowledge, 2011b, 3). In February 2011, Cell C sold its share in Virgin Mobile as part of a restructuring deal under which Virgin Media increased its shareholding from 50% to 55% and Calico Investments Limited acquired the remaining 45% stake (Smit, 2011, 1). By June 2013, Calico sold its 45% to Allied Electronics Group and Virgin Media plc transferred its interests to Virgin Mobile Middle East Africa which reduced its 55% interest to an effective 11% interest (Masote, 2013b, 1).

Virgin Mobile was estimated to have approximately 500,000 subscribers in South Africa as of March 2013 (Masote, 2013b, 1). It has closed 27 retail stores but kept 10 boutique stores (Masote, 2013b, 1). In financial terms, it appears to break even financially on a month to month basis but is relying on shareholder funds to expand revenue growth (Mosote, 2012b, 1).

#### 4.3.2.2.6 Red Bull Mobile

Red Bull Mobile launched in South Africa in February 2011 as an MVNO on the Cell C network (BMI TechKnowledge, 2011b, 4). The initial service was limited to two postpaid voice contract types which included access to Red Bull content through a web portal but grew to include more devices, contracts and data packages by September 2011 (MyBroadband, 2011a, 1; 2011b, 1). Subscribers also obtain access to events and parties across South Africa, free content, free streaming of Red Bull TV content to their devices and opportunities to enter competitions (Red Bull, 2013, 1).

There is little evidence to suggest that the Red Bull MVNO has attracted much interest in South Africa. No recent data is available on the number of Red Bull Mobile subscribers or performance of Red Bull products or services. Indeed, the only prominent evidence of Red Bull Mobile's presence in South Africa is the myriad of complaints about Red Bull Mobile from disgruntled customers.[106]

---

[106] For example, see complaints on hellopeter.com at http://hellopeter.com/red-bull-mobile/complaints/what-is-happening-to-redbull-mobile-1004189.

### 4.3.3 Infrastructure market

The infrastructure segment of South Africa's communications market includes the legacy of the Carrier of Carriers market[107] that operated in South Africa prior to introduction of the *Electronic Communications Act.* This market segment is in the midst of a fundamental transition. With liberalised commercial conditions, the historically passive competition among a handful of traditional carrier of carriers has been replaced by robust competition between a host of new domestic communications network operators and new international submarine cable network operators. Local governments are also building communications infrastructure networks. Market participants are investing heavily in new communications infrastructure networks to feed bandwidth to domestic communications network operators and facilitate greater interconnectivity between international communications network operators and local communications network operators.

#### 4.3.3.1 Segment characteristics

With the convergence opportunities afforded by the *Electronic Communications Act*, South Africa's infrastructure market segment is diversifying away from its traditional focus on the delivery of carrier of carrier communications services. The addition of a broad spectrum of wholesale communications services delivered through high speed domestic fibre optic networks and high speed submarine cable networks has fundamentally transformed this market segment into one of the most dynamic areas of activity in South Africa's communications market. As a result of such developments, the cost of wholesale bandwidth has dropped dramatically since 2009 (South Africa, 2013b, 27).

#### 4.3.3.2 Segment players

The carrier of carriers segment of South Africa's communications market was historically a monopoly enjoyed by Sentech Limited.[108] The advent of the *Electronic Communications Act* absorbed this esoteric license category within the broader Electronic Communications Network Services (ECNS) license regime to create a broader infrastructure market segment. Sentech has exited

---

[107] Supra, section 3.3.5.1.

[108] Infra, section 4.3.3.2.1.

the market but Telkom and Neotel have expanded commercial operations in the market. The Government has played an active role in the segment through Broadband Infraco Proprietary Limited. A handful of local governments have launched or plan to launch high speed broadband networks. At least five domestic infrastructure networks and nine international submarine operators have entered the market or plan to enter the market in the near term.

#### 4.3.3.2.1 Sentech Limited

Sentech Limited held a Carrier of Carriers License due to the Company's historic role as a conduit of communications channels. Sentech was formed in 1996 as a state owned company by the *Sentech Act* when the Government of South Africa rationalised the country's state owned broadcasting networks. Formerly the signal distributor for the South African Broadcasting Corporation (SABC), Sentech acquired the signal distribution assets and responsibilities of the SABC and provincial television stations as part of the Government's restructuring efforts.[109] Although nominally an independent company with its own Board of Directors, Sentech is wholly owned by the Government of South Africa and, as such, constitutes a state owned enterprise. Sentech accounts to the Government as a portfolio organisation of the Department of Communications (South Africa, 2005b, 1).

As contemplated by section 3.1 of the *Sentech Act*, Sentech initially inherited a Broadcasting Signal Distribution License issued to SABC pursuant to section 33(2) of the *IBA Act*. Sentech subsequently used this capability to expand into Africa's largest common carrier enterprise through a range of distribution channels that include television transmitters, FM transmitters, medium wave transmitters, short wave transmitters and microwave multipoint distribution systems that provide broadcasting signal distribution to most broadcasters in South Africa (Sentech, 2003, 8). Sentech also developed satellite links for terrestrial and transmission

---

[109] Sentech began operations in 1992 under the auspices of the SABC as a signal distributor for all transmissions related to SABC broadcasts. This mandate included services provided to M-Net Proprietary Limited, Radio 702, (Primedia Broadcasting Proprietary Limited), Radio Ciskei (Ciskei Broadcasting Corporation), Transkei Broadcasting Corporation and Bophuthatswana Broadcasting Corporation.

As part of the 1995 *Triple Inquiry Report*, the Independent Broadcasting Authority recommended Sentech's creation as a stand-alone public company housing all signal distribution facilities and staff of former stations controlled by the Governments of the Republics of Transkei, Bophuthatswana, Venda and Ciskei (IBA, 1995).

The *Triple Inquiry Report* (IBA, 1995) was approved by the National Assembly of South Africa in March 1996 and the *Sentech Act* promulgated into law in November 1996 to implement the same (South Africa, 2005b, 1).

networks that offer satellite-based IP services through InfoSat Proprietary Limited (InfoSat), a market leader in satellite IP tools and services (Sentech, 2011, 13; Sentech, 2003, 9).

Given Sentech's technical capabilities and convergence of delivery platforms, Sentech's acquisition of communication transmission capabilities represented a logical extension of its broadcasting transmission capabilities. Sentech's shifting array of licences[110] were converted into two individual Electronic Communications Network Services (ECNS) Licenses and two individual Electronic Communications Services (ECS) Licenses (Sentech, 2013, 1) pursuant the provisions of the *Electronic Communications Act.*[111] Sentech's abandoned its Carrier of Carriers business in August 2010 (Sentech, 2011, 3, 17, 22).

In April 2011, Sentech announced plans to build a national wireless broadband wireless network (NWBN) for rural and under serviced areas of South Africa using either Wi-Max or LTE technology (Vermeulen, 2011, 1). In November 2013, the Treasury Department instructed Sentech to return the funds flagged for the NWBN Project until approval of a national ICT strategy (IT Online, 2013, 1). In April 2013, Sentech decided to return to ICASA its spectrum suitable for mobile broadband (Vermeulen, 2013, 1). It appears that the NWBN Project is stillborn.

Along with other state owned enterprises (such as Broadband Infraco Proprietary Limited) and state controlled enterprises (such as Telkom SA Limited), Sentech's future role as a stand-alone entity in South Africa's communications market remains uncertain. Given its withdrawal from the Carrier of Carriers business, Sentech appears to be focusing on its signal distribution business. However, it is often mentioned as a potential part of any national broadband network.[112]

---

110 Such as the Multimedia Service license and the Carrier of Carriers license issued to Sentech Limited by ICASA effective 6 May 2002 (ICASA, 2002c; 2002d) as well as attendant spectrum licenses issued on the same day (ICASA, 2005i).

111 Sentech holds two ECNS Licenses and two ECS Licenses directly but also holds the same class of licenses via its wholly owned InfoSat subsidiary (Sentech, 2011, 55).

112 Infra, section 8.6.

#### 4.3.3.2.2 Fixed line operators

Although Sentech nominally held a monopoly over Carrier of Carriers Licenses in South Africa under previous legislation, the Company was never alone in the Carrier of Carriers market. The Public Switched Telecommunication Services (PSTS) Licenses issued to Telkom and Neotel under the amended *Telecommunications Ac*t permitted Telkom and Neotel to effectively deliver carrier of carriers services within the scope of their entitlements. While Sentech has exited the wholesale segment of South Africa's communications market, the fixed line operators have increased their competition for the provision of infrastructure services. Telkom has an active Telkom wholesale business unit and Neotel is firmly established in this market (BMI TechKnowledge, 2011b, 5).

#### 4.3.3.2.3 Submarine cable operators

South Africa benefits from nearly 15 Tb/s of broadband communications capacity delivered through high speed fibre optic submarine cable networks. This capacity may increase nearly six fold in the near term if mooted submarine networks are completed on schedule. Table 4.4 summarises key features of each of the main cable systems connected or planned to be connected to South Africa:

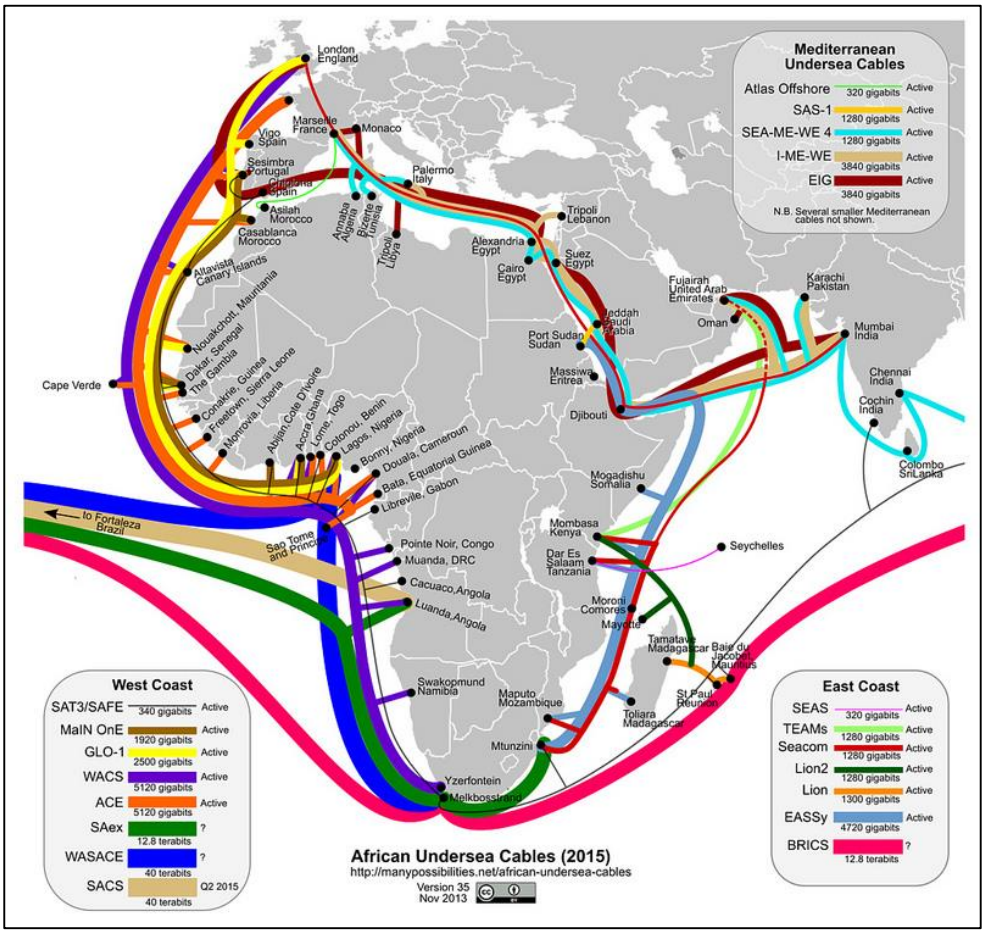
**Table 4.4**
**Undersea cable systems connected to South Africa, 2013**

| Cable system | Landing station | Design capacity (Tb/s) |
|---|---|---|
| **Operational (South Africa)** | | **14.82** |
| SAT-3 | Melkbosstrand | 0.34 |
| SAFE | Melkbosstrand, Mtunzini | 0.44 |
| SEACOM | Mtunzini | 4.2 |
| EASSy | Mtunzini | 4.72 |
| WACS | Yzerfontein | 5.12 |
| **Planned (South Africa link)** | | **71.97** |
| ACE | Yzerfontein | 5.12 |
| SAex | Mtuzini, Melkbosstrand | 12.8 |
| WASACE | Melkbosstrand, Cape Town | 40 |
| MainOne | Melkbosstrand | 1.25 |
| BRICS | Melkbosstrand | 12.8 |
| **Total** | | **86.79** |

Source: Adapted from Ace, 2013, 1; Gillwald et al, 2012, 16; MainOne, 2013, 1; Song, 2013, 1; South Africa, 2013b, 27; BMI TechKnowledge, 2011b, 6; TeleGeography, 2014, 1; 2011b, 1.

Figure 4.2 illustrates the routes of the principal undersea cable systems linked or planned to be linked to South Africa.

**Figure 4.2**
**Undersea cable system routes to South Africa, 2013**




Source: Song, 2013, 1.

Before July 2009, the only submarine cable landing in South Africa was the 120 Gbps South Atlantic 3 (SAT-3) and South Africa Far East (SAFE) cable connecting South Africa with Europe (Spain and Portugal) and Asia (Malaysia) (SAT-3/WASC/SAFE, 2014, 1). Telkom previously held a monopoly on this cable but Neotel's parent company Tata is a shareholder in the group that owns this cable which endowed Neotel with an ability to offer services on SAT-3/SAFE (BMI TechKnowledge, 2011b, 6). The bandwidth capacity of the SAT-3 and SAFE cable systems was tripled in 2009 (Muller, 2009, 1).

The privately-owned SEACOM cable is a 17,000 km cable system (Gillwald et al, 2012, 16) commissioned in July 2009 that lands at Mtunzini on the east coast of South Africa. This cable connects South Africa to several other countries in the Indian Ocean region and Europe via Egypt. Access to SEACOM is available on an open basis. SEACOM's shareholders include: Industrial Promotion Services Limited (26.56%), an arm of the Aga Khan Fund for Economic Development; Remgro Limited (25%); Convergence Partners Limited (12.5%); Shanduka Group Limited (12.5%); and Herakles Telecom LLC (Seacom, 2013, 1).

EASSy is a 10,000 km fibre optic submarine cable system commissioned in July 2010 that lands at Mtunzini on the east coast of South Africa (EASSy, 2013a, 1). It connects South Africa to 21 African countries and a range of international destinations (EASSy, 2013b, 1). Despite pressure to mimic SEACOM's open access structure, EASSy operates a closed consortium structure that includes MTN and Neotel in South Africa (EASSy, 2013c, 1).

The West African Cable System (WACS) is a 17,200 km cable system (Gillwald et al, 2012, 16) commissioned in April 2012 that provides South Africa with a second undersea cable communications route to Europe. As with EASSy, WACS operates as a closed consortium. WACS main shareholders include: Telkom; Vodacom; MTN; Tata Communications Limited; Broadband Infraco Proprietary Limited; Cable & Wireless plc; Portugal Telecom SA; Congo Telecoms SA; Telecom Namibia Limited; Togo Telecom Limited; *Office Congolais des Postes et Telecommunications* (OCPT); and Angola Telecom EP (ICASA, 2013b, 1).

The Africa Coast to Europe (ACE) optical fibre submarine cable is a 17,000 km high bandwidth system that will connect 21 countries from France to South Africa (Ace, 2013, 1). Ace is owned by 16 operators and administered by Orange SA (Ace, 2013, 1). It commenced operation in December 2012 with a link to 17 African countries (Ace, 2013, 1). Sentech was originally ACE's landing partner in South Africa but withdrew from participation in 2011 (TeleGeography, 2011b, 1).

The South Atlantic Express (SAex) is a proposed 10,000 km submarine communications cable to link South Africa to Angola and Brazil with onward connectivity to the United States of America through the GlobeNet cable system (TeleGeography, 2014, 1; BusinessTech 2012, 1; Vorster, 2012a, 1). A company called eFive Telecoms Proprietary Limited is spearheading the project with prospective support from the Bank of China and the Industrial Development Corporation of South Africa Limited (IDC) to fund the estimated USD 300 million construction costs (Vorster, 2012a, 1). The link is expected to commence operations in 2014 (BusinessTech, 2012, 1).

The MainOne cable is a 7,000 km cable system with landing stations in Nigeria, Ghana and Portugal. A Phase II Fibre cable build out plans to traverse the southern coast of Africa and land in Cameroon, Gabon, the Democratic Republic of Congo, Angola and South Africa (MainOne, 2013a, 1). MainOne is owned by MainOne Cable Company Mauritius Limited which is owned by Main Street Technologies Limited (MainOne, 2013b, 1).

WASACE is a proposed 29,000 km submarine fibre optic cable system to connect Europe, the United States of America, South America and the east coast of Africa, including South Africa (Submarine Cable Systems, 2014, 6). WASACE's funders include VIP Must Limited and the African Development Bank (AfDB) (Field, 2011, 1). As of September 2014, however, WASACE's web site remains under construction (WASACE, 2014) and the company has not achieved any milestones by deadlines established for the project (Vorster, 2012b, 1; Field, 2011, 1).

The BRICS cable is a proposed 34,000 km submarine fibre optic cable communications network to link Brasil, Russia, India, China, South Africa and the United States of America (BRICS, 2013a, 1). The project is backed by Imphandze Subtel Services Group, a local South African company (BRICS, 2013b, 1). This project remains in its infancy.

#### 4.3.3.2.4 Dark Fibre Africa Proprietary Limited

Dark Fibre Africa Proprietary Limited (DFA) is a privately-owned company that owns, builds, maintains, secures and monitors a passive fibre network in South Africa. Individual service providers lease fibre optic cable from DFA.

It holds an Electronic Communications Network Services (ECNS) License and an Electronic Communications Services (ECS) License. The dark fibre is 'lit' by each service operator when they deliver new high speed services to their customers. DFA can offer services to any company holding an ECNS licence. Major clients include MTN, Vodacom, Cell C, Telkom, Broadband Infraco Proprietary Limited, MWeb Connect Proprietary Limited, SEACOM, the South African National Research Network (SANReN) and the Tertiary Education and Research Network of South Africa (TENET) (BMI TechKnowledge, 2012a, 34).

DFA's national network was launched on 23 June 2009. The company had been building its network since 2007 and reported that it had completed the installation of over 1,080 km of fibre in South Africa, mostly in metropolitan centres in Durban, Cape Town and Johannesburg, by the middle of 2009. By 2013, DFA's network spanned over 8,000 km and reached all the major cities in South Africa with ongoing roll out efforts targeting the smaller towns and cities in the country (South Africa, 2013b, 28). DFA plans to increase the total footprint of its network to at least 15,000 km nationally through a USD 1 billion capital investment program (BMI TechKnowledge, 2012a, 34-35). The original investors in DFA were Venfin Limited and ABSA Bank Limited, while later debt funders included Rand Merchant Bank Limited, ABSA Bank Limited, the Development Bank of Southern Africa (DBSA) and the KwaZulu Natal Growth Fund (Frontier Market Intelligence, 2012, 1).

Although DFA was the first company to operate as an open access fibre infrastructure provider, competitors have since entered the market. Conduct Telecommunications SA, a division of the Birchman Group Limited, launched a fibre optic network in February 2013 in Johannesburg and expects to expand to Cape Town (Wilson, 2013, 1).

#### 4.3.3.2.5 Broadband Infraco Proprietary Limited

Broadband Infraco Proprietary Limited (Broadband Infraco) is owned by the Government of South Africa through the Department of Public Enterprises (Comninos et al, 2010, 18). It was created through the *Broadband Infraco Act, Number 33 of 2007* (South Africa, 2007) and commercially launched on 17 November 2010 (Etherington-Smith, 2010, 1). Broadband Infraco holds

an Electronic Communications Network Services (ECNS) License (ICASA, 2013a, 1).

Broadband Infraco united the communications assets of Eskom Holdings Limited (Eskom), the Government-owned public electricity supply utility, and Transnet Limited (Transnet), the Government-owned transport and logistics utility (Comninos et al, 2010, 18). Eskom and Transnet were initially expected to play a pivotal role in the SNO, but market challenges ultimately led the Government to place their assets into Broadband Infraco which sold bandwidth exclusively to Neotel for the first four years of its existence (Comninos et al, 2010, 18). Broadband Infraco subsequently become one of the main investors in the West African Cable System and may yet play a meaningful role in South Africa's communications market as a carrier neutral communications infrastructure network.

Eskom contributed substantial assets to Broadband Infraco. Pursuant to the *Eskom Act, Number 40 of 1987,* Eskom was vested with the opportunity to operate a Private Telecommunication Network (PTN) for its own and other purposes (South Africa, 1987). On 11 September 1999, Eskom formed Eskom Enterprises, a wholly owned private company subsidiary, to focus on non-regulated business activities in South Africa and energy and related business services internationally (Eskom, 2005a, 1). In March 2000, the Electricity Council that governed Eskom at the time resolved to consolidate all communications functions from the Eskom Transmission Group and Distribution Group into Eskom Enterprises (Eskom, 2005b, 1). Eskom Telecommunications (Esitel) was created as an unincorporated unit of Eskom Enterprises to house such assets and related employees and functions (Eskom, 2005b, 1).

Eskom's historic right to own and operate a PTN was grandfathered into the new licensing framework promulgated as part of the *Telecommunications Act*. Specifically, section 41(1)(c) of this legislation enabled Eskom to continue its pre-existing communications activities, principally in support of its own business operations. Within South Africa, section 41(2)(b)(ii) of the *Telecommunications Act* exempted Eskom from any requirement to use Telkom or any other PSTN facilities to operate its private telecommunications network, although section 41(3) therein prevented

Eskom from extending its PTN in ways that duplicated services or facilities offered by Telkom for purposes unrelated to its business operations. Beyond South Africa, section 41(8) of the *Telecommunications Act* exempted Eskom from any requirement to hold any international telecommunications services license otherwise required by section 34(2)(a)(iv) therein to use its PTN for '*purposes related to* [its] *operations outside the Republic*' (South Africa, 1996b).

Transnet also contributed substantial assets to Broadband Infraco. Pursuant to Paragraph 9 of Schedule 1 of the *Legal Succession to the South African Transport Services Act*, Transnet was vested with the right to own and operate a Private Telecommunication Network (PTN) for its own and other purposes (South Africa, 1989). This statutory right dovetailed with the exemption contemplated by section 78(1)(a) of the *Post Office Act* which accorded railways the right to own and operate communications networks incidental to rail operations where so permitted by enabling legislation (South Africa, 1958).

Transnet's historic right to own and operate a PTN was grandfathered into the licensing framework of the *Telecommunications Act*. Section 41(1)(c) of the *Act* enabled Transnet to continue its existing communications network activities, principally in support of its own business operations. Section 41(2)(b)(ii) of the *Act* exempted Transnet from any requirement to use Telkom or any other PSTN facilities to operate its private telecommunication network in South Africa, although section 41(3) therein prevented Transnet from extending its PTN in ways that duplicated services or facilities offered by Telkom for purposes unrelated to its business operations. Section 41(8) of the *Telecommunications Act e*xempted Transnet from any requirement to hold any international telecommunication services license otherwise required by section 34(2)(a)(iv) therein to use its PTN for '*purposes related to* [its] *operations outside the Republic*' (South Africa, 1996b).

Two principal policy rationales, applying similarly to Eskom and Transnet, justified this historic arrangement. Such rationales were identified and explained by the Government of South Africa's 1996 *White Paper on Telecommunications Policy* as follows:

> *Critical operational support: parastatals were given permission to build and operate their own telecommunications facilities primarily to enable them to have direct control over critical operations where life may be at risk. At the time when this exception to the national operator's monopoly was granted it was felt that the public telecommunications network could not provide the necessary level of reliability.*
>
> *In-house communication: having been permitted to establish their own telecommunications facilities for their critical operations, the parastatals were also allowed to use these for their own internal needs, so as to optimize the use of their investment in these facilities. In practice, they were allowed to self-provide their "private networks", both voice and data, that other organisations were only allowed to obtain from Telkom. The parastatals also made use of Telkom's facilities in their private networks, at their own discretion, in accordance with their needs* (South Africa, 1996c, 18).

Transnet initially administered its telecommunications operations within an unincorporated business unit called Transtel. In April 2001, however, Transtel was transformed into one of nine profit-oriented divisions of Transnet to serve as the operating entity through which Transnet manages its communications rights and requirements (Transtel, 2005a, 1).

Over the years, Eskom built up a significant national private telecommunications network. By February 2005, Eskom had upgraded the backbone of its network to broadband Synchronous Digital Hierarchy (SDH) transmission standards that supported over 26,500 km of microwave radio links and 900 km of fibre optic cable installed on power lines and equipped with SDH terminals (Eskom, 2005c, 1).

Transnet exceeded Eskom's network building accomplishments by constructing the largest private communications network in the southern hemisphere (Transtel, 2005a, 1). As of February 2005, Transtel owned a countrywide digital transmission network comprised of 3,000 km of fibre optic cable (Transtel, 2005a, 1), microwave radios, fibre optic links and satellite terminals that supported data communications, private telephone exchange junctions, trunked radio systems, train controls and remote control systems for electrical substations and pipeline pump stations (Transtel, 2005b, 1).

In addition to its infrastructure capabilities, Transtel operated South Africa's largest radio transmission network, with over 230 towers as of February 2005 (Transtel, 2005b, 1). Transtel also operated an international gateway, pursuant to its exemption from any licensing requirements provided by section 41(8) of the *Telecommunications Act*, that satisfied the communications requirements of Transnet companies domestically and internationally (Transtel, 2005c, 1). Beyond acting as the communications services provider for Transnet (Transtel, 2005c, 1), Transtel also delivered communications services and solutions to entities outside of the Transnet group of companies, principally international clients (Transtel, 2005a, 1).

Broadband Infraco has shown early promise. At the 2012 Annual General Meeting, the Minister of Public Enterprises, as the representative of Broadband Infraco's shareholder, expressed satisfaction with Broadband Infraco's progress in reporting positive operating and financial results (South Africa, 2012d, 1).[113] At the same time, the Minister highlighted the need for taking measures to ensure Broadband Infraco's long term viability (South Africa, 2012d, 1). Broadband Infraco is expected to experience significant threats to its sustainability as its key clients (Neotel, Vodacom and MTN) migrate their business from Broadband Infraco's infrastructure to their own fibre optic infrastructures as they complete the roll out of the NLD Consortium network. As such, Broadband Infraco is often mentioned as a key part of any national broadband network mandated by the Government of South Africa.[114]

#### 4.3.3.2.6 FibreCo Telecommunications Proprietary Limited

FibreCo Telecommunications (FibreCo) is a partnership between Cell C (mobile network operator), Internet Solutions Proprietary Limited (VANS provider) and Convergence Partners Management Proprietary Limited (private equity fund). It has a strategic partnership with MTN to provide bandwidth to the operator (IT Web, 2013, 1). FibreCo plans a 12,000 km long route that includes a 4,500 km ring linking Gauteng, Cape Town and

---

[113] Financially, Broadband Infraco posted improved financial performance with revenue of ZAR 393.6 million compared to ZAR 297.6 million in 2011 and generated a ZAR 52 million positive cash flow from operations for the first time. Operationally, Broadband Infraco increased its customer base (South Africa, 2012d, 1).

[114] Infra, section 8.6.

Durban to international landing stations (FibreCo, 2013a, 1). FibreCo completed a 2,000 km network linking Johannesburg, Bloemfontein, East London and Cape Town in 2013 (FibreCo, 2013b, 1).

#### 4.3.3.2.7 NLD consortium

The NLD Consortium is a joint venture between Neotel, MTN, Vodacom and the South African National Roads Agency SOC Limited (SANRAL). It is coordinating the co-construction of a 5,000 km national long distance fibre optic network to connect South Africa's major cities (Net.work, 2009, 1). This co-build approach enables each partner to enhance shareholder value and substantially reduce infrastructure and operational costs while achieving the independence of owning and operating its own cables on the network. The project was estimated to cost between USD 200 million and USD 225 billion, with the first phase budgeted to cost an estimated USD 25 million (BMI TechKnowledge, 2012a, 34).

**Figure 4.3**
**NLD consortium fibre optic project**


Source: BMI TechKnowledge, 2013a, 1.

The N3 route was expected to be fully installed by 2011. Delays in obtaining permissions and agreement on construction standards have postponed deployment of the network. The first leg of the network which stretches from Johannesburg to Durban was commissioned in early 2013 (Odendaal, 2013, 1). Construction of the second leg which connects Johannesburg and Cape Town is near completion along with the Johannesburg and Bloemfontein route. The balance of the route to Cape Town was expected to be completed by the end of 2013 (Odendaal, 2013, 1). The status of the N2 route from Cape Town to Durban via the Eastern Cape is unknown and may be delayed for the foreseeable future (BMI TechKnowledge, 2012a, 34-35).

#### 4.3.3.2.8 Liquid Telecom Group

The Liquid Telecom Group is a pan-African communications infrastructure and services company that operates in terrestrial and satellite communication markets (Liquid Telecom, 2013a, 1). Its fibre optic network spans over 13,000 km across Kenya, Uganda, Rwanda, Zambia, Zimbabwe, Botswana, DRC, Lesotho and South Africa (Liquid Telecom, 2013a, 1). In South Africa, Liquid Telecom currently operates a network that links Pretoria, Johannesburg and Cape Town and facilitates data transfers to networks in Zimbabwe, Lesotho, Botswana, Namibia and Mozambique (Liquid Africa, 2013b, 1).

#### 4.3.3.2.9 Local government

Various agencies of local government have entered the wholesale market segment of South Africa's communications market. On a provincial level, the Governments of the Province of Gauteng and the Western Cape have led other provinces in the creation of broadband plans and launch of broadband networks (Gillwald et al, 2012, 4). On a municipal level, Knysna was the first municipality to establish its own network (Budde, 2013c, 1). Major municipalities such as the City of Tshwane, City of Johannesburg, Ekurhuleni (East Rand), City of Cape Town and eThekwini (Durban) have launched their own municipal broadband communications networks in the past four years (Budde, 2013c, 1).

### 4.3.4 Value added network services market

The value added network services (VANS) segment of South Africa's communications market is, in part, the legacy of the eponymously named licensing category prescribed by the *Telecommunications Act*.[115] This market segment has expanded rapidly through opportunities facilitated by the convergence framework of the *Electronic Communications Act*. Increasingly available bandwidth and decreasing bandwidth prices have stimulated competition, although the segment remains a highly fragmented market dominated by a handful of market players. [116]

The VANS market received a significant boost from a protracted court battle[117] won by Altech Autopage Cellular Proprietary Limited against the Minister of Communications (along with ICASA and various other parties) which compelled ICASA to convert VANS licenses originally issued under the *Telecommunications Act* into Electronic Communications Network Services (ECNS) licenses issued under the converged licensing framework of the *Electronic Communications Act*. This High Court victory enabled VANS providers to develop and operate their own communications networks. VANS providers could expand the transmission range of their communications footprints by building proprietary networks which increase the potential number of customers within reach of their services. VANS providers could also reduce their need to lease capacity (and pay high lease rates) on the networks of Telkom, Neotel and the major mobile operators. Although financial constraints and the national reach of existing networks likely limit the benefits arising from this court decision into the medium term, the decision effectively 'levelled the playing field' and gave VANS the opportunity to build infrastructure and gradually expand market share.

---

115 Supra, sections 3.3.4.2 and 3.3.6.

116 Discussion of this market segment excludes consideration of application service providers (ASPs) and wireless application service providers (WASPs) that provide value added services delivered through communications network operators. This industry is currently self-regulated through the Wireless Application Service Providers' Association (WASPA). Mobile operators require all WASPs to belong to WASPA, which has a code of conduct and also appears to be regulated by the mobile operators through additional internal dispute resolution means (WASPA, 2013, 1). Depending on the types of services provided by ASPs and WASPS, such services may or may not be governed by the *Electronic Communications Act* (Silber, 2004, 1-19). ASPs and WASPs do not have a direct role in the realisation of universal service and access to communications services in South Africa. Although they may provide applications which encourage education, commerce and computer literacy, among other purposes, they do not provide the bandwidth needed to deliver such applications. As such, they have a secondary supporting role rather than a primary role in the delivery of communications services to underserved areas or populations in the country.

117 *Altech Autopage Cellular (Pty) Ltd v Chairperson of the Council of the Independent Communications Authority of South Africa and Others* (20002/08) [2008] ZAGPHC 268 (29 August 2008).

#### 4.3.4.1 Segment characteristics

The VANS market is expected to experience significant growth into the medium term as commercial enterprises and consumers increasingly migrate to digital platforms, such as ADSL, 3G, LTE and other broadband channels, and as new technologies, market competition and consumer's insatiable appetite for data increases demand for such services. At the end of 2011, South Africa had between 8.5 million and 10.9 million Internet users which represented approximately 21% of individuals in South Africa.[118] This figure is expected to exceed 12 million users in 2015 (Goldstuck, 2012b, page, 1).

The limited availability and accessibility of broadband communications services constrain the availability of many VANS services on a national basis. The *National Census 2011* found that 64.8% of South Africans did not have any access to the Internet with only 8.6% of South Africans enjoying Internet access from home (MyBroadband, 2013c, 1). Even lower than general Internet connectivity, only 2 out of every 100 South Africans enjoyed fixed line broadband services while 26% of South Africa's population enjoyed some form of mobile broadband connectivity (SouthAfrica.info, 2013, 1).

The rapid proliferation of broadband infrastructure networks[119] is enabling value added network services to reach an increasingly larger portion of South Africa's population. However, the lack of computers and computer literacy may not translate such capacity into the uptake of VANS solutions by a significant portion of this population. Such barriers likely diminish the potential utility of broadband connectivity and VANS solutions in realising universal service and access to communications services in South Africa in the near term.[120]

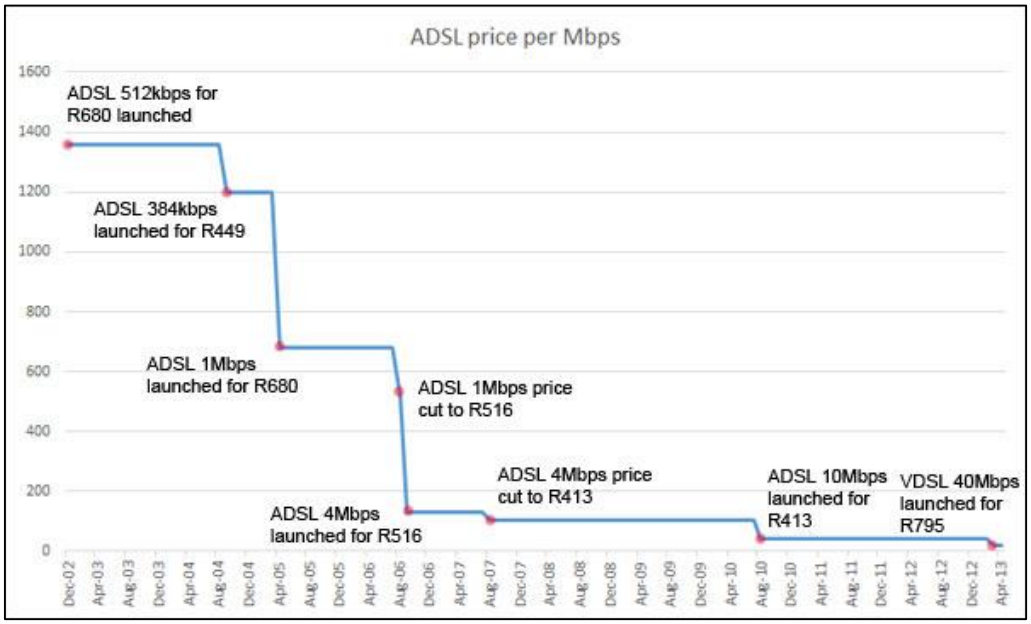
Figure 4.4 shows the dramatic decreases in Telkom's ADSL connectivity prices (excluding line rental and bandwidth charges) in South Africa's communications market between 2002 and 2013:

---

[118] Supra, Table 4.1.
[119] Supra, section 4.3.3.
[120] For example, see Habib, 2012, 1.

**Figure 4.4**

**Telkom ADSL connectivity prices per Mbps without line rental and bandwidth charges, 2002 to 2013**




Source: MyBroadband, 2013b, 1.

Figure 4.5 shows the decreases in the cost of Telkom's line rental with ADSL service in South Africa's communications market between 2002 and 2013:

**Figure 4.5**

**Telkom ADSL connectivity prices per Mbps with line rental charges, 2002 to 2013**


Source: MyBroadband, 2013b, 1.

The pricing of bandwidth on broadband infrastructure networks represents a critical success factor for the continued proliferation of VANS solutions to larger segments of South Africa's population. Decreasing broadband prices may positively affect the realisation of universal service and access to communications services in South Africa.

Although prices are falling, the relatively high price of broadband connectively and recent marginal increases suggest that current prices for connectivity may continue to limit the availability and accessibility of VANS solutions to many South Africans. Such circumstances may similarly challenge the potential utility of broadband connectivity and VANS solutions in realising universal service and access to communications services in South Africa in the near term.

#### 4.3.4.2 Segment players

The VANS segment of South Africa's communications market may be broadly divided by two types of businesses. On the one hand, VANS providers who function as 'wholesale' market participants and purchase bandwidth from international suppliers for resale to their own clients and Internet Service Providers (ISPs). On the other hand, ISPs who function as 'retail' participants and on-sell wholesale bandwidth acquired from VANS to specific clients.

In terms of interconnectivity, VANS and ISPs connect to each other through high speed switches available through direct peer-to-peer connections maintained on a proprietary basis or neutral InterNet eXchange points maintained by the Internet Service Providers' Association (ISPA) as part of the South African Internet Exchange. The South African Internet Exchange operates the Johannesburg Internet Exchange (JINX), the Cape Town Internet Exchange (CINX) and Durban Internet Exchange (DINX). ISPA has different membership levels (large, medium, small, affiliate and honorary). Large, medium and small members must hold an Electronic Communications Services (ECS) or Electronic Communications Network Services (ECNS) licence and/or provide Internet access services. The size of membership has a bearing on the size of the port(s) used to interconnect on the exchanges (ISPA, 2013, 1).

As of May 2013, ICASA had issued 448 individual Electronic Communications Network Services (ECNS) licenses and 438 individual Electronic Communications Services (ECS) licenses (ICASA, 2013a, 1). Many VANS providers function as ISPs, however, effectively reducing the number of stand-alone enterprises operating in only one component of the VANS market. Furthermore, a handful of large enterprises operate in both components (Bate, 2014b, 3) which supports oligopolistic market conditions rather than any free-wheeling competitive marketplace perhaps suggested by the sheer number of VANS license holders.

The VANS market segment is dominated by four large managed data network service providers (Vodacom, MTN, Cell C and Neotel) that enjoy 90% market share (BMI TechKnowledge, 2012b, 43). The remaining 10% market share is retained (63%) by six other players that included MWeb Connect Proprietary Limited, Internet Solutions Proprietary Limited and Vox Telecom Limited, as well as affiliates of the four large managed data network service providers, such as MTN Business Solutions Proprietary Limited. The balance of market share is fragmented among a diverse range of small players (BMI TechKnowledge, 2012b, 43-44). Many second tier ISPs often bundle valued added services with bandwidth services on a complimentary or fee basis and, as such, constitute 'virtual ISPs' that focus on client relationship management while using the backbone and technology provided by first tier ISP wholesalers to deliver their services. By providing such services, such second tier ISPs also constitute VANS providers.

## 4.4 LESSONS FOR UNIVERSAL SERVICE AND ACCESS IN SOUTH AFRICA'S COMMUNICATIONS MARKET BASED ON KEY CHARACTERISTICS OF THE COMMERCIAL ENVIRONMENT

South Africa's communications market has metamorphosed from a monopoly environment into a competitive marketplace over the past two decades. This transformation has increased the availability, accessibility and affordability of communications services for many people in South Africa.[121] Yet some South Africans in some parts of the country continue to suffer from unavailable, inaccessible or unaffordable terrestrial communications services. Given significant competition in the

[121] Supra, sections 4.2 and 4.3.

domestic communications market (particularly the mobile segment), such people and areas likely represent prospects overlooked by operators for commercial reasons.

Due to this market failure and other public policy considerations, the Government of South Africa retains a legitimate and necessary right to intervene in South Africa's communications market to remedy such lacuna. The critical challenge for regulatory authorities is to identify interventions that optimally build upon prevailing commercial conditions in the domestic communications market to achieve public interest objectives in the most efficient, timely and appropriate manner. As such, the historical impact of private sector actors on the availability, accessibility and affordability of communications services in South Africa and the impact of the shifting regulatory environment on such actors represent important areas for consideration in any study aimed at identifying the optimal means to accelerate the realisation of universal service and access to communications services in South Africa.

### 4.4.1 Market impact

The availability, accessibility and absolute affordability of communications services in South Africa have improved dramatically between 1996 and 2013.[122] Such improvements are almost entirely due to the proliferation of mobile communications services. Yet such improvements have also been unevenly distributed across South Africa. Moreover, many market actors have resisted efforts to remedy market imperatives that discourage the delivery of communications services to people overlooked by customary commercial considerations.

#### 4.4.1.1 Availability of communications services

Overall teledensity in South Africa has risen sharply in the past two decades, albeit from a low base. The absolute increase in South Africa's teledensity is largely attributed to the proliferation of mobile phones as the prevalent form of communication in the country. As in many other developing countries,[123] the numbers of fixed lines represent an insignificant contribution to the realisation of universal service and access to communications services in the country. The exponentially higher numbers of mobile phones represents the key contributor to increased teledensity in South Africa.

---

[122] Supra, section 4.2.3 and infra, section 8.3.2.

[123] Supra, sections 2.3 and 2.4.

Yet teledensity is an incomplete benchmark of the availability of communications services in any population. Calculations of teledensity often suffer from an inability to correlate the purchase point of mobile phones, the location of subscriber accounts, duplication of subscriptions and the location of phone use on a reliable basis. Furthermore, fixed line and mobile teledensity often overlook distortions within specific catchment areas, notably the distribution of communications services between urban centres and rural communities. Conclusions drawn from teledensity analyses need to account for these limitations.

Despite impressive national teledensity levels, the increased availability of communications services in South Africa has not completely redressed historical imbalances. The majority of mobile phone ownership is concentrated in upper income brackets of the population, with 85% of people in the top income bracket owning a phone and only 54% of people in the lower three income brackets owning phones (Comninos et al, 2010, 25). Moreover, most mobile phone users in South Africa are located in urban areas, with only 49% of people in rural areas owning a mobile phone (Comninos et al, 2010, 25). As such, the availability of communications services is not as widespread as teledensity figures suggest at first glance.

#### 4.4.1.2 Accessibility of communications services

The overall accessibility of communications services in South Africa has improved dramatically in the past two decades.[124] As with the availability of communications services, the proliferation of mobile telephony represents the principal catalyst for such improvement in the country. Beyond the long standing reach of mobile communications networks (demographically and geographically), the phenomenal growth of broadband services to over 75% of South Africa's population (albeit only 30% of the country's geography) by 2012 indicates that private sector actors are rapidly rolling out high speed broadband networks in response to pent-up demand for bandwidth-intensive data applications and content by consumers.

---

[124] Supra, sections 4.2.1, 4.2.2 and 4.3.2.

Despite such achievements, South Africa's communications industry players have consistently contested regulatory efforts to compel the provision of communications services to marginally profitable territories.[125] In the mobile market, operators have voiced opposition to universal service and access policies and programs and sought to avoid fulfilment of obligations arising thereunder.[126] In the fixed line market, Telkom has resisted universal service and access obligations and abandoned efforts to satisfy some of these obligations for commercial reasons.[127] Telkom's efforts to limit competition in the fixed line market and leverage its hegemony therein to penetrate the VANS market also demonstrate its predominant focus on gaining market share and maximising profits irrespective of the breadth or depth of its network coverage.[128] These market actions collectively suggest that private sector actors are unlikely to resolve the continued lack of available, accessible and affordable communications services to certain segments of South Africa's population absent regulatory intervention.

#### 4.4.1.3 Affordability of communications services

The prices of South Africa's communications services, albeit decreasing in absolute terms in the period under review, remain high relative to prices in other markets. The advent and subsequent acceleration of competition in South Africa's communications market have not sufficiently reduced tariffs to competitive international standards (Comninos et al, 2010, 21-28).[129] High call rates suggest that South Africa's communications companies, driven by a desire to maximise profits, may not provide services on an equitable basis absent any profit motive or regulatory compulsion. Such inclination mirrors the historic views of their counterparts in the United States of America. Theodore Vail, the pioneering chief executive of AT&T, welcomed limited forms of regulation as a means to control competition:

> *I am not only a strong advocate for control and regulation but I think I am one of the first corporation managers to advocate it. It is as necessary for the protection of the corporations from each other as for protection to, or from, the public* (Vail, 1915, 52).

---

125 Infra, section 5.3.1.
126 Ibid.
127 Infra, sections 5.3.1 and 7.3.3.
128 Supra, section 3.3.4.1.
129 Supra, Table 4.3.

In relation to universal service and access, providing communications services to marginally profitable constituencies or cutting prices of communications services hurt profits and consequently hurt shareholder returns. Not surprisingly, many market participants seek to limit public sector intervention to influence private sector market behaviour that would achieve such objectives at the cost of diminished returns. Given the unwillingness of profit-maximising private sector participants to voluntarily remedy this lacuna as part of their commercial activities, it seems that further regulation of South Africa's communications market beyond addressing competition concerns not only represents a legitimate intervention into private sector affairs to correct this market failure but also a necessary public interest imperative to achieve essential public policy objectives such as the realisation of universal service and access to communications services in South Africa.

### 4.4.2 Regulatory impact

Many gains in the availability, accessibility and affordability of communications services in South Africa over the past two decades may be attributed to the liberalisation of the domestic communications market by the Government of South Africa. Vodafone research confirms that:

> *. . . there can be little doubt that the wildfire spread of mobile telephony was triggered partly by the liberalization of the telecom markets in many African countries from the mid-1990's, including the issuing of private mobile licences* (McLeod, 2005a, 36).

Competition and investment are the cornerstones of such liberalisation policies. Indeed, the beneficial effects of competition on consumer welfare[130] are widely accepted:

> *It is commonplace among economists to assume that an industry structure in which multiple firms compete is more likely to optimize consumer welfare than an industry structure in which there is only a single producer (a monopolist) – even if that firm's rates are regulated. Among regulators, too, this is accepted as commonplace these days* (Brands & Leo, 1998, 13).

---

[130] Consumer welfare is an economic term used to represent the aggregated best interests of consumers. Consumer welfare '*is optimal if resources are allocated in such a way that consumers' desires are satisfied most efficiently*' (Brands & Leo, 1998, 12).

Much of the consumer welfare generated by communications companies in South Africa and elsewhere may be attributed to private sector shareholders.

Competition and investment from the private sector do not come cheap. Competitors and investors expect returns on their investments, be it outlays of intellectual or financial capital. South Africa's communications companies have delivered on such expectations. In the Mobile Cellular Telecommunication Services (MCTS) segment, mobile operators have ruthlessly pursued their fiduciary responsibility to maximise shareholder value. Mobile operators have grown from start-up enterprises into leading corporations and created substantial wealth for their shareholders,[131] including significant value for their Black Economic Empowerment (BEE) investors.[132]

Despite its share price falling 70% since 2007 and questions over its future role in South Africa's communications market (Mawson, 2013a, 1; ShareNet 2013, 1), Telkom has returned billions of United States Dollars of value to its shareholders: the Government of South Africa raised at least USD 720 million for the fiscus through Telkom's IPO (Pressly, 2003, 1) while Thintana earned at least USD 1.5 billion in net profits upon exit from its seven year investment (Mahabane & Bidoli, 2004, 23). For retail investors, Telkom's share price quadrupled in value from flotation to 2006, creating significant value for over 100,000 public investors. Equally important, Telkom's IPO generated wealth for more than 50,000 historically disadvantaged Khulisa shareholders (South Africa, Department of Public Enterprises, 2005, 1).

Competition and investment from the private sector also come with other expectations. Competitors and investors expect the government to allow them to freely compete for business so that they may earn returns on their investments. Such freedom includes the ability to set those prices and target those consumers that they feel may optimise the opportunity to earn such returns. Echoing elements of Adam Smith's advocacy of the system of natural liberty (Smith, 1776), Vodacom's CEO (at the time) promoted the concept of 'soft touch' regulation which limits public sector intervention in private markets to competition concerns:

---

131 See di Silvestro, 2004, 1-91 and Bidoli, 2004, 24.

132 For example, the 124,000 BEE investors who purchased MTN's Zakhele shares in 2010 have seen the value of their shares increase fivefold in three years with an eightfold increase projected by 2016 (Mantshantsha, 2013, 1).

> *Stop trying to fiddle with the mechanisms of running business . . . If you want telephones, don't ask government or monopolists to do it. Allow competition and private investment to carry out the task but don't then ask to regulate investors' returns. Once you've achieved a competitive market, get out!* (Knott-Craig, 2005, 35-36).

A chorus of South Africa's communications market participants supports this proposition. In the public pay telephone market, for example, the Commercial Pay Telephone Association of South Africa (COPASA) initially spurned ICASA's assertion of authority over its members (COPASA, 2004, 3-4). Subsequently conceding ICASA's right to police its industry, COPASA sought a form of 'regulation lite' based on self-enforcement through a code of practice (COPASA, 2004, 4-8). In the VANS market, as a further example, some industry players challenged the scope and application of ICASA's VANS regulatory framework (ISPA, 2005, 1-39). To the extent that VANS providers urged ICASA to increase its regulatory intervention in market activities, such requests generally sought enforcement of competition-enabling conditions rather than regulation of other market mechanisms.

Such prescriptions against government intervention in private market activities may be eminently reasonable in circumstances where a multitude of Adam Smith's invisible hands compete against each other for market share. In a competitive marketplace:

> *. . . consumer welfare is usually maximized by the functioning of the market itself; although some government regulation can make important contributions (e.g., consumer fraud laws, safety standards), the competitive process itself is usually seen as the most efficient mechanism to ensure low prices and high quality* (Brands & Leo, 1998, 17-18).

Yet South Africa's communications market, like many other communications markets throughout the world, more closely resembles a natural monopoly than a competitive marketplace. More precisely, many communications markets, including South Africa's industry, more closely resemble a natural duopoly or oligopoly than a competitive marketplace.[133] As with many other utility industries or quasi-utility industries, the reason for the pervasiveness of natural duopolies or oligopolies in communications markets is likely attributable to economic entry barriers and regulatory entry barriers that stunt competition.

---

[133] In economic terms, a natural monopoly traditionally exists when a single firm can most efficiently serve the entire market (Brands & Leo, 1998, 16-19).

In terms of economic market entry barriers, communications markets often retain many economic characteristics of a natural monopoly which restrict competition. High sunk costs associated with the development of communications infrastructure networks and the subsequent presence of economies of scale[134] from operation of such communications networks create economic advantages to first mover incumbent market participants which generally act as market entry barriers that discourage competition. Under such market conditions, the invisible hands of entrenched market players enjoy commercial advantages not because of any business acumen but because of economic circumstances that tie the hands of prospective competitors. Historical characteristics of communications markets support this economic rationale:

> *It has long been assumed that local telephone markets have been, and may still be, natural monopolies. This conclusion seems only logical. Local telephone markets have been monopolies for ages; because markets usually do not become monopolized unless there is a good reason, natural monopoly is the likely culprit. It further seems plausible that there are significant scale economies in local telephony* (Brands & Leo, 1998, 19).

In terms of regulatory barriers, communications companies in most countries originated as extensions of common carrier businesses, such as railroads and airlines, which provided services to the general public (Baldwin, McVoy & Steinfield, 1996). Early regulation of communications services was governed by the laws of common carriage, a concept derived from British law which allocates preferential market status to select firms in consideration of their delivery of universal service and discharge of other public interest functions (Baldwin et al, 1996). As such, many communications markets evolved as regulated natural monopolies (Brands & Leo, 1998, 16-19) buttressed by regulatory authorities who created legal barriers against competition, most often by prohibiting the provision of communications services absent a license and otherwise restricting the number of market participants (Brands & Leo, 1998, 16-19). Such regulatory policies and consequent policing sustain monopoly or oligopoly market characteristics in most communications markets.[135]

---

[134] Economies of scale exist when cost per unit continuously decreases as total output increases (Lipsey, Purvis & Steiner, 1991, G-5).

[135] For broader discussions of the origins of regulation of telecommunications markets, see generally: Brands & Leo, 1998; Cave, Majumdar, & Vogelsang, 2002; Baldwin, McVoy & Steinfield, 1996; and Brock, 2002.

Consistent with prevailing South African communications industry views, effective competition policy may address such market imperfections through various forms of 'soft touch' regulation. This regulatory approach avoids the imposition of any cumbersome regulatory framework upon market participants and curbs any wayward temptation of public policy actors to introduce policies that skew market efficiencies that, reliant on competitive market forces, would otherwise increase the availability, accessibility or affordability of communications services in South Africa. Beyond competition policy, it is highly likely that advocates of 'soft touch' regulation would recognise the appropriateness of regulatory activities related to safety standards, codes of conduct and other consumer protection measures without any need for tariff regulation or other public policy efforts perceived to meddle in private sector activities in ways that undermine market efficiencies.

Yet 'soft touch' regulation may inadequately acknowledge the unique role that communications markets, like some other regulated public utility industries, play in realising public interest policy objectives insufficiently addressed by the limited forms of competition prevalent in duopolistic or oligopolistic market environments. Given the unique role that the availability, accessibility and affordability of communications services play in modern society, at least four other public interest concerns demand rigorous regulation of South Africa's communications market:

- The long term capital demands of planning, operating and maintaining communications networks often conflict with short term shareholder demands. Given the importance of communications services to commerce and community, regulations are required to ensure adequate provisioning for long term capital requirements, such as the roll out of services to disadvantaged areas, as part of appropriate business models and return calculations.

- Access to basic communications services may constitute a human right.[136] In such a circumstance, public policy actors are obliged to regulate communications markets to enforce this right.

- Fair and equitable access to communications services may represent, if not a right, a requirement of social justice that needs to be enforced by regulation.

---

[136] Supra, section 2.3.4 and infra, section 5.2.

- The provision of universal service in the communications markets of emerging economies may form part of those corporate responsibility requirements reasonably imposed on private sector operators by regulation in exchange for the right to earn profits and returns from the provision of communications services in those countries.

Beyond these four general public policy grounds, the peculiar history and present socio-economic conditions of South Africa further support regulation of the domestic communications market beyond simply enforcing competition policy. Historically, the patently unequal distribution of communications services in South Africa was not the result of any general market failure but rather the specific, desired consequence of the Government of South Africa's apartheid policy. As such, many historically disadvantaged South Africans may view rectification of this historic inequality as a 'peace dividend' for living in a democratic South Africa. Any enduring, uneven distribution of communications services, particularly given the proliferation and prominence of mobile phones, may highlight the continuing divide between the 'haves' and 'have nots' in South Africa.

Since many of the 'have nots' represent some of the historically most disadvantaged individuals who continue to earn low incomes, suffer from the absence of sufficient education opportunities or live in sparsely populated areas that have failed to attract market services and often Government resources, this divide threatens to create a new form of class antagonism based not on any form of ethnic apartheid but rather on a form of economic apartheid that limits the scope of commercial opportunities and quality of life for these people. As such, the regulation of South Africa's communications market to ensure a fair and equitable distribution of communications services not only alleviates historic socio-economic structural pressures but also advances a sense of community and social solidarity necessary to keep peace, order and good government in democratic South Africa.

Even without such public interest demands motivating regulation of South Africa's communications market beyond competition concerns, market failure justifies regulation of the domestic communications industry. In many instances, the invisible hand of private markets does not evenly distribute the benefits of communications services (Riordan, 2001, 424-433) as certain populations do not have it, cannot access it or cannot afford it (Schement & Forbes, 1999, 179-193). South Africa does not appear to have escaped such market failure (Comninos et al, 2010, 1-40). In

> pursuit of profit-making commercial imperatives, South Africa's communications companies have failed many South Africans. The pervasive lack of available, accessible and affordable communications services which handcuffs South Africa's rural population and less affluent citizenry suggests that private sector actors have failed to adequately distribute communications services across South Africa, perhaps due to commercial imperatives that discourage the delivery of such services to areas or customers perceived to represent marginally profitable constituencies. Such circumstances are not sustainable in a civil society.

Having established the legitimacy and need for regulatory interventions into South Africa's communications market to promote the availability, accessibility and affordability of communications services due to market failure and inherent market conditions, subsequent consideration needs to be given to the means used to realise such policy objectives. These means should constitute the least intrusive, least market distorting public policies and practices available against known market conditions. As the Government of South Africa's 1995 *Green Paper* notes:

> *Market structures and ownership forms have a fundamental effect on the manner in which the sector may need to be regulated. In most countries where the telecommunications sector has been restructured, this has usually been done by the government in order to achieve some policy objectives, and almost invariably there has been a significant modification of regulatory structures and processes, aimed at giving effect to the telecommunications legislation and objectives* (South Africa, 1995, 25).

To date, such interventions have centred on introduction and acceleration of competition. As ICASA's Chairperson (at the time) noted, however:

> *. . . we have to be cognisant of the fact that – on its own – competition will not simply deliver better services to, for example, the rural poor or uneconomic, underserviced areas. The regulator has to play a leading role in ensuring that the* [digital] *divide is bridged and that underserviced areas are in fact serviced* (Langa, 2001a, 2).

Beyond the general influence exerted by the independent regulatory authority, therefore, due consideration needs to be given to the specific influence that other policies, programs and public sector actors may have exerted and may exert to promote (or frustrate) the Government of South Africa's desire to deliver universal service and access to communications services in the country.

## 4.5 CONCLUSION

This chapter describes the evolution of the commercial environment of South Africa's communications market between 1958 and 2013, particularly the period between 1993 and 2013. It identifies key market conditions that demonstrate improvements in the availability, accessibility and affordability of communications in South Africa during this period. The chapter considers the characteristics of key market segments, including stagnation of the fixed line segment, exponential growth of the mobile segment, promising proliferation of the infrastructure segment and maturation of the VANS segment. It identifies and positions key commercial actors in each segment to better understand the role played and potentially played by such actors in the realisation of universal service and access policies and programs in South Africa's communications market. The chapter highlights the important benefits gained by consumers from the introduction of new technologies and competition in South Africa's communications market. It also highlights the industry's generally dim views of regulatory interventions by public sector actors into the commercial affairs of private sector actors in the country's communications market.

Given that the principal purpose of regulatory policy is to alter the economic behaviour of market participants to achieve public interest objectives, however, the specific policies and programs adopted by the Government of South Africa to realise universal service and access to communications services in South Africa requires scrutiny. Have these policies and programs contributed to the delivery of communications services to those areas and those people in South Africa without the benefit of available, accessible and affordable services? What lessons can be learned from any successes or failures of such policies and programs to inform future policies and programs or other reforms that might facilitate the delivery of communications services to those people and areas left behind without such amenities in current market conditions? Chapter 5 undertakes such scrutiny.

# CHAPTER 5

# ORIGINS, APPLICATIONS AND PERFORMANCES OF UNIVERSAL SERVICE AND ACCESS POLICIES AND PROGRAMS IN SOUTH AFRICA'S COMMUNICATIONS MARKET

## 5.1 INTRODUCTION

Chapter 4 considered the commercial environment of South Africa's communications market. It identified key commercial developments which may have affected or continue to affect implementation of policies and programs designed to improve the availability, accessibility and affordability of communications services in South Africa. Building upon the understanding of universal service and access policies and programs in international markets in Chapter 2 and analyses of the regulatory and commercial environments of South Africa's communications market in Chapters 3 and 4, this chapter examines and evaluates the principal policy interventions adopted by the Government of South Africa between 1996 and 2013 to realise universal service and access to communications services in the country.[137]

These policy interventions are succinctly identified and described as follows:

- Universal service and access obligations

  The Government imposed specific universal service obligations (USOs) on fixed line network operators and specific community service obligations (CSOs) on mobile network operators as part of license conditions (collectively USAOs).

- Universal Service Agency

  The Government created a Universal Service Agency (USA) which was subsequently renamed the Universal Service and Access Agency of South Africa (USAASA)[138] to advance realisation of universal service and access to communications services.

---

[137] The Government of South Africa did not have any explicit universal service or access policies prior to 1996.

[138] Infra, section 5.2.2.

- Universal Service Fund

  The Government established a Universal Service Fund (USF) which was subsequently renamed the Universal Service and Access Fund (USAF)[139] to underwrite specific universal service and access efforts in South Africa's communications market.

- Under serviced area licenses

  The Government created and funded Under Serviced Area Licences (USALs) as a specific communications license category to accelerate delivery of communications services to areas in the country with low teledensity.

This chapter considers the rationale, nature, performance and impact of each policy and attendant programs. It proposes lessons that may be learned from such policies and programs to help inform subsequent consideration of new policies, programs and other reforms that may accelerate the realisation of universal service and access to communications services in South Africa in the years ahead.

This chapter does not discuss every policy and program implemented by the Government of South Africa in relation to information and communications technologies (ICT). It limits its examination to those principal policies and programs adopted by the Government to realise universal service and access to communications services in the country. The Government has embarked upon a myriad of initiatives in the ICT sector over the past two decades, such as the eSkills Institute (South Africa, Department of Communications, 2012b, 1).[140] These initiatives are considered only to the extent that they have affected or likely affect the Government's efforts to deliver universal service and access to communications services in the country.

---

139 Infra, section 5.2.3.

140 The eSkills Institute was integrated into a new ICT training institution along with the Institute of Satellite and Software Applications and the National Electronic Media Institute of South Africa (NEMISA) (South Africa, Department of Communications, 2013, 21).

## 5.2 NATURE AND CONTENT OF UNIVERSAL SERVICE AND ACCESS IN SOUTH AFRICA'S COMMUNICATIONS MARKET

The ability to communicate may represent a fundamental human right.[141] In 1995, President Mandela said that *'for the 21st century, the capacity to communicate will almost certainly be a key human right'* (Mandela, 1995, 1-2). In South Africa, access to communications services may already represent a basic entitlement under the *Constitution of the Republic of South Africa, Act 108 of 1996* (South Africa, 1996d) (hereinafter referred to as the *'Constitution'*). The purpose of this document, *inter alia*, is to:

> *. . . establish a society based on democratic values, social justice and fundamental human rights . . .* [and] *Improve the quality of life of all citizens and free the potential of each person* (South Africa, 1996d).

The Bill of Rights enshrined in the *Constitution* establishes some of these entitlements, notably freedom of association, freedom of expression and right to equality. Section 16 of the *Constitution* stipulates that the freedom of expression includes the '*freedom to receive or impart information or ideas.*' Section 9(2) therein empowers the Government to undertake '*legislative and other measures designed to protect or advance persons, or categories of persons, disadvantaged by unfair discrimination'* as part of its enforcement of equality rights in the country.

The right to communicate likely represents part of the right to receive or impart information or ideas promised under the right of freedom of expression (USA, 1998, 6). As early as 1998, the Universal Service Agency asserted that:

> *. . . access to telecommunications services is a basic right to all citizens to communicate, which is essential for full participation in the community as a basic element of the right to freedom of expression* (USA, 1998, 6).

The right of association may be interpreted to include a similar entitlement. In such circumstances, enjoyment of this right on equal terms and benefits is safeguarded by the equality provisions of the *Constitution*. The Government of South Africa may, pursuant to such provisions, introduce legislation and other measures, such as communications regulatory policies and programs, to ensure the same.

---

[141] Supra, section 2.3.4 and infra, section 5.2.

Reflecting its perceived standing as a fundamental right, the proliferation of communications services on an equitable basis to all South Africans represents a high public policy priority for the Government of South Africa. One of the principal public policy objectives articulated by the African National Congress in its build-up to polling for the first majority-elected Government of South Africa was the improvement of the domestic communications network (ANC, 1994, 18). The *Reconstruction and Development Programme* set a high threshold for success, including the delivery of communications services to all schools and clinics within two years (ANC, 1994, 18).

The ANC's has steadfastly maintained concern for the realisation of universal service and access to communications services over the past two decades. In 1995, President Mandela affirmed that '[w]*e should strive towards global universal service in telephony and global universal access to the information superhighway*' (Mandela, 1995, 3). The State of the Nation Addresses delivered by President Thabo Mbeki in the early years of the 21st century reaffirmed the Government of South Africa's commitment to universal service and access to communications services as a precursor to economic and social development and equality of opportunity in South Africa (Mbeki, 2005, 4; 2004, 5; 2003, 10; 2002, 4). The State of the Nation Addresses delivered by President Jacob Zuma touched upon the need to reduce communications costs, implement high speed broadband connectivity and convert to digital transmission capabilities (Zuma, 2011, 1; 2010, 1; 2009, 1). The ANC Policy Conference in 2012 devoted significant attention to the challenges presented by the lack of access to communications infrastructure and services by many South Africans (ANC, 2012a, 1-25; 2012b, 16-18).

The Government's ICT Policy Review, launched in April 2012 (South Africa, Department of Communications, 2012c, 3-43; 2012d, 1), will necessarily consider the delivery of universal service and access to communications services as part of its review of ICT policies and regulatory frameworks that apply to telecommunications, broadcasting, postal and e-commerce activities in South Africa. Such policy development efforts may yield new insights into ways to realise universal service and access to communications services in South Africa, particularly the affordability of such services. As part of any consideration of new policies or programs, however, it may be prudent to review the four principal universal service and access policies and attendant programs used by the Government of South Africa between 1996 and 2013 to identify any lessons that may be learned from past policies and programs that may improve or influence future policies and programs.

### 5.2.1 Universal service obligations and community service obligations

The first pillar of the Government of South Africa's policy platform to deliver universal service and access to communications services in South Africa imposed universal service obligations (USOs) on fixed line operators and community service obligations (CSOs) on mobile operators as part of their license conditions.[142] Universal service obligations and substantially similar community service obligations are broadly defined as '*mandatory service obligations'* that are '*imposed by license conditions or other regulatory measures*' (Intven, 2000, 6-3). USOs and CSOs were the first public policy interventions used by the Government of South Africa to advance universal service objectives in South Africa's communications market. They are often referred to collectively as Universal Service and Access Obligations (USAOs).

#### 5.2.1.1 Universal service obligations

Telkom was required to meet 16 service quality and roll out targets for its fixed line business in consideration of its license and five year extension of its effective monopoly (South Africa, 1997a). Key universal service obligations included the following requirements:

- Installation of 2.69 million new fixed access lines, including 1.68 million fixed lines in disadvantaged areas.
- Installation of 120,000 public payphones.
- Provision of telecommunications services to 3,204 villages.
- Provision of access to telecommunications services for 20,000 priority customers such as community centres, health clinics and schools.

Telkom was required to satisfy its obligations by 2002 (Telkom, 2002c, 22; South Africa, 1997a). In terms of its license conditions, Neotel was required to

---

[142] Beyond network operators, Sentech was required to provide 500 schools with computer centres within six years of 7 May 2002 when granted a Multimedia Services License (South Africa, 1996b). It was also required to provide Internet connectivity to 5,000 rural public schools over a nine year period (ICASA, 2013i, 5). Sentech had connected 103 schools to the Internet by 2013 (ICASA, 2013i, 5). Wireless Business Solutions Proprietary Limited (WBS), a VANS operator, was also required to provide Internet connectivity to 1,000 rural public schools (ICASA, 2013i, 5). The company had connected 1,800 schools by 2013 (ICASA, 2013i, 5).

establish and maintain high speed internet connectivity for 2,500 public schools or public education and training institutions and 2,500 rural public clinics or hospitals (ICASA, 2013i, 5).

#### 5.2.1.2 Community service obligations

Mobile operators were required to meet certain community service obligations in consideration of their licenses. In its initial five year license period, Vodacom was required to roll out 22,000 community service telephones (ICASA, 2013i, 4). MTN was required to roll out 52,000 community service telephones in a similar period (ICASA, 2013i, 5). Cell C was required to install 52,000 community service telephones over a seven year period (ICASA, 2013i, 4). Vodacom and MTN were required to locate their community service telephones in disadvantaged areas (South Africa, 1997b; 1997c). Cell C was required to install such phones in under serviced areas (BMI TechKnowledge 2010, 9).

Several new universal service obligations were imposed on mobile operators in consideration of their receipt of 15 year 1800 MHz spectrum licenses (Matsepe-Casaburri, 2003c, 1). On the 29 October 2004, ICASA amended Vodacom's and MTN's Mobile Cellular Telecommunication Services (MCTS) licences to include Schedules 4 and 5 which specified CSOs associated with their right to use the 1800 MHz spectrum and 3G spectrum, respectively. For receipt of their 1800 MHz spectrum, each operator was obliged to roll out 125,000 handsets and distribute 2.5 million SIM card connection packages to under serviced areas within five years. For receipt of their 3G spectrum, each operator was obliged to provide Internet access to 5,000 public schools and 140 Institutions of People with Disabilities (IPWDs). They were also required to provide 1,400 terminal equipment units (such as computers) to IPWDs. Cell C was subject to identical requirements (ICASA, 2013i, 4-5).

Vodacom and MTN were responsible for satisfying their initial obligations by 1999 (BMI TechKnowledge, 2010, 6-7; South Africa, 1993b) while Cell C was responsible for meeting its initial obligations by 2008 (BMI TechKnowledge, 2010, 9; ICASA, 2005g; 2004g). No framework has been gazetted to compel mobile operators to complete additional CSOs associated with 1800 MHz spectrum licenses (IT Web, 2006a, 1; 2006b, 1). Neither 8ta nor any of the MVNOs have any community service obligations.

In November 2013, ICASA exercised its authority under the *ICASA Act* to issue a Draft Amendment of the Universal Service and Access Obligations (ICASA, 2013i). ICASA proposed four key changes. First, the number of public schools required to be connected to the Internet by each operator was reduced from 5,000 to 1,500 within five years. Second, each operator was required to connect at least 300 schools to the Internet in the 2013/2014 financial year. Third, ICASA removed the obligation of each operator to distribute 2.5 million SIM cards to under serviced areas. Finally, the regulatory authority removed the obligation of each operator to roll out 125,000 handsets in such areas (ICASA, 2013i, 6).

The obligation to provide Internet connectivity to schools includes the requirement to provide computers, servers, printers and other local area network equipment to leverage such connectivity (ICASA, 2013e, 1). ICASA's proposals are based on public hearings conducted in 2011 which culminated with a Final Findings Document published in 2012 (ICASA, 2013e, 1).

### 5.2.2 Universal service and access agency of South Africa

The second pillar of the Government of South Africa's policy platform to deliver universal service and access to communications services in South Africa involved the creation of the Universal Service Agency (USA). At its inception in 1996, the USA represented the first dedicated agency in the world created by a government to specifically focus on the realisation of universal service and access to communications services (Msimang, 2006, 216-245) and remains only one of four such agencies in the world (Intelecon, 2009, 2).[143] The mandate of this Agency has not varied considerably since its inauguration, although its name was changed to the Universal Service and Access Agency of South Africa (USAASA) by the *Electronic Communications Act*.

The origins of the Universal Service Agency date back to the public debate on the transformation of South Africa's communications market in the middle of the 1990s. During debates of the 1994 National Telecommunications Forum and 1995 National

[143] Other countries that have followed South Africa's example are Pakistan, Ghana and Nigeria (Intelecon, 2009, 2).

Telecommunications Policy Project,[144] the Post and Telecommunication Workers Association (POTWA) insisted that the roll out of communications services to the disenfranchised black population represented an urgent public policy objective that not only demanded the attention of a new regulatory authority but also the creation of a separate dedicated agency to ensure that such redress remained a high priority. The ANC-aligned Congress of South African Trade Unions (COSATU) backed this position (COSATU, 2001, 1).

Other stakeholders disagreed with POTWA's position. Private sector interests, notably Telkom, Vodacom and MTN, opposed creation of a separate universal service agency. These actors viewed the establishment of such an agency as a redundancy likely to increase market inefficiencies by raising transaction costs for market participants through additional taxes or compulsory contributions. As part of the trade-offs incorporated into the broader restructuring of South Africa's communications market, the COSATU-backed POTWA position prevailed (COSATU, 2001) and the foundation laid for introduction of a new universal service agency to complement a new regulatory authority (COSATU, 2001, 1).

Creation of an autonomous universal service agency emerged as a prominent recommendation of the 1996 *White Paper on Telecommunications Policy*:

> *. . . classic approaches to managing the implementation of telecommunications policy would not be sufficient to keep the focus on the goal of universal service long enough to redress the existing imbalances. The apartheid system left the vast majority of black South Africans, particularly in rural communities, without access to basic communications services. . . . The potential development impact of telecommunications would be limited; the opportunity would be lost for South Africa to leapfrog traditional stages of development through the use of telecommunications to foster the application of new information technologies* (South Africa, 1996c, 8).

The establishment of a universal service agency was promoted as the principal means to deliver on the immediate implementation of universal service:

> *Members of historically disadvantaged communities, and particularly those in rural areas, must be the immediate targets for the delivery of universal service. The universal service agency is a South African response to this very particular South African social, economic and political environment* (South Africa, 1996c, 9).

---

[144] Supra, sections 3.2.3, 3.3.1 and 3.3.2.

To avoid any suggestion of competition or conflict with the regulation of South Africa's communications market and to strengthen the rationale for creating a dedicated universal service agency, the *White Paper* distinguished the enabling function of any such agency from the enforcement function of any regulator:

> [Such a universal service agency] *is concerned with development where clearly defined rules, which would apply in the regulatory complex, simply do not now exist. The Agency has no enforcement powers but should identify more creative and innovative methods to promote universal service within the broad framework of development planning* (South Africa, 1996c, 9).

The 1996 *Telecommunications Act* codified recommendations of the *White Paper* in respect of universal service objectives. This law gave prominent consideration to universal service within its much broader reconfiguration of South Africa's communications market. Out of 17 explicit objectives, the first objective of the statute was to '*promote the universal and affordable provision of telecommunication services*' while the third objective was to '*make progress towards the universal provision of telecommunication services*' (South Africa, 1996b).

The Universal Service Agency was created as a separate juristic person by the *Telecommunications Act*. This standing was preserved by the *Electronic Communications Act,* although the Agency was rebranded as the Universal Service and Access Agency of South Africa under the new law.[145] At the discretion of the President of South Africa, the *Telecommunications Act* contemplated the opportunity to close the USA at any time after five years, with the Agency's responsibilities assumed by the regulatory authority. Although the USAASA's governance model has been tweaked in successive legislation (South Africa, 2006c), the USAASA has been governed by a seven member board appointed by the Minister of Communications since promulgation of the *Telecommunications Act*. This governance structure more closely marks the USAASA as a portfolio organisation of the Department of Communications. The USAASA is also a public body under Schedule 3A of the *Public Finance Management Act, Number 1 of 1999* (South Africa, 1999b).

---

[145] For the purpose of this discussion, the USA is cited as the name of the organisation for periods prior to 2006 and as the USAASA for periods from 2006 except in any general discussion of the Agency in which the latter is generally used as it reflects the current name of the organisation.

The USAASA is vested with four key areas of responsibility.[146] First, the USAASA is tasked with an enabling function to promote the proliferation of universal service and access to communications services in South Africa. Second, the USAASA is tasked with an advisory function to provide advice to the Minister of Communications and the regulatory authority on policy matters related to universal service and access to communications services in South Africa. This advisory function includes responsibility for making recommendations on appropriate definitions for universal service and universal access in South Africa's communications market. Third, the USAASA is tasked with a monitoring function to conduct research and perform appraisals of programs related to universal service and access to communications services. This research responsibility was expanded under the *Telecommunications Amendment Act* to include issues related to bridging the digital divide, locally and globally. Finally, the USAASA is tasked with an administrative function to manage the Universal Service and Access Fund.

The USAASA is funded by the fiscus of South Africa through appropriations from the National Assembly of South Africa approved as part of the Minister of Communications' budget vote (South Africa, 2006c; 1996b). Accountability for management of this budget is maintained through submissions to the Minister of Communications as well as an annual report submitted to the National Assembly through the Department of Communications (South Africa, 2006c; 1996b).

### 5.2.3 Universal service and access fund

The third pillar of the Government of South Africa's policy platform to deliver universal service and access to communications services involved creation of a Universal Service Fund (USF) to underwrite the cost of realising universal service and access to communications services in the country. The USF was created by section 65(1) of the *Telecommunications Act* at the same time as the USA. The USF was preserved by the *Electronic Communications Act*, although the fund was rebranded as the Universal Service and Access Fund (USAF) under the new law.[147]

---

[146] These responsibilities remained materially unchanged from the *Telecommunications Act* in the *Electronic Communications Act*. Some scholars (Lewis, 2010, 6) suggest that the USAASA's remit was narrowed under the new legislation, but its four functions were preserved *verbatim* in the new legislation with only the loss of a public awareness responsibility within the enabling function.

[147] For the purpose of this discussion, the USF is cited as the name of the fund for the period prior to 2006 and as the USAF for the period from 2006 except in any general discussion of the Fund in which the latter is generally used as it reflects the current name of the Fund.

Use of USAF proceeds is defined by statute. Section 66(1) of the *Telecommunications Act* mandated exclusive use of USF funds to subsidise the provision of communications services to 'needy persons' and to subsidise the roll out of communications network infrastructure in under serviced areas. The *Telecommunications Amendment Act* prescribed two new constituencies and five new purposes eligible to receive USF subsidies. Public education institutions became entitled to receive a 50% discount on Internet connectivity through USF subsidies. Small businesses and cooperatives became entitled to receive subsidies to acquire and construct infrastructure that provided communications services to under serviced areas. The legislation also made USF subsidies available to establish telecentres, create public information terminals and facilitate the provision of multimedia services. Consistent with the convergence environment, the *Electronic Communications Act* expanded the availability of USAF subsidies to include broadcasting networks and services but generally preserved the USAF's pre-existing mandate.

Responsibility for allocation of USAF funds has evolved over time. The *Telecommunications Act* vested such responsibility with the regulatory authority. The *Telecommunications Amendment Act* subsequently transferred this power to the Minister of Communications. Although the USAASA manages the USAF, it must exercise its responsibilities '*subject to the control and in accordance with the instructions of the Minister*' under the *Electronic Communications Act* (South Africa, 2006c). Beyond this ministerial influence, this law also requires the USAASA to consult with the regulatory authority on the allocation of USAF subsidies.

The USAF is funded by operator contributions. The *Telecommunications Act* required every operator to make compulsory annual contributions to the Universal Service Fund. This law initially vested responsibility for setting the threshold for such contributions with the regulatory authority. The *Telecommunications Amendment Act* subsequently transferred such responsibility to the Minister of Communications. The *Electronic Communications Act* preserved this authority.

The formula for calculating operator contributions has changed three times. Pursuant to finalisation of Telkom's license terms, the Minister of Communications initially capped operator contributions at ZAR 20 million per annum escalating by inflation from 1997, with Telkom responsible for half of this contribution (ICASA, 2000, 6-44). Under the *Telecommunications Amendment Act,* contributions were subsequently fixed at a maximum of 0.5% of operator gross revenues. The

*Electronic Communications Act* increased this threshold to a maximum of 1% of operator revenues, subject to the discretion of the Minister of Communications.

Actual operator contribution requirements have fallen well below the maximum statutory thresholds. In 2002, ICASA set the USF levy at 0.1% of operator gross revenues (ICASA, 2003a, 3), only one fifth of the maximum percentage permitted by law. Commencing July 2005, ICASA increased the USAF levy to 0.2% of operator gross revenues (BMI TechKnowledge, 2010, 18), only two fifths of the maximum permitted by law.

The collection of USAF funds has not changed under successive legislation. All operator contributions received on behalf of the USAF are paid into the National Revenue Fund established by the *Constitution* and need to be re-allocated to the USAF by the National Assembly to support approved universal service and access programs (South Africa, 2006c; 2001b; 1996b). Contributions have far outstripped allocations. The USAF collected ZAR 636 million between 1998 and 2008 (USAASA, 2008, 17). The USAF was allocated approximately ZAR 227 million to 2008, with most funding allocated to the USA's four enabling projects (USAASA, 2008, 17). The USAF's notional reserves were variously estimated at approximately ZAR 900 million (ITU, 2011b, 47) and between ZAR 800 million and ZAR 1 billion (Perry, 2010, 1).

### 5.2.4 Under serviced area licences

The fourth pillar of the Government of South Africa's policy platform to deliver universal service and access to communications services in South Africa involved the creation of a new class of communications license called an Under Serviced Area License (USAL).[148] On 18 December 2001, the Minister of Communications gazetted 27 districts that qualified as under serviced areas (Matsepe-Casaburri, 2001f).[149] These 27 districts comprised cross-border district councils and district councils with boundaries determined by the Municipal Demarcation Board established in terms of the *Local Government Transition Act, Number 209 of 1993* (South Africa, 1993a) based on teledensity figures from the 1996 *Population Census* (South Africa, Statistics South Africa, 1996) augmented by data from *October Household Surveys* (South Africa, Statistics South Africa, 1999).

---

[148] Supra, section 3.3.5.1.

[149] The Minister of Communications subsequently added two additional districts (Matsepe-Casaburri, 2002a).

The Government of South Africa subsequently embarked on two protracted rounds of tenders to award USALs between 2001 and 2007. The evaluation criteria specified in the Minister of Communications' initial invitation for applications relied on seven benchmarks which are broadly summarised in Table 5.1 as follows:

**Table 5.1**
**USAL selection criteria**

| Category | Criteria | Weight |
|---|---|---|
| **Ownership and control** | Involvement of historically disadvantaged groups and women at ownership, board, operational and management levels. | 20% |
| **Consumer benefits** | Service innovation and packaging, tariff level and flexibility, quality of service and geographic coverage. | 15% |
| **Business plan** | Market research, nature of products and services, marketing, pricing and investment plan among other considerations. | 15% |
| **Technical plan** | Roll out targets, network planning, spectrum requirements and technology selections, among other considerations. | 15% |
| **Experience** | Previous relevant experience and availability of financial resources, among other considerations. | 10% |
| **Empowerment** | Skills transfer, skills development, employment opportunities and procurement policies. | 20% |
| **Additional features** | Additional features such as emergency service numbers, directory inquiry services and consumer education. | 5% |

Source: Adapted from Matsepe-Casaburri, 2002b.

After numerous delays (ICASA, 2005h; 2003b; South Africa, Department of Communications, 2005; Matsepe-Casaburri, 2003d) and an anaemic public consultation process (ICASA, 2004m; 2003c), the Government of South Africa ultimately awarded 14 USAL Licenses to broad based black economic empowerment (BBBEE) consortia. As part of the first round of licensing, ICASA issued four USAL Licenses in November 2004 (ICASA, 2005f; 2004a; 2004b; 2004c) with two additional USAL Licenses issued in December 2004 and one additional USAL License issued in 2005 (Smit, 2005, 1; ICASA, 2004d; 2004e). As part of the second round of licensing, ICASA issued three USAL Licenses in August 2006 (Telecompaper, 2006, 1). ICASA also issued four USAL Licenses in 2007 (Lewis, 2010, 7) which were granted not as USAL concessions under the *Telecommunications Amendment Act* but as Electronic Communications Network Services (ECNS) Licenses under the *Electronic Communications Act*. The Government did not pursue any licensing rounds thereafter as the USAL category did not survive promulgation of the *Electronic Communications Act*. The USAL project was officially cancelled on 31 March 2010 (USAASA, 2010, 71).

The Government of South Africa supported USATN operators with subsidies for the provision of communications services to under serviced areas. Section 66 of the *Telecommunications Amendment Act* permitted the Minister of Communications to use USF proceeds to fund USAL activities. Independent estimates suggested that the smallest USATN operator was likely to require at least USD 5 million to construct its network while larger territories required at least USD 20 million in capital investment by relevant USATN operators (Lewis, 2010, 13). The USA subsequently allocated ZAR 15 million to each of seven initial USATN operators which was paid through a ZAR 5 million annual subsidy over three years (USAASA, 2009c, 24).

## 5.3 EVALUATION OF UNIVERSAL SERVICE AND ACCESS POLICIES IN SOUTH AFRICA'S COMMUNICATIONS MARKET

As measured by the availability, accessibility and affordability of communications services, universal service and access in South Arica's communications market have improved in South Africa in the past two decades.[150] This improvement may be deductively attributed to two forces or a combination thereof. On the one hand, private sector actors may have contributed to universal service and access trends, notably through the proliferation of mobile communications services on commercial terms. On the other hand, public sector actors may have contributed to such trends, notably through policy interventions that directed market activities to realise universal service and access to communications services on non-commercial terms.

Given such possibilities, the four principal policies and attendant programs pursued by the Government of South Africa to realise universal service and access to communications services require consideration based on two metrics. First, such policies need to be measured for their impact on universal service and access in South Africa's communications market, whether on an intended or unintended basis. Second, such policies need to be benchmarked against the realisation of their specific policy objectives, irrespective of whether such objectives contributed to the realisation of universal service and access to communications services in South Africa. Such analyses may highlight pitfalls of past policies which should be avoided in future policy development and inform consideration of other policies, programs and reforms that may accelerate the realisation of universal service and access in South Africa's communications market.

---

[150] Supra, sections 4.2.1, 4.2.2 and 4.2.3.

### 5.3.1 Universal service and access obligations

Assessment of the nature of universal service and access obligations as well as operator compliance with such obligations suggests that satisfaction of USAO requirements dramatically differed between fixed line and mobile network operators. In the fixed line market, Telkom satisfied most of its universal service obligations and Neotel very few of its universal service obligations. In both instances, the performance of such obligations failed to materially contribute to the realisation of universal service and access to communications services in South Africa. In stark contrast to such failures, each of the three major mobile operators satisfied most of their community service obligations. In each instance the performance of such contributions meaningfully contributed to an increase in the availability, accessibility and affordability of communications services in South Africa, albeit due to market dynamics rather than regulatory imperatives.

#### 5.3.1.1 Universal service obligations

Telkom and Neotel have not fulfilled their universal service obligations. In terms of the delivery of Internet connectivity to public clinics, the Government of South Africa concedes that such an effort '*has not taken place*' (South Africa, 2012e, 5). In terms of the delivery of Internet connectivity to public schools, The Government admits that such an effort '*has limited success'* (South Africa, 2012e, 5). Both Telkom and Neotel cite poor policy planning by the Government as key reasons for their non-compliance with numerical targets related to such matters.[151] Further discussion of fixed line operators performances of their USOs are found in succeeding paragraphs.

##### 5.3.1.1.1 Telkom SA Limited

Telkom fulfilled most of its universal service obligations and elected to pay penalties rather than complete unsatisfied requirements. In terms of its installation of new telephone lines, Telkom narrowly missed its fixed line roll out targets because it decided that the amount of non-compliance penalties outweighed the commercial cost of fulfiling such obligations:

---

[151] Infra, sections 5.3.1.1.1 and 5.3.1.1.2.

> *We elected not to roll out lines in our last year of exclusivity where it was not economical to do so. As a result we missed our line roll out target by 16,448 lines, or 0.6%. . . . Based on the previous requirements contained in our existing license, we incurred total penalties for failing to meet these targets of approximately R15 million* (Telkom, 2004c, 1).

Telkom largely targeted households for new telephone lines absent any regard for the ability of such households to afford attendant services.[152] Indeed, Telkom introduced discounted installation tariffs for disadvantaged areas which created a perverse incentive whereby low income customers subscribed for communications services on the basis of reduced entry costs but were unable to satisfy subsequent service costs (Telkom, 2004a, 15-91). In some communities, upwards of 50% to 70% of new lines were disconnected due to non-payment of accounts (Telkom, 2004a, 15-91). In the end, no audit or other independent verification process was undertaken by the Government of South Africa to determine the net number of installations achieved by Telkom after disconnections.

Telkom's approach to rolling out telephone lines to under serviced areas optimised satisfaction of its USOs regardless of the commercial soundness of its approach. Telkom was evaluated by the regulatory authority on the basis of its ability to satisfy short term numerical requirements rather than implement sustainable services in under serviced areas. Given the substantial number of disconnections, the net number of new lines created may be substantially less than the 1.68 million installed new lines. Indeed, Telkom estimated that only 665,819 of 2.8 million new lines installed between 1997 and 2002 remained connected by 2004 (Telkom, 2004a, 15-91). Consequently, the net effect of such installations was substantially less than the impact foreseen by the policy motivating such efforts.

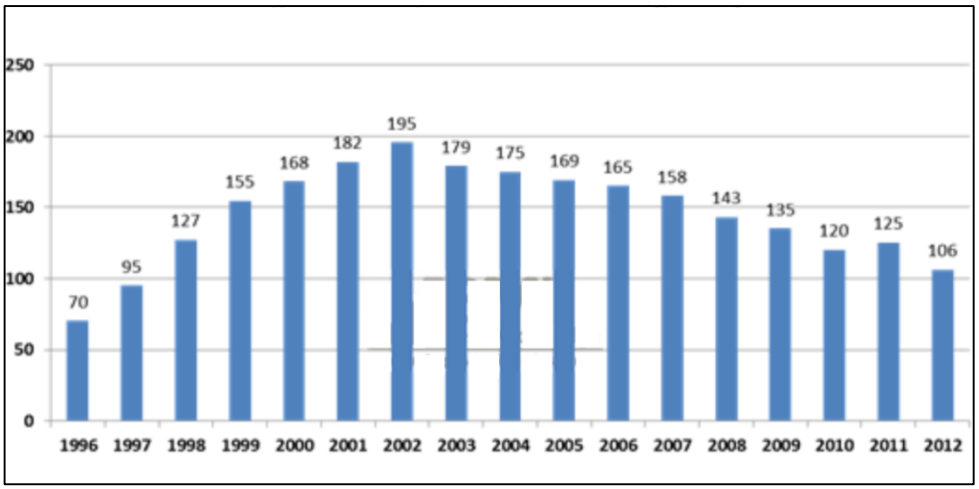
Geographic and demographic considerations were also not considered as part of Telkom's universal service obligations. As such, Telkom was incentivised to roll out telephone lines to under serviced urban areas where economies of scale lowered its costs and high consumption levels raised its revenues. Higher cost under serviced rural areas overlooked by Telkom's efforts were further isolated and disenfranchised relative to their lower cost urban counterparts and broader national neighbourhood.

---

[152] Infra, section 7.3.3.

In terms of community pay telephones, Telkom exceeded its universal service obligations. By 2008, Telkom supported over 195,000 pay telephones in the country, the peak of pay telephone penetration during the period and well beyond its USO thresholds. Figure 5.1 shows the number of pay telephones in service in South Africa between 1996 and 2012:

**Figure 5.1**
**Telkom pay telephones in service ('000s), 1996 to 2012**




Source: BMI TechKnowledge, 2013b, 1.

Similar to deficiencies inherent in the criteria applied to Telkom's fixed line universal service obligations, however, the absence of any geographic or demographic criteria to guide distribution of such phones resulted in asymmetrical installation patterns (Benjamin, 2003, 10, 13). As such, many areas suffering from the lowest teledensity not only failed to benefit from this initiative but, on a comparative basis, actually fell further behind other previously under serviced areas addressed by such efforts. No audit or other independent verification process was undertaken by the Government of South Africa to determine the continued presence or operation of pay telephones following installation. As such, some pay telephones may have been removed, stolen or broken without notice.

The market also bypassed pay telephones as a communications channel of choice. Once viewed as a significant universal access opportunity, the pervasiveness of public pay telephones has steadily declined since 2002[153]

[153] Supra, Figure 5.1.

due to the substitution effect arising from increased personal mobile phone ownership (BMI TechKnowledge, 2013b, 2). Combined with the absence of any follow-up evaluation to address the impact of such telephones, the universal service benefit from the roll out and continuing presence of public pay telephones is undoubtedly less than the impact foreseen by the policy motivating such efforts.

In terms of Telkom's obligation to provide 3,204 villages and 20,000 priority customers with telephone service, Telkom failed this test. The extent of such failure is not known. Although Telkom conceded failure (Telkom, 2004a, 15-91), the nature of the deficit has not been audited or verified by the Government of South Africa. Telkom was not compelled by its license terms or other regulations to provide the regulatory authority with any information about the identity of or criteria used to select the villages and priority customers as well as the nature of services provided to such constituencies (South Africa, 2001b).

#### 5.3.1.1.2 Neotel Proprietary Limited

Neotel has not fulfilled its universal service obligations and unsuccessfully sought to amend its obligations with ICASA (BMI TechKnowledge, 2010, 10-11, 28). In terms of network roll out obligations, it is not known if Neotel has covered 50% of the population within the required municipal areas within five years (February 2011). It is also not known if Neotel progressed towards covering 80% of the population in such areas within 10 years (February 2016). No systemic study has been conducted of Neotel's compliance efforts and Neotel has not voluntarily disclosed such information (BMI TechKnowledge, 2010, 27-28).

In terms of its Internet connectivity obligations, Neotel had only provided connectivity to 50 Further Education and Training Institutions (FETs), two public schools and 20 other schools towards the 2,500 public schools required under its USOs by March 2010. Neotel claims that ICASA has not identified any schools for Neotel's connectivity. ICASA claims that the Department of Education is responsible for identifying such schools. Neotel has further indicated that there are an insufficient number of public schools within its target areas not covered by other operators, such as the Gauteng Online

program and Khanya Project, to reach the 2,500 milestone. Neotel further claims that many public schools in its target areas lack the basic infrastructure (electricity, computers and buildings) required to support Internet connectivity (BMI TechKnowledge, 2010, 10, 24-28).

In terms of its obligations to connect clinics, Neotel has failed to satisfy its requirements. It notes that ICASA has deferred the roll out to rural public clinics and public hospitals pending the establishment of a working group on public clinics and further consultation with the Department of Health. Neotel has also identified significant challenges to the implementation of connectivity to clinics, including the absence of a sufficient number of rural public clinics to satisfy its numerical targets and the Department of Health's desire for free connectivity at such clinics (BMI TechKnowledge, 2010, 10-11, 14-15, 18, 24, 27).

#### 5.3.1.2 Community service obligations

Mobile operators have failed to satisfy their community service obligations. The initial round of community service telephone (CST) obligations was successfully implemented by each mobile operator. Although an unpublished SATRA-commissioned report (Stavrou & Mkhize, 1998) concluded that operators failed to satisfy such requirements, ICASA has confirmed compliance with the numerical targets set for each operator in respect of such obligations (ICASA, 2013i, 4-5). At the same time, the operators have fallen short on some of the USAOs imposed in consideration of their subsequent receipt of 1800 MHz and 3G spectrum licenses.

Vodacom satisfied its CST obligations through two principal means. On the one hand, Vodacom rolled out a network of phone shops housed in shipping containers into disadvantaged communities. These containers supported at least five community service telephones owned and operated by small entrepreneurs who paid Vodacom ZAR 26,000 for the facilities (Reck & Wood, 2003, 10). Vodacom often provided financing to support the acquisition of shops by such entrepreneurs (Reck & Wood, 2003, 16). On the other hand, Vodacom installed portable CSTs at education and other community institutions. By March 2004, Vodacom had deployed more than 24,500 community service telephones, including about 1,500 phones at education and other community institutions, and

23,000 phones operated from 5,015 phone shops owned by 1,962 operators (Telkom, 2004a, 68; Vodacom, 2004b, 29, 34). By 2008, Vodacom reported the installation of over 118,000 community pay telephones (Jones, 2008, 1), well in excess of its CST obligations.

MTN also satisfied its CST obligations through two principal means. On the one hand, MTN rolled out more than 11,000 autonomous pay points called community payphones by the end of 2005 (MTN, 2006b, 1). These phones were largely situated in existing retail shops and other secure areas with low risks of theft and vandalism (MTN, 2006b, 1). On the other hand, MTN rolled out a network of more than 1,000 phone shops and telecentres in partnership with franchise owners (MTN, 2006b, 1). These facilities were owned by MTN with entrepreneurs earning revenues through a profit sharing arrangement based on predetermined tariff schedules (MTN, 2006c, 1). In total, MTN rolled out over 75,000 community service telephones (ICASA, 2013i, 5).

Cell C satisfied its CST obligations. The operator rolled out 100,000 community service telephones by 2008 (Jones, 2008, 1). As such, Cell C installed almost double the number required by its community service obligations.

The operators were less successful in satisfying other components of the USAO policy. Vodacom, MTN and Cell C only delivered a fraction of the 125,000 handsets that each of them was required to deliver under the USAO policy.[154] They did not distribute the 2.5 million SIM cards that each of them was required to circulate by the policy. Vodacom, MTN and Cell C only connected a small fraction of the 5,000 schools that each of them was required to connect to the Internet.[155] No operator appears to have provided Internet access to any IPWD or delivered the 1,400 terminal equipment units that each of them was required to provide to such institutions (ICASA, 2013i, 5).

---

[154] Vodacom only delivered 26,667 handsets; MTN only delivered 25,068 handsets; and Cell C only delivered 26,666 handsets. In each instance, these handsets were provided to the South African Police Service (SAP) and the Department of Health during the FIFA World Cup period through the Department of Communications (ICASA, 2013i, 4-5).

[155] Vodacom only connected 703 schools; MTN only connected 593 schools; and Cell C only connected 81 schools. Each operator had an obligation to connect 5,000 schools (ICASA, 2013i, 4-5).

> ICASA acknowledges such outcomes. It concedes that '*Community Service Telephones (CSTs) were the only obligation that was fully completed, whereas the sim* [sic] *card and handset obligations were not fully completed'* (ICASA, 2013e, 1). In its November 2013 draft amendments to the USAO policy, ICASA dropped the SIM card and handset distribution obligations because they '*were no longer relevant'* (ICASA, 2013e, 1). In lieu of such obligations, however, the Agency proposes to require operators to connect schools to the Internet and provide supporting infrastructure (ICASA, 2013e, 1; 2013i, 6). This appears to represent an extension of the kind of USAO obligations that operators have failed to discharge on an effective basis.[156]

Analyses of the nature of the USAO policy as well as operator performance thereof support seven broad conclusions. Two conclusions highlight positive developments arising from operator performance in realising specific policy objectives while four conclusions highlight deficiencies within the structure of USAOs which eroded their effectiveness. A final conclusion addresses the impact of the USAO policy and operator performance thereof on the realisation of universal service and access to communications services in South Africa.

No positive conclusions may be drawn from the failed experiment with USOs in the fixed line market. Telkom's USO policy has attracted the strongest criticism. Some scholars posit that '*the imposition of fixed-line targets on Telkom has had almost no net effect on fixed-line penetration, at considerable cost and through much wasted effort'* (Lewis, 2010, 8). Harsher critics suggest that Telkom's USO efforts showcase the '*failure of the universal service policy*' (Hodge, 2004, 5).

However, two positive conclusions may be drawn from the generally successful experiment with CSTs in the mobile market. First, the container-based phone shop system represents a highly effective delivery model. Indeed, an independent report concluded that further CSOs should be modelled, both in terms of procedure and infrastructure, on this precedent (Stavrou, Benjamin, Burton & McCarthy, 2000, 1-37). Second, the opportunity to access communications services in phone shops at substantially lower calling charges may have meaningfully expanded the availability of communications services to poor South Africans far beyond any subsidised installation packages offered by Telkom as part of its USO efforts.

---

[156] Vodacom only connected 703 schools; MTN only connected 593 schools; and Cell C only connected 81 schools. Each operator had an obligation to connect 5,000 schools (ICASA, 2013i, 4-5).

Reliance on numerical requirements as the sole benchmark of performance represented a significant design flaw of the USAO policy. The measurement of universal service by the number of new installations without any regard for the sustainability of such installations discouraged operators from identifying viable candidates for new communications services and, in the long term, defeated the purpose behind the regulatory requirement for new installations. A modified formula which not only measures the number of installations but the ongoing operation and viability of such installations clearly represents a preferred approach, particularly given Telkom's precedent and the absence of reliable indicators regarding the sustainability of community payphones installed by mobile operators.

Reliance on fixed numerical requirements rather than proportionate requirements represented another design flaw of the USAO policy. The 1993 forecasts used to fix the level of CSTs were surpassed by 1996, roughly halfway through the performance period (Stavrou et al, 2000, 1-37). Use of community service obligations based on market share or size represents a preferred approach which addresses unanticipated market developments in a fair and transparent manner.

Reliance on numerical requirements without geographic or demographic considerations represented another significant design flaw of the USAO policy. Many CSTs were installed by mobile network operators in high traffic, urban disadvantaged areas rather than low traffic, rural disadvantaged areas (Benjamin, 1997). While the roll out of CSTs into these more accessible, more financially viable urban disadvantaged areas satisfied numerical compliance criteria and improved access to communications services by previously overlooked constituencies, such practices further isolated and disenfranchised under serviced rural areas. The use of targets which account for geographic and demographic imperatives represents a preferred approach that achieves more balanced distribution patterns.

The Government of South Africa did not learn any lessons from deficiencies that dragged down the effectiveness of the first round of CSOs in subsequent policy actions. The second round of CSOs adopted the same numerical approach used to set earlier obligations. The second round of obligations also avoided any consideration of geographic or demographic imperatives. Indeed, the USA disregarded recommendations to commission a national Geographic Information System (GIS) to identify geographic and demographic areas underserved by communications services (Benjamin, 1997). The USA ultimately commissioned the

Human Sciences Research Council (HSRC) to prepare this system in 2002, well after expiry of the initial round of community service obligations (HSRC, 2003, 50). Even with this study in hand, second round obligations gave operators greater freedom to install CSTs and give away SIM cards at commercially convenient locations without regard for geographic or demographic imperatives. As with other policy failures, the Government acknowledged in 2012 that '*the provision of SIM cards was overtaken by market forces'* (South Africa, 2012e, 5).

Despite such deficiencies, the USAO policy contributed (marginally) to the improvement of universal service and access to communications services in South Africa. On the one hand, Telkom rolled out of 665,000 sustainable lines to disadvantaged areas that improved the plight of about 3% of the 41% of South Africans living in under serviced areas (South Africa, 2001a, 1). Due to the use of a purely numerical basis to benchmark performance, however, the specific identify of such communities remains unknown. Indeed, household fixed line penetration among black households decreased from 29.2% in 1997 to 28.7% in 2002 (Hodge, 2004, 9), the period under which Telkom rolled out its new lines under its USO efforts. On the other hand, the roll out of 29,500 community service phones between 1994 and 1999 improved the plight of some disenfranchised South Africans. Yet CSTs accounted for less than 1% of the 3 million new mobile phone subscribers gained between 1994 and 1999 (BMI TechKnowledge, 2013b, 1).

The extent of benefits achieved through such policy-directed activities pales in comparison to universal service accomplishments achieved by market-directed activities. The preponderance of mobile phone use among South Africa's black population across geographic and demographic classifications (South Africa, Statistics South Africa, 2009, 148-150) suggests that market forces rather than regulatory forces accounted for the majority of improvements to universal service and access to communications services in South Africa in the relevant period. As one scholar succinctly notes:

> *Rather than regulatory intervention, it is market forces that have conspired to undermine the fixed-line USOs and to cause the mobile operators to exceed their USOs* [CSOs] *by orders of magnitude* (Lewis, 2010, 10).

Overall, the Government of South Africa's policy of imposing specific numerically-measured USAOs on communications network operators contributed marginally, but not materially, to the overall promotion of universal service and access to communications services in South Africa. Such policy leadership by the Government of South Africa accelerated the development of a highly effective distribution system by private sector actors for phone shops and the implementation of affordably priced outbound call tariffs for community pay telephones.[157] At the same time, several significant design flaws diluted the impact of such policies and, absent any ability to respond to market developments, led to the rise of market-driven forces as the principal reason for improvements to universal service and access to communications services in South Africa. Time will tell if the current round of proposed USAOs (related to the delivery of Internet connectivity to schools and provision of related infrastructure) fare any better than strikingly similar previous requirements which were not satisfied by operators.

### 5.3.2 Universal service and access agency of South Africa

The Universal Service and Access Agency of South Africa has yet to deliver any substantive impact on the realisation of universal service or access to communications services in South Africa. In terms of its enabling function, the USAASA has supported four principal programs to advance universal service and access in the country without much success.[158] In terms of its advisory function, the USAASA has delivered a limited amount of recommendations and advice to the Minister of Communications and ICASA with few results.[159] In terms of its monitoring function, the USAASA has undertaken a limited amount of research and appraisal efforts with mixed results.[160] In terms of its administrative function, the USAASA has not managed the USAF in a competent manner.[161]

---

157 The ZAR 90c tariff was substantially lower than the approximately ZAR 2.50 tariff for regular air time.

158 Infra, section 5.3.2.1. The USAASA also supported some other strategic initiatives such as: training; providing libraries with access to ICT; and community websites. The four programs contemplated herein, however, represent the core initiatives undertaken by the USAASA in the relevant period. Other than the training initiative, the USAASA failed to achieve targets in every area.

159 Infra, section 5.3.2.2.

160 Infra, section 5.3.2.3.

161 Infra, section 5.3.2.4.

Most likely as a result of such limited success, the USAASA commenced a process to redefine its strategy and operating model between 2010 and 2012 (USAASA, 2009a, 1-2). This realignment effort included a pronounced shift away from an implementation role towards a facilitation role (USAASA, 2010, 4). Since the start of this repositioning effort, the USAASA has achieved modest success in several areas, but a long road lies ahead before the USAASA makes any material impact on the realisation of universal service and access to communications services in South Africa. As it continues to refine its efforts to implement its mandate, the USAASA may benefit from a concise assessment of its past performance of its four key functions. The succeeding paragraphs of this section provide such a reckoning.

#### 5.3.2.1 Enabling function

The USAASA's execution of its enabling function may be measured against the success of its enabling efforts. Since its inception in 1997, the USAASA has been involved in four principal enabling programs. It developed and implemented a Telecentre Program and a Cyberlab Program with little success.[162] It supported the roll out of an expensive and inefficient public information terminal (PIT) program by the Department of Communications and the South African Post Office.[163] Finally, it developed and implemented a network of community digital hubs with mixed results.[164] The achievements and failures of these four programs represent the most obvious means to evaluate the USAASA's discharge of its enabling function.

##### 5.3.2.1.1 Telecentre program

The centrepiece of USAASA enabling efforts was a Telecentre Program. A telecentre may be characterised as:

> *. . . a public place where people can access computers, the Internet, and other digital technologies that enable them to gather information, create, learn, and communicate with others while they develop essential digital skills* (Mayanja, Acevedo, Caicedo & Bure, 2013, 1).

---

[162] Infra, sections 5.3.2.1 and 5.3.2.1.2.

[163] Infra, section 5.3.2.1.3.

[164] Infra, section 5.3.2.1.4.

A telecentre may also be known as a Public Internet Access Centre (PIAP), village knowledge centre, infocentre, Community Technology Centre (CTC), Community Multimedia Centre (CMC), Multi-purpose Community Telecentre (MCT), Common/Citizen Service Centre (CSC) or Point of Presence (PoP), among the other names of such places around the world.

The USA's Telecentre Program evolved informally over four phases. The initial phase between 1997 and 2003 represented a growth period characterised by an ambitious but poorly defined and poorly executed program that largely failed to realise its mandate. The second phase from 2003 to 2006 represented a consolidation period characterised by a modest but better defined and better executed program that cut some early losses and corrected some early mistakes. The third phase between 2007 and 2010 absorbed the telecentres within the Government of South Africa's Multi-Purpose Community Centre (MPCC) project that ultimately became the Thusong Service Centre initiative (USAASA, 2009c, 18). The fourth phase from 2010 to date resurrected the Telecentre Program as the community access centre program (USAASA, 2010, 12, 14-15).

#### 5.3.2.1.1.1 First phase

The first phase of the Telecentre Program focused on creating a network of community-based telecentres. Spurred by the Ministry of Communications, the USA envisaged a need for over 5,000 centres to meaningfully deliver universal access to communications services through such centres. It set ambitious roll out targets to realise this objective (Benjamin, 2003, 13). At the outset, the USA intended to create 60 telecentres in 1997 and 100 centres in 1998 (Benjamin, 2003, 11). The USA expected to fund the majority of start-up costs for such centres from the Universal Service Fund but thereafter rely on owners or operators to fund telecentre costs from their own resources or revenue streams (Benjamin, 2003, 2-6).

The USA launched a national campaign to advertise its Telecentre Program that invited applications to own and operate telecentres in under serviced areas (USA, 2001). Hundreds of individuals and numerous community groups responded to advertisements (USA,

2001). The USA issued evaluation criteria which favoured the selection of owners/operators from the ranks of organisations which satisfied specific empowerment criteria, such as the inclusion of women, as well as specific management criteria, such as a track record of successfully operating enterprises in under serviced areas (USA, 2001).

The price tag of telecentres varied by locations and ownership structures. Early telecentres cost between ZAR 150,000 and ZAR 250,000, with an average cost of ZAR 200,000 shared between the USA and telecentre owners (Benjamin, 2003, 2). The cost of early mini-telecentres ranged to ZAR 15,000 which was funded equally by the USA and operators who ran such facilities (Benjamin, 2003, 2).

Telecentres generally provided a standard suite of services. Each telecentre was equipped with between three and five telephone lines, typically Telkom fixed lines or Vodacom CSTs, as well as a primitive billing system (Benjamin, 2003, 2). Each centre was equipped with between two and four computers, although some facilities managed to secure additional computers through relationships with education institutions or specific suppliers (Benjamin, 2003, 2). Each telecentre supported a printer, photocopier and facsimile machine and many telecentres supported a scanner, television and video recorder (Benjamin, 2003, 2). Most telecentres were located in secure, refurbished buildings that included cubicles for use of telephones and computers (Benjamin, 2003, 2).

Mini-telecentres provided similar services. Each mini-telecentre was equipped with a moveable cabinet that housed one computer, a three-in-one multimedia resource (printer, photocopier and scanner) and two Vodacom CSTs (Benjamin, 2003, 2). The location of each mini-telecentre was determined by the owner/operator.

Subsequent roll out of the USA's Telecentre Program was uneven. Despite its early ambitions, the USA only established 65 telecentres by March 2001, representing 54 fully equipped centres and 11 mini-centres (Benjamin, 2003, 2). This number grew slowly over the next two years, with the USA supporting 70 telecentres by August 2003

(USA, 2004a). Given the USA's selection criteria, the majority of early telecentres were owned by community organisations such as women's groups, civic organisations and community associations (Benjamin, 2003, 2-4). Remaining telecentres and mini-centres were owned by entrepreneurs (Benjamin, 2003, 2, 7).

The first phase of the USA's Telecentre Program was a failure. Over half of 65 telecentres established by March 2001 were unable to offer telephone services, while nine out of 10 centres were unable to offer Internet services (Stavrou, Whitehead, Wilson, Seloane & Benjamin, 2001). Over one third of established centres were unable to offer computer services (Stavrou et al, 2001). Nearly one third of established telecentres went out of business, a significant failure rate. Only 23 operations constituted profitable enterprises (Stavrou et al, 2001). Although the USA rolled out another five telecentres in the next two years, a further four telecentres closed down, resulting in some form of ongoing operations at 45 telecentres by September 2003 (Benjamin, 2003, 3-6). As such, the USA experienced a 64% success rate in launching and sustaining at least partially operational telecentres and a 44% success rate in launching and sustaining fully operational telecentres. Both benchmarks indict the USA's early Telecentre Program as a failure.

Five circumstances may have conspired to doom the first phase of the Telecentre Program as a failure. First, the USA may have misunderstood its mandate. Second, the USA may have under-estimated the institutional capacity required to implement its Telecentre Program. Third, the USA may have engaged in inadequate or insufficient planning. Fourth, the USA may have adopted a flawed implementation model. Fifth, the USA's operational freedom may have been squeezed by the competing priorities of other actors, notably Telkom, ICASA and the Department of Communications.[165]

---

[165] Each of these five circumstances is discussed at length in the immediately succeeding paragraphs of this section.

At the outset, the Universal Service Agency's view of its role in the Telecentre Program may have exceeded the scope of its mandate. By assuming full responsibility for the Telecentre Program, the USA coupled its enabling function with an implementation function. Conception, advancement and funding of a Telecentre Program executed by other agents represented a legitimate enabling function of the USA. By focusing significant efforts on implementation of the Telecentre Program on a proprietary basis, however, the USA diminished its unique ability to empower and enable other actors to implement such a program. As a review report concluded: '[t]*he Agency, which had no mandate or authority to undertake implementation projects, nonetheless made implementation its core function'* (USA, 2005a, 93). As a Telkom representative observed: '*Government wants to be the policy maker, the operator, the regulator, everything'* (Bate, 2014e, 14).

The USA may have also 'bit off more than it could chew' when it assumed responsibility for execution of the Telecentre Program. The Agency did not have the institutional capacity to implement large scale public policy programs. The handful of USA field workers were likely insufficient to adequately guide, monitor and evaluate the performance of telecentres and, at the same time, support implementation of other USA activities. Greater investment in operational and financial controls at telecentres, additional training of telecentre personnel and more proactive intervention to resolve community conflicts may have saved 12 of 21 telecentres that went out of business (Benjamin, 2003, 10-15).

Poor planning may have doomed implementation of the Telecentre Program. The scope of variables, operational requirements and administration of a national Telecentre Program were not adequately canvassed as part of the USA's planning process. Rather than immediately roll out a national Telecentre Program, the USA could have introduced interim measures that tested delivery options (Benjamin, 2003, 10-22).

Poor planning likely led the USA to adopt a flawed implementation strategy. One of the central flaws of the USA's abridged planning effort was to disregard the prospective impact, positive or negative, of market determinants on telecentre operations. The USA's failure to consider market determinants in the allocation of subsidies, selection of telecentre locations and distribution of telecentre equipment represented three critical oversights that may have compromised the viability of several telecentres.

The USA likely mismanaged the allocation of subsidies by ignoring market conditions. While certain telecentres in urban areas with strong pent-up demand may have required a small subsidy or soft loans to fund capital equipment, other telecentres in more remote, sparsely populated areas may have required a large equipment subsidy as well as ongoing financial assistance to support operations. Indeed, the USA failed to '*run demonstration pilot projects to see what is possible, using a combination of market forces and subsidy*' (Benjamin, 2003, 18). A more tailored, market-sensitive mechanism might have saved money and improved prospects for some of the telecentres that went out of business.

The USA likely botched the selection of telecentre locations by ignoring market conditions. On the one hand, the Agency's supply-driven application process promoted the *ad hoc* distribution of telecentres rather than the balanced, strategic positioning of such facilities. Without any demand analysis to determine the necessity for telecentres in specific locations, some telecentres were likely located in jurisdictions with access to substitute services. On the other hand, the USA overlooked the relationship of the Telecentre Program to other market efforts, notably the roll out of CSTs by mobile operators. In at least one instance, a Telkom pay telephone was vandalised near a newly established telecentre to eliminate competition (Benjamin, 2003, 13). As a Telkom representative said: '[t]*hey had the responsibility to do a proper study; a proper investigation'* (Bate, 2014e, 7). Greater coordination of telecentre efforts by the USA with other market actors would have overcome these deficiencies.

The USA likely mishandled the distribution of telecentre equipment by ignoring market conditions. The USA did not conduct any needs analysis to determine the nature of services required in individual areas. The communications needs of rural areas vary dramatically from the communications needs of urban areas. Standardised telecentres failed to account for such nuances. While telephone service represented the most popular offering (Stavrou et al, 2001), telecentres *'are not an appropriate model if the intention is just supplying telephony*' (Benjamin, 2003, 13), particularly since the cost of operating a phone shop or installing a community payphone is substantially less than the cost of operating a telecentre. As such, the USA's cookie-cutter approach likely led to over-capitalisation or under-use of equipment at some telecentres which created an expensive, inefficient and suboptimal means of delivering telephone services to some communities and an expensive, inefficient and redundant means of offering unnecessary communications services to other communities.

Culpability for the failure of the USA's initial telecentre efforts may be shared with at least three other actors. From an operational perspective, Telkom often failed to hardwire telephone lines in telecentres in a timely manner (Benjamin, 2003, 14), thereby delaying the roll out of specific telecentres. From a financial perspective, the regulatory authority controlled the purse strings to the Universal Service Fund and the USA often suffered from '*not receiving money from the USF for a long time, then being obliged to spend it quickly to show delivery for the Ministry*' (Benjamin, 2003, 14). From a political perspective, the Department of Communications exerted significant pressure upon the USA to not only originate but also implement the Telecentre Program in a short period (Benjamin, 2003, 1, 16). Torn by *'a push and pull of forces above them*' (Benjamin, 2003, 16), the USA may have risked implementation of the Telecentre Program despite known deficiencies (Benjamin, 2003, 14).

Such known deficiencies would ultimately require remedy. The March 2001 review of the USA's performance recommended that the Agency exit responsibility for implementation of the Telecentre Program as well as all other project implementation tasks (Stavrou et al, 2001). Yet the

USA rejected any suggestion that it abandon responsibility for implementation of the Telecentre Program. It ultimately attempted to salvage its Telecentre Program through a second phase of development between 2003 and 2005.

#### 5.3.2.1.1.2 Second phase

Following the failure of early telecentre efforts, the Universal Service Agency recognised that it needed to build, fund and operate better 'mouse traps' to sustain the viability of its Telecentre Program. Implicitly acknowledging the flaws of its initial business model, the Agency commissioned the University of South Africa (UNISA) to evaluate models to rehabilitate the 45 telecentres which remained operational as of September 2003 (USA, 2003b). Building upon the lessons of the first phase of operations, the Agency subsequently embarked on the second phase of its Telecentre Program between 2003 and 2006.

The USA recognised that it needed to underwrite the cost of building better mouse traps. Substantial increases in the amount of operator contributions to the Universal Service Fund commencing 2003 and expanded access to USF reserves to bankroll proprietary projects arising from new provisions of the *Telecommunications Amendment Act* enabled the USA to earmark USF monies to cover operating costs, capital acquisition and replacement costs for the reconstituted Telecentre Program. The Agency also paid for training costs as part of the second phase of the Telecentre Program.

The USA recognised that it needed to attract more mice to its mouse traps. Implicitly acknowledging its failure to account for market determinants in its initial roll out of telecentres, the USA commissioned a community needs analysis to determine key demand dynamics (USA, 2006b). Moreover, the USA embarked on outreach efforts to communities served by telecentres to educate prospective clients about the availability and benefits of telecentre services (USA, 2003b).

The USA recognised that it needed a steady supply of cheese to keep its mouse traps in business. The USA modified its telecentre selection criteria to favour joint ventures with non-profit community organisations and schools (USA, 2003b). Applications were considered on a 'first come, first served' basis and guided by the availability of funds. Only areas without access to existing telecentres were considered for new facilities and the USA encouraged collaboration with other urban renewal and ICT programs. Applicants needed to contribute to operating costs and support sustainable business plans (USA, 2005b).

36 telecentres were rolled out during this consolidation period along with 52 Multi-Purpose Community Centre (MPCC) facilities (USA, 2006c, 13). The USA also established a computer refurbishment centre and over 3,000 refurbished computers were installed in telecentres by 2005 (USA, 2006g, 1). Despite a focus on refurbishment of existing telecentres, the USA deployed nearly 60 centres in 2006 (USA, 2006c, 13) with a total of 154 telecentres ultimately established by 2007 (USAASA, 2010, 4).

#### 5.3.2.1.1.3 Third phase

The bulk of the Telecentre Program was ultimately integrated into the Government of South Africa's Multi-Purpose Community Centre Program (now called the Thusong Service Centre Program) in 2007 (USAASA, 2009c, 18). The Government mandated the Government Communication and Information System (GCIS) to establish Multi-Purpose Community Centres commencing December 1999 (South Africa, 1999c). MPCCs provide access to a host of government services (post office, library, welfare services, housing information, education services and home affairs services) through a one stop ICT-enabled service facility supported by an in-house telecentre (Thusong, 2012, 1). The USA was allocated responsibility for establishing telecentre facilities within each MPCC and promoting use of telecentre technology to access MPCC services (GCIS, 2006a, 3).

The GCIS established 77 MPCCs by November 2005 (South Africa, 2006b, 1). In January 2006, the Government of South Africa required the GCIS to create at least one MPCC in every one of 284 municipalities by 2014 (South Africa, 2006b, 1). By March 2012, 171 Thusong Service Centres operated across the country (Thusong, 2012, 1), leaving an additional 113 centres to be established by the deadline.

As with the USA's initial roll out of its Telecentre Program, the GCIS experienced a number of significant problems during launch of the MPCC Program. By March 2000, the MPCC Program faced '*major challenges*' which included '*training, ensuring that departments operate in an integrated manner, commitment from departments to provide efficient services as well as sustainability and maintenance*' (GCIS, 2000, 2). These challenges led a 2001 Parliamentary Committee to '*question the sustainability of these centres*' (GCIS, 2001, 4).

As a result of a review process, however, '*many logistical problems* [were] *ironed out*' (GCIS, 2001, 4). By May 2003, GCIS reported that '*all the evidence is that the MPCCs are making an enormous impact*' (GCIS, 2003, 5). This impact was being driven by greater ICT contributions by departments providing frontline MPCC services as well as stronger private sector participation that included a hand in '*the modernisation of infrastructure*' in MPCC facilities (GCIS, 2003, 6). No empirical analysis of Thusong Service Centre performance appears to have occurred since 2001.

Telecentres appear to enjoy greater success when part of Thusong Service Centres. Anecdotal evidence suggests that Thusong Service Centre facilities spin-off demand for telecentre services from consumers initially attracted by the availability of government services at such centres (GCIS, 2006b, 1; 2006c, 3):

> *Centres that link to other organisations that are valued in the community, such as schools and government offices, are more likely to attract users and will have more 'organisational momentum' to keep functioning* (Benjamin, 2003, 21).

Higher demand for telecentre services begets higher social and economic returns from the public sector investment in such facilities.

Additional investments in management and financial resources by public sector institutions appear to improve the success rate for telecentres within the Thusong Service Centres by removing many of the operational and financial pitfalls that plagued stand-alone USA telecentres. Indeed, many of the critical failure factors that contributed to the closure of early USA telecentres (weak management, lack of coordination, financial mismanagement, community conflicts and absence of trained personnel) are overcome through greater public sector support. Moreover, the payment of maintenance expenses, capital costs and connectivity costs by public sector institutions eliminates many of the financial risks assumed by telecentre operators.

While materially improving access to government services, particularly in rural areas, Thusong Service Centres have yet to make and are unlikely to make any material contribution to the realisation of universal access to communications services in South Africa. Even with a telecentre in every Thusong Service Centre in every municipality, the number of telephone lines located within such facilities does not materially impact the availability, accessibility or affordability of communications services in the country. Indeed, many Thusong Service Centres are located in urban centres where a wide range of communications services are already provided by private sector firms. In remote areas where such facilities are not available, other policy delivery options (such as direct subsidies to private sector operators) may represent more cost effective market interventions than a national Telecentre Program.

Thusong Service Centres represent a very expensive and inefficient means to deliver universal access to communications services in South Africa. Thusong Service Centres operate without regard for any actual demand for services. The cost of buying and operating equipment may exceed revenues generated from use of such equipment in some areas. Private sector actors (such as phone shops, copy centres and Internet cafes) may deliver more communications services to more people and empower more entrepreneurs in more disadvantaged areas at lower costs than telecentres located in Thusong Service Centres.

Telecentres located in Thusong Service Centres are not accountable for such concerns because they provide other valuable services. The ability to access government resources through telecentre facilities delivers a significant benefit and convenience to many citizens of South Africa. The ability to gain guidance with the use of computer technology through government-paid staff at Thusong Service Centres resources represents another significant benefit.

Yet such benefits do not materially accelerate the realisation of universal access to communications services in South Africa. As such, telecentre capabilities within Thusong Service Centres should be seen for what they are: a public service provided and paid for by the Government of South Africa to enable citizens to access government services and, when desired, use government-provided communications services to pursue private matters. Acceptance of this revised mandate diminishes the need to justify the financial and operational resources required to sustain telecentres. The return on investment is measured by heightened access to services offered by the Government of South Africa rather than the delivery of universal access to communications services in the country.

#### 5.3.2.1.1.4 Fourth phase

The Universal Service and Access Agency of South Africa revived its Telecentre Program in the form of community access centres (Access Centres) in 2009 (USAASA, 2009c, 18). As part of its *2009 to 2014 Corporate Plan*, the USAASA undertook to establish 1,250 new Access Centres by 2014 (USAASA, 2009a, 45). The Agency also undertook to rehabilitate existing telecentres still operating under the previous program prior to handover to new operators, mostly private sector owners or government departments (USAASA, 2012c, 1; 2010, 14).

The USAASA appears to have learned from some of the mistakes made in its earlier telecentre efforts in advancing the Access Centre program. First, the USAASA does not operate the centres. Existing centres are rehabilitated and handed over to private sector operators or government departments. Second, the USAASA is facilitating public-

private partnerships for new Access Centres. It is helping local communities with:

> *. . . creating partnerships with service providers to accelerate a single roll out as opposed to attempting it piecemeal. We also opted for solutions that worked best according to each situation instead of applying a single one-size-fits-all approach* (USAASA, 2010, 4).

Such efforts are consistent with the USAASA's desire to undertake '*a more facilitative role within the ambit of our mandate, as compared to our previous approach as an implementation agency'* (USAASA, 2010, 4). Such efforts also appear to acknowledge, in some cases, the greater capacities and efficiencies of private sector actors to roll out and operate Access Centres.[166]

It is too early to judge the success or failure of the Access Centre Program. The USAASA admits that the Agency '*was not getting a good return on its investment'* in its Telecentre Program (USAASA, 2009c, 18). As the USAASA requests, it '*must be judged according to where it is going and not from where it has come*' (USAASA, 2010, 5). Despite measured improvements, early indications suggest that the USAASA continues to be dogged by the inability to effectively manage and efficiently finance enabling programs, even on a facilitative basis.

The USAASA targeted the roll out of 100 Access Centres under a 'Rapid Deployment Project' by 2012 (USAASA, 2010, 4). It did not achieve this objective due to bureaucratic delays (USAASA, 2010, 12). During the 2011 fiscal year, the USAASA was expected to roll out 44 additional Access Centres but *'[a]ll projects were placed on hold, pending conclusion of forensic* [sic]' (USAASA, 2012a, 14). Yet it connected between 55 and 85 Access Centres and rehabilitated another 80 Centres in 2012 (Pule, 2013, 1; South Africa, Department of Communications, 2013, 21).

---

166 The USAASA's apparent enthusiasm for private sector participation is tempered by the handover of many Access Centres to government departments (USAASA, 2012c, 1) and lack of use any market-driven mechanisms to set subsidy levels for Access Centres.

The USAASA continues to resist use of market mechanisms to optimise funding solutions. As explicitly required by the *Electronic Communications Act*, it would be prudent public sector practice for the Agency to use market-driven mechanisms to determine the need for Access Centre subsidies and, if a need exists, to efficiently set subsidy levels through market-driven means such as reverse auctions. Profit-making companies will operate Access Centres that do not generate revenues and will not abandon financially non-viable Access Centres if the USAASA compensates them for the absence of such revenues. Through the use of internally-set subsidies without regard for any market benchmarks, however, the USAASA may be paying some Access Centres a larger subsidy than needed to support operations in certain areas.

#### 5.3.2.1.2 Cyberlab program

An e-school Cyberlab Program represented another key initiative rolled out by the Government of South Africa which affected universal access to communications services in the country. The Department of Communications launched this program in 2000 to provide computer and Internet services to under serviced areas (South Africa, 2004b, Chapter 2). The creation of computer centres in public schools was the principal means used to deliver on this mandate (USA, 2004a). Each 'cyberlab' consisted of 30 computers with a server, printer, photocopier, scanner, fax machine, television, video recorder, Sentech satellite connection, furniture and air conditioning (USA, 2004a). The Department of Communications vested the USA with responsibility to roll out of this program (South Africa, 2004b, Chapter 2).

The USA developed a selection process that favoured secondary schools in under serviced areas that matched 21 nodal points identified by the *Integrated Sustainable Rural Development Programme* (ISRDP) which lacked computer facilities (USA, 2005b). The USA expected secondary schools to share facilities with primary schools and surrounding communities. Interested schools were invited to submit applications that were vetted by a provincial coordinator and approved on a 'first come, first served' basis against allocated funds (USA, 2005b).

Based on this selection process, the Department of Communications and the USA adopted a two phase implementation program. The first phase was delivered under the auspices of the Teacher's e-Readiness Program and provided computers and training to science teachers to enable them to subsequently teach computer skills to students (South Africa, Department of Communications, 2004, 1). The second phase provided computers and training to students. To ensure that this program was undertaken according to specific standards, the USA produced a school implementation manual to guide such efforts (USA, 2004a).

Initial roll out of the Cyberlab Program occurred in 2002. Following the two phase protocol, the USA delivered five computers to each of 69 schools to train teachers in computing skills (South Africa, Department of Communications, 2004). The USA subsequently delivered 25 more computers to the same 69 schools for student use and instruction (USA, 2004a). In 2003, the USA delivered cyberlabs to a total of 129 schools out of 130 targeted institutions (USA, 2004b). In 2004, the USA rolled out 50 cyberlabs and trained over 500 teachers (USA, 2004b). By 2005, the USA had deployed 275 cyberlabs, mostly in less affluent provinces (South Africa, 2004b, 7-42; South Africa, Department of Communications, 2006a, 1). The USAASA supported 362 facilities by 2010 (USAASA, 2010, 4).

A significant amount of money was allocated to roll out the Cyberlab Program. Each cyberlab cost over ZAR 331,000 (including site preparation and equipment installation). The USF historically underwrote set-up costs and expected to fund operating costs into the medium term (USA, 2004b). The USA initially overlooked the need to replace or refurbish cyberlab equipment for the first three years of the program. Perhaps due to an inability of host schools to maintain or replace such equipment, however, the USA subsequently allocated funds for such purposes (USA, 2004b). The USA ultimately allocated additional money to help each school cover the costs of a help desk, maintenance and insurance (USA, 2006c, 13, 22).

The self-funding interconnectivity requirement of the Cyberlab Program did not function well. Many cash-strapped South African schools could not maintain cyberlabs due to an inability to meet ongoing connectivity costs. As of 2001, about one half of host schools with cyberlabs could not afford to

maintain Internet connections for their facilities (Stavrou et al, 2001). As of 2012, connectivity continued to represent a primary obstacle for the Cyberlab Program because the USAASA experienced '*fruitless and wasteful expenditure . . . due to payments made to Telkom and Sentech for internet connectivity of cyber labs and telecentres, while there was in fact no internet connectivity on the sites'* (USAASA, 2012a, 79). The USA should have anticipated the need to support and manage the cost of connectivity for cyberlabs. In addition to leveraging discounted connectivity rates available through other Government programs, it could have proposed a Cyberlab Program budget that included allowances for payment of Internet connection rates to a certain level per school based on student enrolment numbers, thereby securing at least a minimum level of access for each facility.

The USA appears to have learned a small lesson from the 'go it alone' policy implementation approach adopted during its roll out of early telecentres. In 2004, the USA teamed with Digital Partnership of South Africa to provide refurbished computers to certain cyberlabs and telecentres (South Africa, 2004a, 1). Given the heavy use but light processing requirements of most cyberlab computers, this partnership enabled the USA to reduce capital costs without compromising benefits to students. The USA also partnered with SchoolNet SA to facilitate the training of cyberlab teachers (South Africa, Department of Communications, 2004, 1).

Yet such partnerships are inconsequential compared to broader collaboration opportunities overlooked by the USA in the policy space served by the Cyberlab Program. The inability or unwillingness of the USA to partner with other actors diminished the scope and impact of the Cyberlab Program. On a regional level, the NEPAD e-schools project substantially duplicated the cyberlab mandate in several African countries, including South Africa (NEPAD, 2005a, 1; 2005b, 1). On a domestic level, numerous provincial efforts not only duplicated the mandate but also exceeded the impact of the Cyberlab Program (Cape Gateway, 2006, 1; Gauteng, 2006, 1; Khanya, 2006, 1; Senne, 2006a, 1; Sentech, 2006, 1; Joemat-Pettersson, 2002, 1). Private sector programs have equalled or exceeded public sector efforts (Blaine, 2006, 1; MTN, 2006d, 1; Pandor, 2006, 1; Shuttleworth Foundation, 2006, 1).

The USA's inability or unwillingness to reach out to such market players undermined the cost effectiveness of the Cyberlab Program. Opportunities to use economies of scale to procure less expensive equipment were lost. Opportunities to access donor funding or private sector contributions to offset the cost of equipment, training, maintenance, connectivity and operating overheads were lost. Given its unique position, the USA's lack of use of leverage represented a significant policy failure which reduced the cost effectiveness of the Cyberlab Program.[167]

The USA's failure to coordinate roll out efforts with other actors also undermined the impact of the Cyberlab Program. Rather than wait for applications from schools without computer facilities, the USA should have proactively developed an integrated roll out strategy that ensured effective demographic and geographic coverage of target populations through different delivery channels. Given its unique position, the USA's unwillingness to assume this coordinating function represented a significant policy failure which resulted in redundancies and disproportionate coverage of certain geographies.

The USA's Cyberlab Program earns a failing grade. It has not materially contributed to higher computer literacy levels in South Africa. The failure of the USA's Cyberlab Program to make any material contribution towards the improvement of South Africa's computer literacy levels largely resulted from a lack of scale. The small size of the program is a function of two factors. First, the USA had limited institutional capacity. Within such limited capacity, the USA did not retain the capability to roll out or operate cyberlabs on an efficient operational basis or cost effective financial basis. Second, the USA steadfastly refused to relinquish responsibility for implementation of the Cyberlab Program to other actors who do not suffer from such constraints. By 2010, the USAASA appeared to have realised its limitations and transferred responsibility for the Cyberlab Program to the Department of Education (USAASA, 2010, 12).

---

[167] The USAASA appears to have recognised this failure and undertaken to change its practices as part of its new corporate plan (USAASA, 2009a. 36).

Notwithstanding this transfer of responsibility, the USAASA can serve at least four important roles in furthering cyberlab initiatives. First, it can create and maintain a national 'needs map' which identifies schools which require cyberlab facilities. Second, it can identify the operational and financial requirements to implement such facilities. Third, it can identify structures for public sector agencies and private sector actors to realise such implementation requirements. These structures may include public-private partnerships or community support and involve market-related reverse auctions, donor contributions or direct USAF subsidies. Fourth, it can conduct a tender process to implement the optimal structures to roll out cyberlab facilities. Following this process, the USAASA can exercise a monitoring and evaluation function to ensure that enabled partners operate such facilities in accordance with agreed program parameters. The USAASA would not engage in any implementation function with such responsibility left to other public sector agencies or private sector actors.

The USAASA can undoubtedly play an important role in facilitating the proliferation of computer facilities and Internet connectivity to South Africa's schools. Indeed, such activity represents an important part of the USAASA's statutory mandate. Yet the promotion of computer literacy does not, in itself, however, accelerate the realisation of universal service and access to communications services in South Africa. As with the Telecentre Program, the Cyberlab Program does not materially improve the breadth or depth of communications service in South Africa. Computer literacy is an important skill for advancement in today's global village, but it is not the same as enjoying access to communications services, including basic voice telephony. The education of a computer (Internet) literate population adds little value to society if such a population cannot access the Internet due to the absence of enabling communications services.

Furthermore, the challenges of converging communications technologies may require reconsideration of the traditional concepts of 'universal service' and 'universal access' to communications services to include the availability, accessibility and affordability of Internet services. Yet any reconfiguration of these concepts cannot sacrifice the original focus of universal service and access to communications services. In the drive to reduce the 'digital divide' and achieve 'digital inclusion', it remains important not to obscure the

continuing need to provide some areas of South Africa and some South Africans with basic communications services. Perhaps the transfer of the Cyberlab Program from the USAASA to the Department of Education in 2010 acknowledged such realities.

#### 5.3.2.1.3 Public information terminal program

A public information terminal program[168] represents another key initiative rolled out by the Government of South Africa which affected universal access to communications services in South Africa. Launched in 1998 by the Department of Communications, the PIT Program aspired to deliver community-based access to government and parastatal information through stand-alone PIT kiosks (ComTask, 1996, 75). These information kiosks provide users with a one-stop access point to online government services and department web sites as well as Internet and email services. There were 825 PITs operational in post offices across South Africa in March 2012 (Matsena, 2012, 11).

The South African Post Office owns and operates most PIT kiosks as part of its Electronic Business Unit (Coleman, Herselman & Jacobs, 2008, 1-11). Every kiosk is available for use by any community member at no cost. The PIT Program is designed as a public service without expectation of any financial return. Funding of PIT kiosks is shared between the Department of Communications and the South African Post Office on an equal basis (Coleman et al, 2008, 1-11).

The USAASA has a defined role in the PIT Program. Overall responsibility for the PIT Program rests with the South African Post Office (Matsena, 2012, 97; Gulube, 2006, 1) but the USAASA underwrites the connectivity costs of some PIT kiosks in under serviced areas through the USAF (USA, 2004c). Along with this funding role, the USAASA consults with the Department of Communication and South African Post Office on the PIT Program (Gulube, 2006, 1).

---

[168] At some point this program also became commonly referred to as the Public Internet Terminals program.

The PIT Program does not appear to have been subjected to any rigorous performance appraisal, making meaningful evaluation difficult. A national study conducted in 2001 confirmed consumer interest in most PIT services (South Africa, 2003b, 1). This study did not examine the cost effectiveness of the PIT Program nor establish any quantitative metrics or evaluation regime to benchmark program performance. The performance of the PIT Program in two rural communities was reviewed as part of a mini-master's thesis in 2007 (Coleman et al, 2008). The GCIS noted the limited use of PIT kiosks and need for public-private partnerships to improve service delivery standards (Matsena, 2012, 12). The Portfolio Committee on Communications expressed concern with the use and efficacy of PIT kiosks (Matsena, 2012, 12). A 2012 master's thesis concludes that:

> *The PITs have reached the end of their life cycle a few years ago* [sic]. *On a daily basis we have PITs breaking down either due to failing hardware or software. Parts are difficult to come by because it* [sic] *needs to be imported from Brazil. The software is out-dated and not compatible with latest technology. Lack of ownership is a reality because management at the retail outlets which accommodates these PITs do not see any benefit from it* (Matsena, 2012, 12).

Three environmental barriers doom the PIT Program. First, kiosks are generally located in busy post offices that do not support user-friendly environments for consumers to use Internet facilities. Second, PIT kiosks are not well marketed in post offices, reducing consumer usage by ignorance rather than omission. Third, kiosks operate as self-help centres which require users to initiate PIT services and possess computer skills to access such services. Such prerequisites discourage use of PIT kiosks.

Beyond environmental barriers, the PIT initiative suffers from lack of a program champion. Policy responsibility falls to the Department of Communications. Funding responsibility is divided between the USAASA, the Department of Communications and the South African Post Office. Implementation responsibility falls to the South African Post Office. The absence of any 'buck stops here' accountability impedes program implementation, excuses meaningful program review and discourages program building. As such, the PIT Program operates like an orphan shunted between distant relatives without any full time parent to champion her accomplishments, correct her poor performance or otherwise guide her maturity into a well-adjusted person.

The PIT Program also suffers from the absence of any frontline champions. South Africa's post offices do not provide any human resources to help users navigate PIT kiosks nor train personnel to assist consumers with PIT protocols, thereby diminishing interest levels in PIT services by both post office personnel and consumers. Post office personnel cannot use PIT kiosks to improve the quality of postal services, reducing any incentive to encourage PIT use by consumers. Since PIT kiosks are not a revenue-generating business function, post office personnel under pressure to meet operational efficiencies and reach financial targets are unlikely to promote the presence of PIT kiosks over other recognition-driven business functions. Such personnel are also unlikely to focus on promoting PIT services which do not materially improve their performance appraisals or bonuses. As such, post office personnel are unlikely to champion the use of PIT facilities.

The PIT Program offers South Africans free Internet access at a convenient location. To the extent that the provision of Internet access represents a principal policy objective, the PIT Program benefits those users who take advantage of PIT facilities. Given the proliferation of Internet connectivity, however, the relatively small number of PIT access points does not materially contribute to higher Internet connectively levels in South Africa. To the extent that affordability of Internet access represents a principal policy objective, however, the free cost of PIT services delivers a meaningful benefit to cash-strapped South Africans prepared to conduct their business in often busy public post offices.

The Government of South Africa may therefore wish to review the policy purpose served by the PIT Program. If affordability of access to the Internet represents the principal benefit provided by PIT terminals, other delivery channels may represent more cost effective means to realise this ambition. As suggested by the GCIS (Matsena, 2012, 12), public-private partnerships should be considered as alternative delivery channels. The Government of South Africa could underwrite Internet connectivity at private sector computer centres that offer low cost access points. Subsidies could be determined through reverse auctions that require private sector operators to compete for compensation based on a transparent formula that amortises the cost of equipment over a prescribed period and limits returns to predetermined market-related rates.

This public-private partnership model overcomes many of the deficiencies of the existing PIT Program. PIT kiosks may be transformed into user-friendly computer centres with personnel to assist consumers with the navigation of PIT services. Proprietors of such centres would represent a single point of accountability with strong incentives to promote use of their facilities. Such centres may be leased within post offices, develop partnerships with the South African Post Office or represent independent businesses operating in pre-approved locations. Under such a model, the USAASA assumes a greater enabling role in the coordinated roll out of competitively-tendered PIT centres and a greater monitoring role to ensure ongoing compliance with PIT Program requirements.

As with the Telecentre Program and the Cyberlab Program, the relationship between the PIT Program and realisation of universal access to communications services merits consideration. PIT kiosks deliver access to the Internet which is an important resource for bridging the digital divide, but it is not the same as delivering access to voice communications services. In terms of South Africa's communications market, any reconfiguration of any concepts of 'universal service' or 'universal access' that includes Internet connectivity cannot sacrifice the original focus of such concepts in South Africa's communications market. It remains important not to sacrifice the continuing need to provide some areas of South Africa and some South Africans with available, accessible and affordable communications services at the altar of interconnectivity. Only if Internet access can deliver interconnectivity in tandem with other communications services can the Government of South Africa be assured that no territory or person within South Africa is left behind when bridging the digital divide.

#### 5.3.2.1.4 Community digital hub program

A community digital hub (CDH) Program represents another key initiative rolled out by the Government of South Africa which affected universal access to communications services in South Africa. The USA defined community digital hubs as '*advanced ICT facilities deployed by the Agency to provide Human* [sic] *capacity building and technical support to the remote Telecentres and Cyberlabs'* (USA, 2005b, 2). For the USA, creation of the CDH Program was a direct attempt to remedy some of the flaws of the

Telecentre and Cyberlab Programs, including limited human capacity to manage and operate facilities; under-use of facilities due to lack of computer training and skills; high rate of technical failure (especially connectivity); and inappropriate equipment and delivery configurations (USA, 2006f, 1).

The Department of Communications contemplated a larger role for community digital hubs as:

> *. . . advanced ICT centres where local communities can access ICT services, including access to skills development and capacity building for optimal utilisation of ICT services and to foster integrated approach in the use of ICTs for social and economic development in nodal areas of South Africa* (South Africa, Department of Communications, 2006b, 1).

Beyond the delivery of value added services, the 'hub and spoke' position of community digital hubs relative to other enabling programs was designed *'to facilitate collaboration between government, business, NGOs, traditional leaders and local stakeholders'* in delivering ICT at grassroots levels (USA, 2006b, 2). In particular, CDH services were designed to encourage the integration of ICT into provincial and local government plans (South Africa, Department of Communications, 2006b, 1).

It cost just under ZAR 3 million to establish a new CDH and about ZAR 450,000 to operate each hub on an annual basis when the Program launched in 2005 (USA, 2006f, 3). The Universal Service Fund paid the bulk of such costs. About ZAR 6 million was allocated to create community service hubs in 2006 (USA, 2006f, 3). However, the USA subsequently adopted a co-funding strategy which encouraged hub operators to contribute towards operating costs through corporate sponsorships and government grants (USA, 2006f, 3).

The USAASA planned to create three community digital hubs per year until 2009 by which time 12 hubs were expected to operate in South Africa (USA, 2006f, 3). CDH franchises were awarded by the USA to community organisations and other non-profit organisations with a demonstrated capacity to manage community projects and satisfy co-funding objectives (USA, 2006f, 3). By May 2006, four CDHs were operational with two of these hubs officially christened as part of the CDH Program (USA, 2006f,

3). Six years later, it appears that the CDH Program does not exist in any recognisable form. Whether it was absorbed into the Access Centre Program or terminated as part of the USAASA's restructuring of legacy programs, it does not appear that any CDH exists in South Africa in 2013.

An early demise of the CDH Program would mirror the fate of other USAASA programs. Indeed, the CDH Program shared many of the pitfalls of such programs, particularly the telecentre initiative (USA, 2006f, 5). Although the CDH Program was designed to facilitate greater collaborative efforts between public and private sector partners in the provision of goods and services to CDH facilities, the USAASA retained primary implementation responsibilities. Teething problems at the four CDHs eerily resembled early problems experienced at USA telecentres (USA, 2006f, 5) and spotlighted the same deficiencies that troubled the USAASA's efforts to implement the Telecentre Program. In any event, the CDH Program did not achieve its objectives or materially contribute to the delivery of universal service or access to communications services in South Africa. It stands testament to another USAASA program failure.

#### 5.3.2.2 Advisory function

The performance of the USAASA in discharging its advisory function may be evaluated against two metrics. First, examination of the USAASA's performance in providing general advice to the Minister of Communications and ICASA on policies related to universal service and access to communications services in South Africa. Second, examination of the USAASA's performance in formulating specific recommendations for the definitions of universal service, universal access and other key terms in relation to South Africa's communications market.

##### 5.3.2.2.1 Advice

The USAASA has discharged its mandate to provide general advice and recommendations to the Minister of Communications and ICASA on matters pertinent to universal service and universal access to communications services in South Africa. The breadth of advice has varied by year and circumstance. The USA provided information and advice related to the roll

out obligations of telephone network operators in 2001 (Matsepe-Casaburri, 2001g, 1) as well as bandwidth requirements for certain under serviced areas in 2005 (Matsepe-Casaburri, 2005, 1). The USAASA provided information and advice related to broadband issues to the Minister of Communications and ICASA in 2009 (USAASA, 2010, 5, 18, 22). The depth of advice has also varied by year and circumstance. Beyond superficial considerations of numerous matters, for example, the USA provided the Department of Communications with material advice on the USAO policy imposed on network operators (USA, 2005a).

#### 5.3.2.2.2 Definitions

The USAASA has discharged its mandate to provide specific recommendations to the Minister of Communications related to appropriate definitions of 'universal service' and 'universal access' with regards to the delivery of communications services in South Africa. It has also undertaken additional efforts to define the concepts of 'under serviced area' and 'needy persons' applicable to relevant legislation. Much of this responsibility was a legacy of the lack of definitions of such terms in legislation preceding the *Electronic Communications Act*. The Agency commenced its efforts to define these terms in 1998 and published various position papers that culminated with the Minister of Communications adopting its recommendations in February 2010. As such, it took the Agency over 12 years to discharge this mandate.[169]

Early policy documents only alluded to such definitions. The 1995 *Green Paper on Telecommunications Policy* generally regarded universal service as '*putting a telecommunications line in every household wanting the service, at affordable prices*' (South Africa, 1995, 7). Although the 1996 *White Paper on Telecommunications Policy* regarded universal service to communications services as a prerequisite for social and economic development and advocated creation of the Universal Service Agency, it did not prescribe any definition for universal service (South Africa, 1996c). The *Reconstruction and Development Programme* regarded universal access to communications services as a key public policy objective:

---

[169] Infra, this section 5.3.2.2.2.

> *The telecommunications sector is an indispensable backbone for the development of all other socio-economic sectors. An effective telecommunications infrastructure which includes universal access is essential to enable the delivery of basic services and the reconstruction and development of deprived areas* (ANC, 1994, 18).

The *Programme* challenged the incoming Government '*to provide universal affordable access for all as rapidly as possible within a sustainable and viable telecommunications system*' (ANC, 1994, 18).

Yet the *Telecommunications Act* and *Telecommunications Amendment Act* abstained from introducing any prescriptive definitions of universal service or universal access to communications services to underpin such policy pronouncements. In this policy and legislative void, some stakeholders such as Telkom adopted informal definitions for universal access. Pursuant to its mandate, the USA embarked on a broad-based consultative process to close this void. In August 1998, a task team comprised of USA and SATRA representatives was appointed by the USA to define the concepts of 'universal service' and 'universal access' to communications services (USA, 1998, 1-14). The USA subsequently published a discussion paper in October 1998 and conducted public hearings that culminated with a national colloquium in February 1999 (USA, 1998, 1-14).

The USA's discussion paper did not prescribe any definitions for universal service or universal access to communications services. Following a review of relevant definitions in other markets, the discussion paper abstained from recommending any definition of universal service but described universal access in generic terms as '*allowing everyone in the country to have access to a telephone that works within a reasonable distance at a reasonable cost'* (USA, 1998, 8). The USA concluded its consultation process without prescribing any definition for universal service to communications services. However, the USA adopted the generic definition from the discussion paper and applied the ITU's policy framework to distinguish universal access to communications services '*as an interim step that should be realisable for South Africa within the first decade of the 21st century*' as part of a long term goal of realising universal service (USA, 1998, 10).

The USA subsequently issued a second discussion paper which alluded to appropriate definitions. The USA defined universal access as '*everyone in the country having a telephone they can use within a reasonable distance*' (USA, 1999, 7) and subsequently established appropriate distances for urban and rural areas. The USA defined universal service as '*people having a private phone at home or at work*' (USA, 1999, 7). It also noted the policy rationale for universal service:

> *The purpose of Universal Service is to ensure that the part of the population which would not receive essential telecommunications services under normal market conditions, has access to those services. Universal Service provision is required primarily to cover those citizens who can not* [sic] *afford essential service* (USA, 1999, 15).

The USA adopted the three parameters of availability, accessibility and affordability to measure the delivery of universal service and access to communications services in South Africa.

Such pronouncements remained part of the USA's consultative process and did not lead to adoption of any formal definitions for universal service or universal access in the context of South Africa's communications market. The USA subsequently contracted a private consultancy to develop definitions of universal service and universal access to communications services (USA, 2002, 22). The outcomes of this contract were not published. If concluded, it appears that any recommendations related to the definitions of universal service or universal access to communications services were not adopted by the USA, since the Agency continued to consult with stakeholders to develop suitable definitions thereafter (USA, 2004c).

The concepts of universal service and universal access to communications services were ultimately settled by the *Electronic Communications Act*. Table 5.2 summarises the definitions of 'universal service' and 'universal access' codified by this legislation:

**Table 5.2**

**Concepts of universal service and universal access**

| | |
|---|---|
| **Universal service** | Universal provision of electronic communications services and broadcasting services. |
| **Universal access** | Universal access to electronic communications network services, electronic communications services and broadcasting services. |

Source: South Africa, 2006c.

Although the new law defined ‘universal service’ and ‘universal access’, section 83(3) therein required the USAASA to make recommendations to the Minister of Communications to determine the parameters for such definitions from time to time (South Africa, 2006c). Moreover, responsibility for the definition of ‘under serviced area’ vested with ICASA pursuant to section 88(2) of the *Electronic Communications Act* while the designation of ‘needy persons’ was left to the Minister of Communications pursuant to section 88(4) of the law.

In 2008, the USAASA embarked upon a consultative process and research effort to realise consensus on these definitions (USAASA, 2009b, 4-7). This process included a review of international best practices, an examination of universal service and access in South Africa’s communications market and consultation with industry players that ultimately produced a discussion paper in 2009 (USAASA, 2009b, 6). The USA subsequently coordinated a public consultation process that produced a position paper with recommendations regarding definitions for ‘universal service’ as summarised in Table 5.3 and ‘universal access’ as summarised in Table 5.4:

**Table 5.3**
**Definition of and targets for universal service**

| | |
|---|---|
| **Definition** | The ability of all people to obtain quality, affordable access to a minimum set of voice and data Electronic Communications Network Services (ECNS) and Electronic Communications Services (ECS) on either a household or individual basis on a non-discriminatory basis (regardless of disability, age or other vulnerability).<br>Universal service for voice services includes access to emergency services using free calls and messaging while universal service for data services includes an Internet connection. |
| **Two year targets** | **Voice ECS**<br>Voice service available to 95% of households on demand and affordable to 90% of households.<br>In terms of affordability, each household or individual shall not outlay more than 5% of total expenditures for voice services which shall consist of 90 minutes calling time per month of which not less than 30 minutes falls within peak calling rate periods.<br>**Data ECS**<br>Service is available to 90% of households on demand which includes access to the Internet.<br>In terms of affordability, 60% of households shall not outlay more than 5% of their total expenditures for data services which shall include Internet use of at least 20 hours per month of which not less than 10 hours are within peak calling rate periods and include at least 200 Mb of data. |

Source: Adapted from USAASA, 2009b, 68-74.

**Table 5.4**

**Definitions of and targets for universal access**

| | |
|---|---|
| **Definition** | The ability of all people in all areas and communities to obtain quality, affordable access to publicly available Electronic Communications Network services (ECNS) and Electronic Communications Services (ECS) on a non-discriminatory basis (regardless of disability, age or other vulnerability). |
| **Two year targets** | **Voice ECS**<br>At least one working public telephone at a public access point (regardless of technology) in a geographically founded community of up to 2,000 people with an additional telephone available for every 2,000 additional people of every such community, if the community desires it.<br>The distance travelled from home to access voice ECS at a public access point shall not be more than one kilometre.<br>**Data ECS**<br>At least one public broadband Internet access point in a geographically founded community of up to 10,000 people with an additional public broadband access point for every 10,000 additional people in every such community (or part thereof).<br>The distance travelled from home to access data ECS at a public access point shall not be more than two kilometres.<br>Basic broadband is defined as an always available connection that supports multimedia services including Internet access with a downstream access speed of at least 256 kbps. |

Source: Adapted from USAASA, 2009b, 68-74.

These definitions were ultimately adopted by the Minister of Communications in 2010 (USAASA, 2010, 17).

The USA's position paper also developed a definition for 'under serviced areas'[170] that was similarly adopted by the Minister of Communications (USAASA, 2010, 17). Table 5.5 summarises the definition prescribed for 'under serviced area' based on the USA's recommendations:

**Table 5.5**

**Definition of under serviced area**

| | |
|---|---|
| **Definition** | An under serviced area is any local municipality or smaller geographic area defined by the Municipal Demarcation Board in which:<br>(a) No electronic communications network (ECN) has been constructed;<br>(b) A constructed ECN does not adequately cover the inhabited parts of the area; or<br>(c) A constructed ECN does not provide adequate electronic communications services (ECS).<br>As guidance, an under serviced area is presumed to exist if the targets for universal access have not been achieved within such an area. |

Source: Adapted from USAASA, 2009b, 76-78.

[170] The Position Paper also contemplated such definitions for broadcasting services which are beyond the scope of this discussion (USAASA, 2009b, 69, 73).

The USA's also proposed a definition for 'needy persons' which has yet to be confirmed by ICASA (USAASA, 2010, 17). Table 5.6 summarises the USA's proposed definition for this term:

**Table 5.6**

**Definition of needy persons**

| | |
|---|---|
| **Definition** | Any person (collectively or individually) who qualifies as a needy person through application of a means test (that considers a number of factors such as financial means, disability, age or other vulnerabilities) devised by the USAASA or any public service organisation or institution selected by the USAASA for such purpose. |

Source: Adapted from USAASA, 2009b, 76-78.

Building upon the definitions of universal service and universal access codified in the *Electronic Communications Act,* the USAASA introduced the elements of availability, accessibility and affordability of communications services to the definitions of these concepts. It delineated specific targets based on proportionate benchmarks rather than fixed benchmarks (except in the case of distances to access points). The Agency also injected the concept of broadband connectivity as a concurrent goal of universal service and access to communications services in South Africa.

The Minister of Communications' acceptance of the USAASA's recommendations represented an important achievement in the quest for universal service and access to communications services in South Africa. The introduction of specific targets based on proportionate benchmarks is a significant improvement over the use of fixed numerical targets imposed on operators under the USAO policy. The introduction of specific targets also provides a baseline upon which the realisation of universal service and access to communications services may be measured in South Africa. Admittedly, the targets specified by the USAASA are lax as the proliferation of mobile communications services essentially satisfied the availability and accessibility thresholds specified in such targets.

Emphasis on the affordability of communications services in the USAASA's definitions reflects growing public policy concern that the cost of communications services represents a key barrier to the realisation of universal service and access in South Africa's communications market. Having achieved widespread availability and accessibility of communications services (largely through mobile telephony), universal

service and access efforts are increasingly challenging the relatively high cost of communications services in South Africa.[171] The USAASA's definitions account for such realities.

The inclusion of broadband communications services as a component of the definitions of universal service and universal access reflects an inevitable capitulation to the realities of an increasingly interconnected world. Success in today's wired communities may require access to content and applications only available through broadband-intensive Internet resources, especially in emerging economies such as South Africa (Barron, 2013, 7). While expansion of the concepts of universal service and universal access in South Africa's communications market to include broadband services mirrors international precedents and captures the growth of such services in South Africa, it is important that the continuing need of some South Africans and some areas of South Africa for basic communications services is not lost in the focus on the roll out of broadband connectivity.

It took the USAASA over 12 years to achieve definitions of universal service and universal access for South Africa's communications market. The nature and length of this process highlight the USAASA's impotence as a policy influencer. Despite its pedigree as an independent body, the USAASA does not retain any statutory power to influence the outcome of its recommendations. As a relatively small portfolio agency under the umbrella of the Department of Communications, it does not have its own political power base to influence the outcome of its recommendations. Indeed, the USAASA does not appear to benefit from the patronage of any 'champion' to lobby its position with other interest groups. Pitted against more powerful internal stakeholders as well as more powerful and well-funded external stakeholders, the Agency appears to be outgunned and outmanoeuvred in subsequent considerations of its positions by key decision makers. For this reason, the Minister of Communications' adoption of the USAASA's recommendations on the definitions of universal service, universal access and under serviced areas represents a key milestone for the Agency.

---

[171] Supra, section 4.4.1 and infra, sections 7.3.1 and 8.3.

In the end, the lack of definitions in the 12 year period preceding the Minister of Communications' acceptance of the USAASA's definitions likely impeded the realisation of universal service and access to communications services in South Africa. The absence of statutory definitions created market uncertainty over appropriate components to include in any measurement of these concepts. Such lacuna enabled different actors to apply different definitions and use different measurements to reach different conclusions. It enabled different interest groups to apply different definitions and different measurements to reach different conclusions. Such deficiencies created opportunities to manipulate data and skew policy decisions that hinder reliable evaluations and audits of applicable policies and programs.

The resolution of such uncertainty enables public policy makers to focus on key objectives (affordability of voice services and availability, accessibility and affordability of broadband services) and will influence the direction of policies and programs that may or may not optimally realise universal service and access to communications services in South Africa in the years ahead. At least the presence of such definitions and targets provides a foundation to benchmark such efforts which, by itself, represents a milestone in the evolution of the universal service and access public policy paradigm in South Africa's communications market.

#### 5.3.2.3 Monitoring function

The performance of the USAASA in discharging its monitoring function may be evaluated in two parts. First, examination of the Agency's performance of its research function, particularly its ability to keep abreast of developments in the ICT area locally and globally. Second, examination of the Agency's performance of its appraisal function, notably the quality and quantity of those investigations, surveys and evaluations undertaken by the Agency to date.

##### 5.3.2.3.1 Research function

The USAASA likely failed to meet its research responsibility. The Agency has maintained a research department since its inception (USA, 2006e, 1). This division may have produced substantial research not acknowledged in any published sources. For example, a USAASA representative highlights the conundrum in respect of one study undertaken by the USAASA as

follows: '*What they* [the USAASA] *did was make a study and give it to the Department* [of Communications] *and the Department just buried it'* (Bate, 2014a, 8). Beyond this dilemma, the USA mismanaged several early research undertakings, particularly through the mismanagement of consultants. The USAASA representative concedes that:

> *You look at some of the studies and some of the research and say "This is just atrocious." We've had some problems with researchers. You know it's frustrating knowing that some of them were given a job to do a certain type of study . . . some of them just took the money and did nothing. . . . You call the people. You consult with them and they have been paid almost half of their money and they have not started the job* (Bate, 2014a, 9).

The USAASA appears to have adopted an inadequate or inappropriate approach to its research efforts. Belated efforts to produce a GIS resource, for example, were frustrated by the USA's inability to source requisite data from operators. The Agency ultimately contracted the HSRC in 2002 to produce such a system (HSRC, 2003, 50). The USA also shunned primary research. Early USA publications that contemplated a definition of universal service, for example, generally consolidated secondary information without any primary research that added value to the discussion of such matters among stakeholders in South Africa's communications market.

The USA may have benefitted from a greater investment of financial and human resources into its research capabilities. A 2001 review encouraged the USA to increase the amount of investigative research conducted on developments within the ICT sector (Stavrou et al, 2001). Undoubtedly this recommendation stemmed, at least in part, from the absence of any substantive research produced by the USA prior to issue of this report. The USA should have also integrated its research responsibility with its enabling function. The 2001 review suggested that the Agency create a national advice and technical support service centre to advance use of ICT resources (Stavrou et al, 2001). This centre would collect and disseminate information on technical support issues to public participants in the ICT market and promote a spatially dispersed network of technical support providers that subscribed to a specific code of ethics that ensured provision of affordable and appropriate services to consumers (Stavrou et al, 2001). The USA did not act upon this concept.

Perhaps in belated acknowledgement of this report, the USAASA realigned its Research and Strategy Division as part of its broader corporate reorganisation efforts (USAASA, 2010, 17). The ineptitude and impotence of previous research efforts were implicitly recognised by the USAASA through the Research and Strategy Division's requirement to establish a baseline document to define key ICT indicators to be used to monitor ICT developments (USAASA, 2010, 18). In 2010, the USAASA also signed a Memorandum of Understanding with Statistics South Africa to collaborate on the development of measurable ICT indicators and the collection of data using internationally agreed methodologies (USAASA, 2010, 18). Perhaps the performance of the USAASA's monitoring function may improve through such efforts, but the need to develop such documents and implement such partnerships over 17 years after the inception of the USA generally demonstrates the Agency's failure to discharge this function in a competent manner.

In 2012, the USAASA announced the development of a national universal access and service strategy (National UAS Strategy) (USAASA, 2013a; USAASA 2012d). As part of this process, the USAASA completed a market gap analysis. However, it has elected to retain this study as a confidential internal document (USAASA, 2013a, 13). This decision not only undermines public confidence in the integrity of the USAASA's research capabilities but also frustrates the dissemination of information that may be helpful in the timely discourse of universal service and access to communications services in the country.

The USAASA claims that its National UAS Strategy '*in no way seeks to make policy; rather it seeks to complement existing policy and regulatory initiatives'* (USAASA, 2013a, 8). The Agency says that the Strategy will *'support'* and '*feed into'* and '*augment efforts/initiatives'* as well as *'assist'* the activities of other Government agencies involved in ICT sector reforms (USAASA, 2013a, 8). This is a very noble idea. It appears to recognise the enabling capabilities of the USAASA, including its research function. Yet the hoarding of the market gap analysis seems to contradict such intentions.

It also appears that the USAASA is going to market in 2014 with its consultative process (USAASA, 2013a) at the same time that the Government's national ICT review is considering many of the same matters. ICASA's review of USAO requirements (ICASA, 2013e; 2013i) also appears to be evolving without USAASA involvement. In each instance, the USAASA does not appear to be complementing other Government efforts or coordinating its activities with other public sector actors. Combined with its effort to formulate a National UAS Strategy, the USAASA seems to be standing outside the house playing by itself (once again) while other siblings in Government undertake substantive policy making or regulatory efforts without regard for (or access to) the USAASA's proposed contributions.

#### 5.3.2.3.2 Appraisal function

Mirroring the evolution of its performance of its research responsibilities, the USAASA has generally failed to meet its appraisal responsibilities.[172] The Agency has overlooked any effort to undertake a systemic evaluation of the four central universal service programs adopted by the Government of South Africa to intervene in the domestic communications market between 1996 and 2013. To the extent that the Agency attempted to evaluate such programs on an *ad hoc* basis, its efforts were poorly conceived and executed in most instances and appear to have produced no meaningful information or impact with regards to the delivery of universal service and access to communications services. As part of the new direction undertaken by the USAASA pursuant to its *2009-2014 Corporate Plan*, the USAASA has committed to creating a platform to finally discharge the Agency's appraisal function in a competent, collaborative and transparent manner.

In terms of the Government of South Africa's USAO policy, USA efforts to benchmark operator compliance with such obligations were a wholesale failure. Operators refused to release relevant information to the USA and, absent any enforcement powers or support from the Minister of Communications or regulatory authority, the USA's inability to compel production of such information neutered its efforts. In 2005, the USA and ICASA jointly commissioned a study of CSTs in under serviced areas to help inform decisions regarding future obligations (USA, 2006h). By that time,

---

[172] Infra, this section 5.3.2.3.2.

however, market conditions had superseded the need for USAOs and the Government of South Africa has not imposed any additional obligations on operators since that time.

In terms of key USAASA programs, the Agency has undertaken a slew of largely qualitative policy reviews without any systemic, empirical quantitative analysis of the efficacy or cost effectiveness of enabling programs. A partial evaluation of the USA's Telecentre Program (Stavrou et al, 2000, 1-37), for example, generated a snapshot of selected aspects of the Program's performance that relied mostly on qualitative measurements and fell far short of an empirical review. Whether by design or ignorance, the USA shied away from asking the tough questions or collecting information about its enabling programs that would lead others to ask tough questions until it was ultimately confronted by the wholesale collapse of such programs.

In terms of USAL concessions, the USA undertook a slew of studies in an effort to quantify the performance of this program. A 2005 study (USA, 2006h), for example, examined the viability of USATN operators to identify means to enhance their sustainability. By that time, however, market conditions and legislative priorities had bypassed this program and geographically ring-fenced licenses were eliminated the following year with promulgation of the *Electronic Communications Act*. In terms of the USAF, no empirical analysis of this fund appears to have been conducted since its inception. Beyond the lack of spending of USAF monies and the lack of impact of USAF subsidies, no dedicated study has been commissioned or completed regarding the mandate, rationale or efficacy of the USAF as a stand-alone mechanism for underwriting universal service and access to communications services in South Africa.

Although the USAASA has not engaged in any meaningful analysis of the four policy pillars used by the Government of South Africa in its efforts to realise universal service and access to communications services in the country, the Agency has spent a considerable amount of time in the appraisal of its own performance. These efforts were incomplete, inadequate or poorly structured and frequently generated no follow-through action from the USA. As an example, a 2001 USA study (Stavrou et al, 2001) did not include any quantitative empirical review of the USA's performance. As a further example, a 2005 review evaluated the Agency's performance locally and benchmarked

results against the Agency's peers internationally but did not immediately manifest any material changes to USA operations (USA, 2006a). By 2008, the USAASA commenced a reorganisation process that included the generation of many internal reports that culminated with its *2009 to 2014 Corporate Plan* (USAASA, 2009a).

Perhaps the USAASA's ability to discharge its appraisal function will improve under this Plan. As part of its new direction, the USAASA has undertaken to establish a Monitoring and Evaluation Framework to monitor progress on the realisation of universal service and access targets in South Africa's communications market up to 2015 (USAASA, 2010, 18). The need for such a framework over 17 years after inception of the USA is the clearest indication of the failure of Agency's appraisal efforts. In developing its new framework, the USAASA may wish to learn from some of the critical mistakes it made during its earlier efforts, including the lack of institutional capacity, poor political judgment and suboptimal positioning within the decision-making environment.

The USA`s inability to effectively deliver on its appraisal responsibilities is likely attributable, in part, to the Agency's lack of investment in capacity building. The USA may have allocated insufficient attention to the definition of appropriate mandates, mechanisms, targets and means to evaluate its range of internal and external programs. The USA may have allocated insufficient resources to the execution of its appraisal responsibility. The Agency likely failed to build an institutional knowledge base capable of surviving personnel changes. The absence of such capacity building measures represents an inexcusable oversight in terms of public policy best practices (Grindle & Hilderbrand, 1995, 441-463).

Beyond a lack of institutional capacity, the USA may have lacked good political judgment. It often picked the wrong fights with the wrong people and set itself up for failure. For example, the Agency's decision to create a GIS resource and investigate operator compliance with USAOs as its initial appraisal projects not only represented poor task selection but also put public sector partners and private sector operators in a position to undermine such efforts and compromise the USA's fledgling credibility.

Perhaps the USA should have anticipated the reluctance of operators to cooperate with Agency efforts to compile a GIS resource and investigate their performance of universal service and community service obligations. USAOs represented involuntary measures that operators begrudgingly accepted as part of their license conditions. Given various penalties arising from failure to comply with such obligations as well as competition considerations, it is not surprising that operators resisted requests for the disclosure of information to the USA or any regulatory authority for fear of unfavourable regulatory rulings or adverse competitive consequences. The USA should have recognised the likelihood of such resistance and focused on other areas suited to ready measurement.

Perhaps the USA should have also anticipated the reluctance of the regulatory authority to cooperate with Agency efforts to investigate operators' performance of USAO requirements. While the USA retained a general responsibility for managing the USF and a general mandate to investigate matters related to universal service and access in South Africa's communications market, the regulator enjoyed specific statutory authority over such matters (South Africa, 1996b). The Agency should have recognised that the regulator's specific mandate in relation to USAO matters trumped the USA's general mandate in this area by application of the general rules for the interpretation of laws (Côté, 1984, 240). At a minimum, the USA should have recognised that it was bound to lose the turf war with the regulator over the monitoring of USAOs and picked another area for consideration by its early monitoring efforts.

The USA's impotence may reflect a fundamental flaw in South Africa's communications regulatory framework. Early consideration of the Universal Service Agency in the *White Paper on Telecommunications Policy* envisaged a universal service entity attached to the regulatory authority, presumably to leverage resources and enforcement powers and harmonise policy activities. However, the USA was ultimately conceived as an independent agency (South Africa, 1996b) which essentially positioned the organisation in a no-man's land between the political and regulatory battles of operators, the Minister of Communications, the Department of Communications and the regulatory authority. Without any regulatory power, political influence or financial clout, the USA remains largely powerless to influence the interplay between these entities or shape public sector policies and private sector practices.

Many of the deficiencies which led the USA to fail in its appraisal responsibilities continue to haunt the Agency. The *Electronic Communications Amendment Bill of 2012* remedies a few of these defects but does not resolve the USAASA's positioning in a '*bizarre regulatory space*' (Limpitlaw, 2012, 5261) between the Department of Communications and ICASA. The USAASA has substantially improved its research capabilities in recent years (USAASA, 2010, 17-18) but this newfound capacity has yet to translate into meaningful reports.

The USAASA's shift away from an implementation role to a facilitative role, combined with the Agency's increased political maturity (and changes of the Board Directors and senior management teams) may enable the USAASA to avoid many of its previous political mistakes. If the USAASA continues its politically precarious place between the Department of Communications and ICASA, it will need to rely on collaboration and consensus-building skills not known to the Agency in previous years. In 2013, the Minister of Communications (at the time) claimed that the USAASA '*is back on its feet following a series of governance challenges'* (Pule, 2013, 3). Time will tell if the USAASA has resolved its many challenges and can contribute materially to the realisation of universal service and access to communications services in South Africa.

#### 5.3.2.4 Administrative function

The performance of the USAASA in discharging its responsibility to administer the Universal Service and Access Fund may be measured by the quality of its management efforts. Within the USAASA, accountability for the management of USAF proceeds rests with the Finance and Supply Chain Management Division managed by Chief Financial Officer (CFO) appointed pursuant to the *Public Finance Management Act, Number 29 of 1999* (South Africa, 1999b). Notwithstanding concerns regarding the efficacy of procurement policies and practices, particularly those related to the award of USAF subsidies and management of Agency programs, the CFO Division does not appear to have managed the USAF in a responsible manner and may not have fully complied with its statutory obligations in regards to the management of the USAF.[173]

---

[173] Infra, this section 5.3.2.4.

As of May 2010, the USAASA confirmed that '*no one . . . actually knows how much is in the fund, where the money is, or what has been done with it*' (Perry, 2010, 1). Various industry participants indicated that the USAASA was '*approaching operators requesting figures on their contributions so that it can work out how much money the Fund should have*' (Perry, 2010, 1). As one journalist concluded: '*a significant amount of money* [has] *gone "somewhere", with no governance, no audit, no clarity as to where it has gone and what it has been spent on*' (Perry, 2010, 1). Such circumstances suggest that the USAASA has not administered the USAF to minimum International Financial Reporting Standards (IFRS) or Generally Accepted Accounting Principles (GAAP) requirements or applicable statutory requirements. Given the availability of operator records, the requirement for National Treasury to receive and record receipt of such funds, the requirement for the USAASA to obtain the approval of the National Assembly to spend USAF funds and the reporting requirements applicable to the USAASA and other public sector actors under various pieces of legislation, the opaqueness of USAF reserves and allocations presents a perplexing situation.

The USAASA may be plagued by financial mismanagement and financial irregularities in the administration of USAF monies. The Auditor General cited material concerns in his qualified audit of the Agency for the year ended March 2013 (USAASA, 2013c, 31-37). He noted that:

- *Leadership instability resulted in poor oversight of business processes & monitoring of organizational performance.*

- *Strategic planning & performance management* [were] *not submitted in accordance with Treasury Regulation 30.1.1 i.e. entity documents not separated as in current year.*

- *Records management systems* [were] *not able to maintain reliable, accurate and complete information that is easily accessible* (USAASA, 2013c, 33).

In providing his qualified opinion, the Auditor General highlighted the absence of audit evidence for over ZAR 45 million of project expenses and ZAR 11 million of trade and other payables by the Agency (USAASA, 2013c, 34). He further cited the inadequacy of targets, absence of appropriate audit information on key programs, material adjustments to performance targets in contravention of the *Public Finance Management Act, Number 1 of 1999* (South Africa, 1999b) and the procurement of goods and services under ZAR 500,000 by Agency officials without obtaining required quotations as deficiencies with the Agency's performance (USAASA, 2013c, 37).

Beyond prospective misadministration of USAF monies, the USAASA attracted attention for the way it spends its budget. The Democratic Alliance cited the USAASA for '*excessive salaries and bonuses paid to current top management in a year when 91% of its targets were not achieved'* (Shinn, 2012, 1). Indeed, approximately 43% of the fiscus allocated to the USAASA in 2012 was spent on staff costs, including significant overseas travel costs (Shinn, 2012, 1).

Such concerns compounded existing issues with the administration of USAF monies. According to the Democratic Alliance, the Agency's '*executive management team was suspended at the start of a forensic investigation into financial management'* and replaced by executive directors in November 2011 (Shinn, 2012, 1). In 2012, USAASA officials authorised the withdrawal of ZAR 4.78 million of USAF receipts to settle the Pay as You Earn (PAYE) obligations of Agency personnel (Shinn, 2012, 1). This payment '*is illegal in terms of the Public Management Act because it was not authorised by the Minister of Finance'* (Shinn, 2012, 1). A similar payment in the 2011 fiscal year '*led to the "resignation" of the former Chief Financial Officer . . . for financial mismanagement'* (Shinn, 2012, 1).

The USAASA found itself in more troubles in 2013. In June 2013, the United Democratic Movement (UDM) delivered an open letter to President Zuma which alleged irregularities in the award of a multi-million Rand application by Cell C for the roll out of broadband infrastructure in the eMalahleni municipality (SAPA, 2013, 1). The UDM alleged that Ms Dina Pule, the Minister of Communications, and senior USAASA officials approved this application outside of the adjudication process required by the *Electronic Communications Act* (SAPA, 2013, 1). The Agency's Board of Directors subsequently '*resolved*

*to act [on such] allegations of corruption and maladministration*' which included the launch of an independent investigation and the suspension of two Agency personnel as a precautionary measure (USAASA, 2013b, 1). A report was expected to be released by August 2013 (SAPA, 2013, 1). The USAASA subsequently provided a report to the Department of Communications which was consulting with the Government's lawyers as of November 2013 (Jacobs, 2013, 1). The report had not been made public by December 2013.

In the intermittent period, Dina Pule was replaced as Minister of Communications and subject to three investigations (on unrelated matters) by the Public Protector, Auditor General and Parliament (Madonsela, 2013, 1). Further allegations of '*corrupt activities'* at the USAASA were alleged in November 2013, including the persecution of whistleblowers related to the UDM complaint (Jacobs, 2013, 1).

### 5.3.3 Universal service and access fund

Performance of the Universal Service and Access Fund may be measured against three metrics. First, the nature of subsidies awarded by the USAF in relation to its statutory mandate. Second, the impact of such subsidies in achieving their intended purpose. Third, the contribution of such subsidies to the delivery of universal service and access to communications services in South Africa.

The USAF has failed to discharge its statutory remit to subsidise the delivery of communications services to 'needy persons' and provide subsidies to eligible network operators to roll out communications services to under serviced areas.[174] Despite studies on the subject (USAASA, 2009b; Stavrou & Mkhize, 1998), ICASA has yet to define 'needy persons' and the USAF has not explicitly granted any needy person any subsidy. Moreover, neither Telkom nor any other eligible network operator has applied for any subsidy to roll out coverage to any under serviced area.[175] While the rationale for such reticence is not known, perhaps operators are reluctant to accept public sector funding that exposes their books to scrutiny from public sector authorities.

---

[174] Infra, this section 5.3.3.

[175] Excluding the specific subsidies allocated to USATN operators (supra, section 5.2.4).

USA programs have been the principal beneficiaries of USF subsidies. The USA's Telecentre Program was a major beneficiary of USF support (Benjamin, 2003, 11). The PIT Program was another beneficiary of USF subsidies (South Africa, Department of Finance, 2000, 201-210). The funding of such programs with USF monies was '*possibly illegal'* (Lewis, 2010, 11) because both efforts arguably fell outside the scope of permitted USF subsidies which needed to be spent on 'needy persons' or help operators roll out services to under serviced areas. As the gatekeeper of USF subsidies and the authority responsible for defining 'needy persons', however, ICASA may have implicitly deemed the beneficiaries of such programs as 'needy persons' and deemed USF disbursements to such programs as subsidies that reduced their communications costs. In any circumstance, the limited scope of disbursements between 1997 and 2001 indict the Universal Service Fund as a failure.

Expansion of the range of constituencies and purposes eligible for subsidies in 2001 relaxed USF purse strings. The USF increased subsidies to the USA's Telecentre Program and underwrote the USA's Cyberlab Program. The USF also funded subsidies to operators under the USAL Program and paid for the roll out of the USA's CDH Program. Beyond these core Programs, the range of efforts supported by USAF subsidies did not materially change between 2001 and 2010 (USAASA, 2010, 12-15, 60-73).[176]

A growing number of public policy actors have proposed using USAF monies to subsidise the purchase of Set Top Boxes (STBs) by less affluent households required to migrate from analogue to digital terrestrial television (Link Centre, 2012, section 4.11; Mawson, 2012b, 1; Perry, 2010, 1). Indeed, the *Electronic Communications Amendment Bill of 2012* contemplates amendments that would permit the use of USAF funds for such purposes, among a broad range of other purposes potentially unrelated to the realisation of universal service and access to communications (and broadcasting) services in South Africa.

---

[176] In recent years the USAF has also subsidised Internet connectivity at Further Education and Training Institutions with connectivity at 18 FETs supported by USAF subsidies in 2010 (USAASA, 2010, 12). The USAF has also paid for a range of training subsidies.

This prospective use of USAF monies for such purposes is problematic for at least two reasons. On the one hand, broadcasters have not contributed to the USAF.[177] This circumstance suggests that the USAF notionally holds monies collected to realise universal service and access to communications services (not broadcasting services). On the other hand, the estimated cost to subsidise the roll out of STBs to approximately five million low income households is expected to reach as much as ZAR 3.5 billion. The projected cost of this subsidy is, therefore, three to five times the notional size of the USAF.

Under such circumstances, the entire USAF fund may be prospectively allocated for the STB subvention with the balance of any subsidy coming from other Government sources. Use of USAF monies to fund the STB roll out effectively uses the USAF contributions of South Africa's Electronic Communications Network Services (ECNS) and Electronic Communications Network (ECS) license holders, including major mobile network operators, to cross-subsidise the business of South Africa's Broadcast Services license holders, including the SABC. While the realisation of universal service and access to broadcasting services remains a legitimate public policy priority, the fulfilment of such a priority should not come at the expense of the fulfilment of an equally significant public policy priority, namely the realisation of universal service and access to communications services.

Perhaps the Government of South Africa's willingness to loot the notional USAF reserves to partially pay for STB subsidies recognises that USAF subsidies have not materially improved the realisation of universal service and access to communications services in South Africa and should be used for other purposes. Indeed, USF investments in equipment, training and other services for the USA's Telecentre Program generally failed to engender sustainable operations. Analogous conclusions may be drawn regarding USF contributions to the USA's Cyberlab Program and PIT Program. USAL subsidies have been misappropriated or mismanaged by USATN operators.[178] As such, the bulk of USAF allocations have represented bad investments in failed enterprises that generated negligible returns (social or economic) on investment:

---

[177] Broadcasters contribute to the Media Diversity and Development Agency (MDDA) which are to be offset against USAF contributions. However, ICASA has not yet implemented this set off policy (Perry, 2010, 1).

[178] Infra, section 5.3.4.

> *. . . the fund's track record has been less than illustrious, with expenditure to date having been both inappropriate and ineffective, often wasteful, leaving a massive unspent surplus of nearly two thirds of contributions* (Lewis, 2010, 12).

Responsibility for the ineffectual allocation of USAF subsidies clearly rests with those authorities empowered by statute to disperse such funds. Between 1997 and 2001, the relevant authority failed to exercise such responsibility in any meaningful way other than to fund USA programs. While the Minister of Communications increased disbursement activity following 2001, such disbursements have been made on an *ad hoc* basis, notably to fund USA programs and the USAL Program, without any institutional decision-making or planning process implemented to conceive, execute, monitor or evaluate the effect of such disbursements.

No agency of the Government of South Africa appears accountable to investigate and measure the returns on investment generated by USAF subsidies. The Department of Treasury is the gatekeeper of USAF reserves. The Minister of Communications is the arbiter of USAF subsidies. ICASA is the consultation counterparty for the allocation of USAF subsidies. The USAASA is the administrator of USAF subsidies. Not one of these parties has undertaken any meaningful program evaluation that measures the impact of USAF subsidies. The wholesale absence of any such effort constitutes gross public policy negligence and a breach of public confidence in the Government's ability to efficiently and effectively allocate the national fiscus.

Given the negligible impact of programs funded by USAF subsidies, the utility of the Universal Service and Access Fund in its current form with its current mandate warrants significant reconsideration. While the notional size of the USAF has grown exponentially in recent years relative to historic levels, the Minister of Communications has yet to demonstrate any concrete plans for the systematic disbursement of notional USAF reserves towards programs or projects that meaningfully improve access to communications services for those areas of South Africa and those South Africans that continue to be overlooked by market participants in the domestic communications market.

The USAF's role as a funding pool that helps private sector operators offset the costs of implementing public sector communications policy priorities mirrors President Mandela's vision for pan-African communications funding partnerships:

> *The investment needs of this rapidly expanding sector cannot be met by the public sector alone. They can be met only through partnerships between public and private sectors. Such partnerships will promote a climate for sustainable investment in infrastructure that guarantees good returns and at the same time helps close the information gap.*
>
> *If this partnership is to have the maximum effect in promoting our goals, it will need to have some co-ordinated vehicle like a dedicated African Telecommunications Development Fund. Such a fund would finance the infrastructure projects needed to extend telephony to every village in Africa and would certainly put the continent on the map of the global information society* (Mandela, 1998, 2).

The public-private partnerships that President Mandela envisioned for funding Africa's communications renaissance explicitly focus on infrastructure funding and differ strikingly from the public-public implementation approaches undertaken by the USAASA in underwriting its programs. Consistent with President Mandela's original plan, the current Minister of Communications may wish to consider restricting USAF disbursements to cover capital costs in projects conceived by public sector authorities but implemented and operated by private sector partners. Application of this paradigm to USAASA programs, for example, would strengthen the Agency's enabling function but limit its ill-advised foray into implementation efforts by transferring execution responsibilities into capable private sector hands.

In any contemplation of further USF reforms, the Minister of Communications should consider opportunities to enhance the USAF's role as a funding pool available to the private sector to implement universal service and access projects in South Africa's communications market. Rather than represent a closed fund used to underwrite the USAASA's proprietary projects, the USAF should allow any private sector party to apply for subsidies for projects that advance realisation of universal service and access to communications services in South Africa. While the Minister of Communications may continue to support supply-driven allocations to underwrite public policy priorities, a demand-driven allocation approach using competitive, market-determined subsidy formulas expands opportunities to implement viable universal service and access projects that bridge the digital divide on a cost effective basis. Otherwise, the USAF may continue to represent a receptacle for unallocated operator contributions that, in large part, has become a symbol of the Government of South Africa's failure to deliver on universal service and access to communications services in South Africa.

Overall, the Universal Service and Access Fund has failed to effectively discharge its statutory mandate. USAF subsidies have delivered few sustainable returns on investment. As of 2013, the mammoth mountain of unallocated USAF contributions stands as testament to the Government's mismanagement of the USAF mandate. Combined with the lack of return on USAF subsidies, the disequilibrium between USAF contributions and dispensed USAF subsidies suggests that serious consideration needs to be given to restructuring the Universal Service and Access Fund in South Africa. Private sector actors would undoubtedly favour abolition of the USAF. Public sector actors appear inclined to use most, if not all, of the USAF to fund the STB subsidy program in the broadcasting market. At a minimum, reform of the USAF is a prerequisite part of any review of the funding solutions available to implement the realisation of universal service and access to communications services in South Africa.

### 5.3.4 Under serviced area licenses

Implementation of the Under Serviced Area License Program represents the fourth centrepiece of the Government of South Africa's drive towards realisation of universal service and access to communications services in the country. The Program held much promise: approximately 21.4 million people lived in the 27 areas demarcated as USAL concessions, representing approximately 48% of South Africa's population and accounting for approximately ZAR 18 billion or 25% of South Africa's total communications revenues to March 2004 (Smit, 2004, 1, 15). Despite such commercial promise, the USAL Program played out as a public policy failure that was soon relegated to the wayside by the Government of South Africa as regulatory reforms and market conditions bypassed its purpose.

The USAL Program suffered controversy from the outset when network operators challenged the Minister of Communications' use of 1996 census figures (South Africa, Statistics South Africa, 1996) to determine boundaries of under serviced areas. These operators argued that such data was outdated and focused on fixed line teledensity to the exclusion of high mobile penetration rates. Absent reliable independent data, these operators suggested that the Minister of Communications rely on industry-supplied information (Gillwald, 2002, 2-3).

Such views were largely advanced by operators for self-serving purposes (Gillwald, 2002, 3). In demarcating eligible areas, the Minister of Communications followed the ITU's measurement of teledensity. Given self-evident competition concerns, the uncertain objectivity of industry-supplied information would have required scrutiny that delayed the adjudication process. The ability to measure mobile teledensity, moreover, suffers from an inherent inability to accurately determine the residence of subscribers who may purchase mobile phones and air time in disparate locations. Finally, each operator retained a vested interest in minimising the redistribution of market share to new entrants by limiting the number of under serviced areas.

The basis for the Minister of Communications' decision to restrict the number of USALs awarded in the initial round of the adjudication process remains unknown. However, four factors favoured a cautious approach. First, release of an initial allotment of USALs afforded authorities the opportunity to test market appetite for USAL concessions and adjust license conditions to enhance market interest in subsequent allocations. Second, licensing an initial round of USATN operators enabled authorities to evaluate the performance of early concession holders as a pilot project and tweak license conditions and enforcement methodologies prior to the roll out of any national program. Third, a strong performance by initial USATN operators would allow authorities to adjust licensing conditions in their favour, such as increasing fees or reducing subsidies, in subsequent allocations. Finally, the staggered allocation of USALs reduced the regulatory burden on authorities by limiting the scope of applications at any one time.

Similar to restrictions imposed on the initial number of USALs, the basis for the Minister of Communications' decision to impose ownership restrictions on USALs remains unknown. However, these ownership limitations increased the number of shareholders in USATN operators and thereby facilitated the empowerment of historically disadvantaged individuals and SMME interests, two of the principal objectives of the USAL Program. Notwithstanding redundancies, a greater number of jobs might have also been created by different employers with consequently larger trickle down economic multiplier effects.[179]

---

[179] For further discussion on multiplier effects arising from introduction of communications services into under serviced areas, see Grace, Kenny, Qiang, Liu & Reynolds, 2001.

Yet ownership restrictions also compromised the business case of some USAL concessions. Without the ability to pool resources and achieve economies of scale with other concessions, smaller territories became less viable as stand-alone business propositions. It also became difficult for smaller groups of previously disadvantaged communities to raise the capital needed to establish operations in more marginal territories. As such, USAL ownership restrictions may have dampened market interest in such concessions and narrowed the range of BEE constituencies capable of operating such concessions.

Complicated ownership restrictions and other socio-economic qualifications required of USATN operators may have also diluted the competency of USAL applicants. Notwithstanding a thorough vetting process, the USA admitted that USATN operators suffered from '*the lack of technological and regulatory expertise, and a misunderstanding of corporate governance issues*' (Vecchiatto, 2006a, 1). Several USATN operators allegedly mismanaged funds (Parle, 2013, 1). The USAASA conceded that:

> *The Fund did not adequately in terms of the agreements entered into with the Under Serviced Area Licenses (USAL's)* [sic] *operators follow up on the certificates of completion and the quarterly reports from the licensees who have been awarded an initial subsidy of R 5 000 000. The majority of USAL's* [sic] *did not adhere to their contractual commitments. The Fund did not have policies and procedures to address the monitoring of contracts. This would ultimately result in the Fund not meeting its objectives of providing universal access to under-serviced* [sic] *areas* (USA, 2007, 14).

A more nuanced approach that combined BEE credentials with technical expertise may have improved the prospects of many USATN operators. As a Telkom representative observes:

> *This time we are not asking for BEE. We are asking for clever people who have tried and perfected it. If its 10 white males, let it be so. We say to them: "You have won this tender, go and run it, show Telkom and the mobiles a thing or two." And then we run this model and see if it can be successful. You can then franchise it. But franchising is a script, because it says this is how the burgers are cut; this is how the bread is cut; this is how much tomato sauce you put in; this is how you measure. With a fixed script manual of how everything is done. So they are not left with money coming in and they buy furniture. I want to know there are clever business people out there who can show us a thing or two. . . . It can be one consortium or two and then from there we can then franchise it* (Bate, 2014e, 15).

Indeed, the absence of technological expertise led some equipment suppliers to take advantage of USATN operators by selling them obsolete equipment (Vecchiatto, 2006a, 1).

ICASA may have also made assumptions that doomed the USAL Program to failure. Many USATN operators selected CDMA2000 technology as the preferred technology to deliver communications services within their territories and successfully negotiated contracts with equipment suppliers to build out their networks (Parle, 2013, 1). ICASA, however, assumed that such operators would use GSM technology and set aside 1800 MHz spectrum for such purposes (Parle, 2013). The desire of USATN operators to use WiMax and CDMA2000 technology required access to other bandwidth not readily available to such operators under their licenses. The eventual availability of such spectrum came too late for many USATN operators who '*had all but imploded by this point'* (Parle, 2013, 1).

USATN operators also lacked access to commercial arrangements necessary to deliver communications services to areas with marginal commercial viability. The availability of asymmetrical interconnection rates may have represented a critical opportunity for USATN operators to realise such financial means (Lewis, 2010, 13). Asymmetrical interconnection rates would have enabled USATN operators to earn financial returns sufficient to offset higher capital and operating costs to compete against fixed line and mobile operators with lower capital and operating costs due to economies of scale. They would have enabled USATN operators to lower origination fees to compete against fixed line and mobile operators on price. They would have also accelerated opportunities for USATN operators to support secondary industries in under serviced areas that enhanced the empowerment objectives of the USAL scheme as well as the general empowerment and job-creation objectives of other Government policies. Yet the Government of South Africa never implemented such rates to benefit USATN operators during the USAL Program. The absence of asymmetrical interconnection rates, combined with the lack of meaningful subsidies, deprived USAL concessions of the commercial sustainability and financial stability required to support a viable business case for many USATN operators.

Absent sustainable commercial arrangements, the inadequacy of USAF subsidies doomed the USAL business case. The USA made ZAR 5 million available to each USATN operator over three years, with only the first year guaranteed and subsequent years subject to a performance review. This amount was insufficient to offset substantial start-up capital expenditures estimated between USD 5 million and USD 20 million (Lewis, 2010, 13). Even a USA-commissioned report recommended that such subsidies be *'increased substantially . . . and that operating expenditure and capital expenditure be availed and administered separately'* (Thornton, 2006, 2). Yet the USA ignored such recommendations. As such, the USA's reliance on across-the-board subsidies without reference to any market mechanisms, such as reverse auctions, failed to detect such deficiencies or optimise the amount and allocation of subsidies in accordance with market realities.

Market conditions ultimately bypassed the rationale for issuing separate licenses for under serviced areas. At the outset of the USAL Program, under serviced areas were estimated to suffer from teledensity levels about 48% lower than South Africa's average teledensity, with few opportunities to narrow this discrepancy absent USAL concessions (Smit, 2004, 3). Due to the exponential growth of mobile communications services in South Africa since 1995, however, many under serviced areas enjoyed extensive access to mobile communications services by the licensing of the first round of USATN operators in 2003: on average, at least 86% of USAL territories were covered by mobile operators by that time, with 98% of some under serviced areas falling within mobile coverage plans (Smit, 2004, 46).

Many private sector actors argued that '*there is no compelling business case for USALs*' given market conditions (Ashford, 2006, 1). Many public sector actors shared this view, including a USA Board member who concluded that '[m]*aybe we should ask ourselves if there is a case to continue with the concept of USALs. If not, then what could be a better model to bring access to these* [rural] *areas?* (Vecchiatto, 2006b, 2). Another USA Board member lamented that she '*wanted to run away*' because she was '*tired of being in workshops where we discuss the problems that the USALs are facing*' (Senne, 2006b, 1).

In the end, the introduction of the *Electronic Communications Act* eliminated the USAL category and empowered every Electronic Communications Network Services (ECNS) or Electronic Communications Services (ECS) license holder, particularly VANS providers, to compete within USATN operators within any USAL area on equal if not more advantageous terms. As the USAASA conceded:

> *The USAL project has been overshadowed by various challenges such as:*
>
> - *shortage of capital*
> - *interconnection agreements with incumbent operators not being favourable,*
> - *competing with incumbent operators in some of their areas on products, packages, lower tariffs, etc, and*
> - *the introduction of the ECA which does not offer them special rights, as was the case with the Telecommunications Act.*
>
> *After in-depth review, it was decided that funding be suspended until a sustainable model on the business case, regulatory, financial support and policy be developed* (USAASA, 2009c, 24).

As one commentator noted, '[t]*he under-serviced area licensees seem to have become an unfortunate and unpleasant footnote to the history of telecommunications access in South Africa*' (Lewis, 2010, 14). Only one USATN operator continues in business in 2013 (with a converted license) and it faces challenges paying its licensing fees that may threaten its continued existence (Magcawas, 2013, 1).

Overall, the USAL Program did not materially improve the delivery of communications services to under serviced areas. USATN operators collectively served 17,000 customers, with an average of 3,000 users per license (Senne, 2006b, 1), when the *Electronic Communications Act* eliminated the USAL as a separate licensing category. Based on the USD 15 million subsidy received by each USATN operator, this represents a subscriber acquisition cost (or connectivity cost from a public policy perspective) of USD 5,000 (approximately ZAR 50,000) per subscriber against marginal, if any, revenues received by such USATN operators. Given the extent of financial and operational resources poured into the USAL Program, this result represents a poor return on investment.

## 5.4 LESSONS FOR UNIVERSAL SERVICE AND ACCESS POLICIES AND PROGRAMS IN SOUTH AFRICA'S COMMUNICATIONS MARKET BASED ON PREVIOUS GOVERNMENT INTERVENTIONS

The Government of South Africa's policy platform for the realisation of universal service and access to communications services in South Africa has under-performed and under-delivered on its objectives. Despite investment of significant financial and operational resources, every policy and every program implemented under every policy has failed to materially improve universal service and access to communications services in South Africa.[180] In 2006, the CEO of the USAASA claimed that the four pillars of this universal service and access policy platform remain sound but "*the failure is in the implementation*" (Claasen, 2006, 40). This may be true. Beyond specific program failures, the disappointing performance of the four pillars of the Government's universal service and access platform may be attributed to three recurring mistakes made by public policy actors on behalf of the Government of South Africa in the implementation of such policies and programs.

The first mistake made by the Government of South Africa was to overlook the potential of private sector actors to play a pivotal role in policy implementation efforts. While policy formulation and evaluation remain the legitimate purview of Government mandarins, policy implementation is best left to private sector resources operating under public sector scrutiny. Many programs failed operationally or failed to make any material impact because the USAASA lacked sufficient institutional capacity to implement such efforts or responded too slowly to shifting market conditions. Failure to use reverse auctions and other market-driven benchmarks to determine and allocate subsidies increased program costs. International precedents confirm that incentivised private sector agents are best placed to implement public sector policy priorities on the most cost effective basis while public sector institutions are best placed to enable such private sector actors and hold them accountable for their implementation activities.[181]

The second mistake made by the Government of South Africa was to overlook the need for empirical program reviews. Not a single policy or program implemented under the Government's policy platform was subjected to any quantitative program appraisal

---

[180] Supra, section 5.3.

[181] Supra, sections 2.3 and 2.4.

effort. This deficiency prevented the Government from identifying problems early in the program implementation process. It restrained the Government from holding implementation agencies accountable for performance targets. It deprived the Government of any meaningful way to measure the cost effectiveness and efficiency of its programs. It precluded comparative evaluation of program performance against other domestic and international efforts.

The third mistake made by the Government of South Africa was to create an unworkable policy programming environment. This environment was characterised by overlapping mandates and activities which encouraged conflict and discouraged accountability between public sector actors. Conceived as an adjunct agency of the regulatory authority, the USAASA was born as a nominally independent agency into a no man's land between other public policy actors without the statutory authority or political power to deliver its mandate. The USAF was controlled by the regulator and subsequently the Minister of Communications but managed by the USAASA. Numerous universal service and access programs conceived by one agency were implemented by other agencies. For example, the USAASA and ICASA arguably shared responsibility for the monitoring the discharge of USAOs by operators. There was no clear cut, single point of accountability for implementation of the Government's key policies and programs to realise universal service and access to communications services in South Africa. Such conflicting roles and responsibilities compromised the delivery of such policies and programs.

While the Government of South Africa struggled to implement the four pillars of its universal service and access policy platform in South Africa's communications market, commercial developments often rendered attendant programs obsolete or unnecessary. Innovative air time packages offered by mobile network operators reached previously under serviced areas with far greater effect and efficiency than any community service obligations. Market efforts far exceeded Government efforts in rolling out computer centres and connectivity to South African schools. Even many USATN operators relied on Vodacom, MTN or Neotel to provide their services (Parle, 2013, 1). The Government of South Africa was slow to recognise the impact of market developments on its policies and programs and even slower to adjust such policies and programs once aware of such developments.

Such slothfulness may demand reconsideration of the definitions of universal service and universal access to account for evolving commercial conditions and consumer habits in South Africa's communications market. The Government is devoting an increasing amount of public policy consideration to 'bridging the digital divide' and realising 'digital inclusion' by increasing Internet connectivity. Given the convergence of communications technologies, such matters go hand-in-hand with communications policy development. While the paradigm underpinning the *Electronic Communications Act* promotes such convergence, the Government's current ICT policy review is likely to accelerate such convergence as part of any wholesale reforms to existing laws.

Expansion of the concepts of universal service and universal access to encompass ICT delivery platforms may be warranted in current market conditions. Indeed, the concepts of 'awareness' and 'ability' have increasingly been added to the three elements of availability, accessibility and affordability in some considerations of universal service and access to communications services to address the importance of computer literacy and access to the Internet through broadband services (ITU, 2011b, 3).[182] Any such expansion, however, creates new challenges and issues. The availability, accessibility and affordability of Internet resources is quite distinct from consideration of the availability, accessibility and affordability of basic voice communications services. Internet use requires a degree of technological literacy, training and capital investment not required to access most telephony services.

At the same time, communications literacy is an essential component of any well-crafted universal service or access program. Indeed, a Telkom representative cites a lack of computer literacy as a contributing factor to the failure of the USA's Telecentre Program:

> *. . . we need to link it to a whole literacy program. It can't be just the Government, the* [USAASA] *and the Communications Minister coming with a lot of computers. A lot of centres and people don't know how to use those things. So it needs to be packaged properly* (Bate, 2014e, 2).

Yet a representative of the Internet Service Providers' Association (ISPA) cites an Association program that teaches computer literary to teachers to highlight the importance of infrastructure in bridging the literacy gap:

---

[182] The USAASA has identified the concepts of 'awareness' and 'advocacy' as increasingly important components of the definition of universal service and access in South Africa's increasingly broadband-driven communications market (USAASA, 2013a, 7).

> *What we have found in the program is that, once we have taught the teachers to use the computer, the next challenge is that they didn't have computers at their schools. So now they are literate but they would lose that skill over time as there was no access to technology at the end of the day.*
>
> *I think it should be a major focus of Government: driving down access to technology at school because if we don't do it now, this will remain a problem. . . . What will it help if the facility is in place, but* [people] *can't use it?* (Bate, 2014b, 7).

A Vodacom representative confirms that '*if you address that connectivity, you can address education issues; you can address employment issues; you can address societal issues'* (Bate, 2014f, 3). As such, integrated public policy programs may be required to realise inclusive concepts of universal service and universal access to communications services in South Africa.

It also remains important not to overlook the continuing need of some South Africans to access voice communications services. Such a need might be met through Internet connectivity or other communications platforms. To the extent that divergent technologies cannot satisfy this requirement, however, the Government of South Africa needs to ensure that policies and programs to realise universal service and access to communications services motivate the private sector to remedy such deficiencies.

The Government of South Africa must be held accountable for significant failures as it looks back on nearly two decades of efforts to realise universal service and access to communications services in South Africa. It admits as much, conceding that:

> *Despite uptake of mobile phones, growth in the South African ICT sector has not been accompanied by a realisation of the primary policy objectives of affordable access for all, to the full range of communications services that characterise modern economies.*
>
> *State interventions to address access gaps, which among other things included but not limited to tele-centres in rural areas, school cyber-laboratories, Internet kiosks at Post Offices and Under-Serviced Area Licenses have not only been reactive in nature but have not yielded the anticipated results* (USAASA, 2012d, 2).

The Government of South Africa must be held even more accountable for forthcoming policy decisions that affect the future realisation of universal service and access to communications services in South Africa. Such a reckoning should acknowledge the

history of universal service and access efforts in South Africa's communications market, build upon the rare accomplishments and learn from the many mistakes. As an ICASA representative notes:

> *. . . . we should learn lessons in terms of where we were successful and where we were not successful and try to retain those things where we believe we were successful and completely render obsolete those things that were not successful and have a relook to find out if we can fashion another, different model* (Bate, 2014d, 17).

Indeed, the pending development of a national strategy for universal service and access for South Africa's communications market by the USAASA (USAASA, 2013a; 1-28; 2012d, 2-3) and the review of South Africa's ICT policies by the Government of South Africa that includes a green paper, a white paper and new legislation afford the Government of South Africa an opportunity to implement a 'course correction' that remedies past mistakes and introduces new policies, programs and other reforms that may meaningfully improve the realisation of universal service and access to communications services for all South Africans, particularly those South Africans (and those parts of South Africa) that still do not enjoy available, accessible and affordable communications services nearly two decades after the dawn of the communications revolution in democratic South Africa.

## 5.5 CONCLUSION

This chapter evaluates and examines the specific policies and programs adopted by the Government of South Africa between 1996 and 2013 to realise universal service and access to communications services in South Africa. It reviews the nature of universal service and community service obligations imposed on communications network operators by the Government at the outset of the managed liberalisation period. It considers the socio-economic and political environment in which the Government created the Universal Service Agency as a stand-alone champion for the delivery of universal service and access to communications services in the country and describes the four principal functions and four principal programs adopted by the Agency to implement its mandate. The chapter examines the nature of the Universal Service Fund created by the Government to help pay for its universal service and access policy ambitions. It also explores the genesis of Under Serviced Area Licenses as tools for the realisation of universal service and access to communications services.

Having established a sound understanding of the four principal policies and attendant programs adopted by the Government of South Africa to promote universal service and access to communications services in the country, the chapter subsequently explores the performance of those policies and programs through analysis that relies on both quantitative and qualitative performance measurements. Based on such analysis, it highlights the failure of the Government's policies and programs to materially improve the availability, accessibility or affordability of communications services in South Africa between 1996 and 2013. The chapter identifies lessons that may be learned from the rare achievements and numerous failures of the Government's previous policies and programs and inform deliberations about future policies and programs designed to realise universal service and access to communications services in South Africa in the years ahead.

As with discussions in every previous chapter, the exploration, evaluation and analyses of such policies and programs are underpinned by a wide range of primary and secondary research. An understanding of the design and methodologies used to collect such research represents an important ingredient in the consideration of the trustworthiness of the findings and results arising from such exploration, evaluation and analyses. Chapter 6 provides such a foundation.

# CHAPTER 6

# RESEARCH DESIGN AND METHODOLOGIES

## 6.1 INTRODUCTION

Chapter 5 considered the public policy interventions undertaken by the Government of South Africa to influence the availability, accessibility and affordability of communications services in South Africa between 1996 and 2013. It described each principal intervention and subsequently evaluated the performance and impact of each intervention. Based on the generally poor performance of such interventions, it drew lessons that should be considered as part of any discussion of new policies or programs designed to realise universal service and access to communications services in South Africa in the years ahead.

As with every preceding chapter, Chapter 5 represents an exploratory investigation into matters germane to the availability, accessibility and affordability of communications services in South Africa. Each chapter relies on a mix of primary and secondary research to undertake the examination, evaluation and analyses of such matters. A sound understanding of the nature and methodology of such research and protocols used to collect underlying data is an essential prerequisite to any informed consideration of the trustworthiness of such efforts as well as subsequent recommendations for future policies, programs and reforms based, in part, on such exploration, evaluation and analysis. Given this imperative, this chapter describes the research design and methodologies used in this study.

More particularly, this chapter outlines the nature of the research design, methodologies, data collection and analysis approaches and types of data used to conduct this study. It describes a 10 step research design tailored to identify and collect data and facilitate a research program that generates the types of information and understanding of the subject matter required to address the central problem, five research questions, aim and nine objectives of this study. It highlights a methodologically pluralistic research approach that combines elements of qualitative and quantitative schools of inquiry to undertake primary and secondary research that generates secondary and primary data of a qualitative and quantitative nature.

Secondary research principally consists of two literature reviews. An initial literature review focuses on international communications markets. A subsequent literature review focuses on South Africa's communications market. Primary research principally consists of semi-structured interviews with key informants drawn from a representative sample of the population of public and private sector actors involved in the design or implementation of universal service and access policies and programs in South Africa's communications market.

The chapter discusses the strategies used to enhance the trustworthiness of the study's findings and results. It reviews key ethical considerations associated with the conduct of the study. The chapter concludes with a summary of the data retention and destruction policy adopted by this study.

## 6.2 RESEARCH DESIGN AND METHODOLOGIES

The term 'research design' and 'research methodology' are often used interchangeably. However, these terms are distinct and different concepts. On the one hand, 'research design' is defined as:

> *A detailed outline of how an investigation will take place. A research design will typically include how data is to be collected, what instruments will be employed, how the instruments will be used and the intended means for analyzing data collected* (Business Dictionary, 2013a, 1).

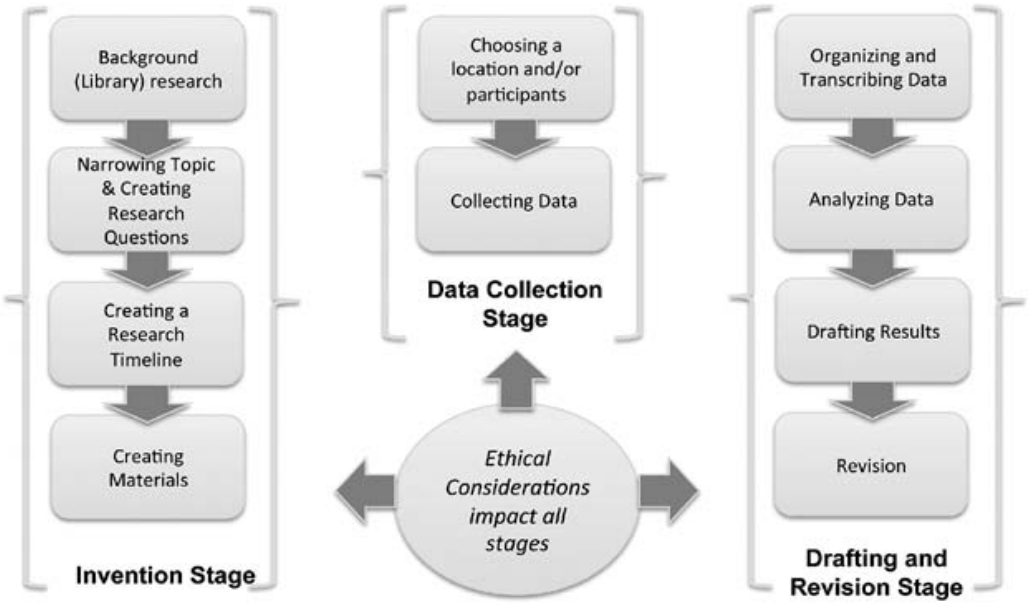
On the other hand, 'research methodology' is defined as:

> *The process used to collect information and data for the purpose of making* [decisions]. *The methodology may include publication research, interviews, surveys and other research techniques and could include both present and historical information* (Business Dictionary, 2013b, 1).

In practical terms, 'research design' refers to *'the logical structure of the inquiry. It articulates what data is required, from whom, and how it is going to answer the research question'* while 'research methodology' refers to *'the mode of data collection. This includes whether qualitative or quantitative data is required, or a mix of the two'* (Muaz Jalil, 2013, 6).

This study adopts a 10 step bespoke research design which may be divided into three main types of activities. First, an 'invention stage' that defines key parameters for the study. Second, a 'data collection stage' that undertakes the identification and collection of appropriate data. Third, a 'drafting and revision stage' which organises and analyses data to reach conclusions and recommendations. Figure 6.1 highlights some of the key activities within each stage of the research process:

**Figure 6.1**
**Overview of research process**




Source: Driscoll, 2011, 157.

The debate over the description, classification and suitability of various research methodologies in the discipline or field of public administration has consumed academia for decades (Stout, 2013, 11-12). Much of this debate has centred on the suitability of qualitative research methods relative to quantitative methods of inquiry (Stout, 2013, 12). The study incorporates elements of several research methodologies in each stage of the research design.

The concept and application of qualitative research varies widely across disciplines and studies. Scholars acknowledge that '*there are about as many definitions of qualitative research as there are books on the subject'* (Guest, Namey & Mitchell, 2013, 2). Some scholars focus on the purpose of such research (Merriam, 2009, 13) while other scholars stress the epistemological nature of research that relies on '*methods*

*such as participant observation or case studies which result in a narrative, descriptive account of a setting or practice'* (Parkinson & Drislane, 2013a, 1). As a working definition, however, 'qualitative research' may be defined as '*any research that uses data that do not indicate ordinal values'* (Nkwi, Nyamongo & Ryan, 2001, 1). Typically, qualitative research '*collects data from observation, interviews or verbal communication.* [It] [f]*ocuses on the meaning and interpretation of participant information rather than on items that can be counted and evaluated by statistical methods'* (Southcentral Foundation, 2013, 4).

The definition of quantitative research suffers from no such ambiguity. It may be defined as '[r]*esearch using methods allowing for the measurement of variables within a collection of people or groups and resulting in numerical data subjected to statistical analysis'* (Parkinson & Drislane, 2013b, 1). In broad terms, quantitative research involves '*scientific investigation in which numbers are used to measure a range of values such as characteristics, concepts or things'* (Southcentral Foundation, 2013, 4). Such a definition contrasts well with the working definition of qualitative research.

Rather than adopt a rigid approach that excludes the value potentially extracted through the use of different methodologies, this study adopts a methodologically inclusive and interdisciplinary approach to research. It incorporates the ontological, epistemological and methodological elements of qualitative and quantitative traditions of inquiry to construct the most suitable method of investigation to answer the central problem, research questions, aim and objectives of this study through collection of a varied and verifiable data universe. While some critics may find fault in such a tailored methodological approach, other commentators are likely to recognise that:

> *How one approaches qualitative research, and research in general, depends on a variety of personal, professional, political, and contextual factors. Ultimately, there is no right or wrong way of conducting a qualitative research project* (Guest et al, 2013, 1).

The pluralistic methodological paradigm adopted by this study involves the collection of secondary and primary research. Although primary research (also called field research) is defined differently across various disciplines of study, it may be regarded as '*research that is collected firsthand rather than found in a book, database or journal'* (Driscoll, 2011, 154). Secondary research (also called desk research) is the opposite of primary research and consists of research about '*what has already been written or found at the library'* (Driscoll, 2011, 153).

Through such primary and secondary research, this study generates a data universe comprised of both qualitative and quantitative data. Similar but distinct from the concepts of qualitative and quantitative research, 'qualitative data' may be defined as '*data describing the attributes or properties that an object possesses'* while 'quantitative data' may be defined as '*data expressing a certain quantity, amount or range'* (UNECE, 2000, 10). The secondary research conducted pursuant to this study includes a review and analyses of qualitative and quantitative data while the primary research undertaken for this study (semi-structured interviews) generates both quantitative and qualitative data. Outputs generated through interpretation, analyses and understanding of the data universe underpin the principally qualitative conclusions and recommendations found in this study.

### 6.2.1 Research design

This study adopts a 10 step bespoke research design that incorporates elements of qualitative and quantitative research paradigms. It commences with an 'invention stage' that articulates the central problem, five research questions and the principal aim and nine objectives of the study. The research design includes a 'data collection stage' that involves the collection of data using elements of both qualitative and quantitative methodologies to undertake primary and secondary research that generate a data universe for the study. It features a 'drafting and revision' stage which organises, analyses and interprets information within the data universe to reach conclusions and recommendations that inform the development of answers to the central problem.

Unlike typical research designs, however, it includes three phases of data collection and three phases of data analysis. The first two phases of data collection and analysis focus on the collection and assessment of secondary data (of a qualitative and quantitative nature) through literature reviews. The third phase of data collection and analysis focuses on the generation and assessment of primary data (of a qualitative and quantitative nature) that augment data and earlier analyses of data collected and interpreted during the first two phases of the data collection and analysis effort. Table 6.1 summarises the 10 major steps of the bespoke research design applied to the conduct of this study:

**Table 6.1**

**Summary of research design**

| | |
|---|---|
| **Step 1**<br><br>**Problem definition and research design** | Develop the purpose of the study. Consider the rationale for the study, identify an appropriate central problem and articulate this problem as a problem statement. Confirm key research questions, research assumptions and the aim, objectives, scope and limitations of the study. Taking into consideration such matters, develop the research design and methodological approach to undertake the study. |
| **Step 2**<br><br>**Initial literature review** | Conduct a literature review to gather qualitative and quantitative data about the definitions and origins of universal service and access as well as the application and performance of universal service and access policies and programs in a representative sample of international communications markets, including markets that share characteristics with South Africa's market. |
| **Step 3**<br><br>**Initial analysis** | Analyse and interpret data collected from the literature review of universal service and access policies and programs in the representative sample of international communications markets to determine salient dynamics of such policies and programs in such markets. Extrapolate lessons that may be germane to consideration of such matters in South Africa. |
| **Step 4**<br><br>**Subsequent literature review** | Conduct a literature review of the regulatory, commercial and policy environments of South Africa's communications market (from a universal service and access perspective) to gather quantitative and qualitative data on salient dynamics, policies and programs that may have affected and may affect the availability, accessibility and affordability of communications services in South Africa. |
| **Step 5**<br><br>**Subsequent analysis** | Analyse and interpret data collected from the literature review of the regulatory, market and policy environments of South Africa's communications market to identify key factors that may have affected and may affect the realisation of universal service and access to communications services in South Africa. Evaluate the nature and performance of the principal policies and programs adopted by the Government of South Africa to promote the availability, accessibility and affordability of communications services in the country. |
| **Step 6**<br><br>**Initial conclusions and recommendations** | Develop preliminary conclusions and recommendations to accelerate the realisation of universal service and access to communications services in South Africa, including prospective reforms to existing policies and programs and introduction of new policies or programs. |
| **Step 7**<br><br>**Questions** | Taking into account information and insights gained during the previous research steps, design a set of closed-ended and open-ended questions for semi-structured interviews to be administered to a representative sample of public sector policy makers and private sector actors active in South Africa's communications market. Ensure that such questions address applicable sampling criteria. |
| **Step 8**<br><br>**Semi-structured interviews** | Conduct semi-structured interviews with key informants drawn from a representative sample of the population of public sector policy makers and private sector actors involved in South Africa's communications market to:<br>(a) Elicit primary data of a quantitative and qualitative nature about the performance of the Government of South Africa's universal service and access policies and programs;<br>(b) Solicit any ideas about ways to improve universal service and access to communications services in South Africa; and<br>(c) Explore their receptiveness to some of the study's initial conclusions and recommendations. |
| **Step 9**<br><br>**Subsequent analysis** | Analyse and interpret data collected during the semi-structured interviews to identify information which may help inform additional conclusions and recommendations or amend preliminary conclusions and recommendations. Explore areas of accord and discord between primary data collected in the interviews and secondary data collected during earlier literature reviews. Undertake statistical analyses of quantitative data generated from answers to the closed-ended questions of the interview to test the validity and reliability of data. |
| **Step 10**<br><br>**Final conclusions and recommendations** | Based on the results of the earlier research steps, develop a set of firm conclusions and recommendations to accelerate the realisation of universal service and access to communications services in South Africa, either through reforms to existing policies and programs, introduction of new policies and programs or a combination thereof. As part of such effort, identify any obstacles or opportunities related to the implementation of any recommendations. Consider the limitations of the study and any areas for further research. |

Source: Author.

Through this incremental, staggered data collection and analysis design outlined in Table 6.1, the study increases the depth, descriptiveness and diversity of the data universe used to investigate the subject of the study and maximises the opportunity to establish the trustworthiness of the study's findings and results and subsequent conclusions and recommendations.

As indicated in Table 6.1, the research design incorporates a mix of quantitative and qualitative methods of inquiry to construct a substantial data universe that provides a foundation to analyse and interpret salient information and underpin subsequent conclusions and recommendations about optimal ways to improve the availability, accessibility and affordability of communications services in South Africa. Further information about the nature of such methodologies and data is found in the next sections of this chapter.

### 6.2.2 Research methodologies

This study uses a mix of qualitative and quantitative research methods to maximise the opportunity to answer the central research problem and five research questions and realise the aim and nine objectives of the study. The study is predominantly a qualitative research effort that adopts a 'model-dependent realism' school of inquiry that generally subscribes to a post-positivist approach with elements borrowed from the interpretive school of inquiry. It also incorporates quantitative research methods through the use of closed-ended questions during the semi-structured interviews. Answers to those questions generate primary data of a quantitative nature that not only augments other data collected as part of this study but also tests the confidence[183] of assertions and conclusions formed as part of this study. Further definitions and discussions of such matters are found in succeeding paragraphs.

#### 6.2.2.1 Qualitative research

Substantial consideration of the multitude of different approaches to qualitative research is well beyond the scope of this study. In terms of its epistemological perspectives, however, qualitative research is commonly divided between the interpretive (anti-positivism) school of inquiry and the positivism (post-positivism) school of inquiry (Guest et al, 2013, 5-6).

---

[183] The word 'confidence' is used in customary semantic terms and not in relation to any specific statistical nomenclature.

Discussion of the complex world of interpretivism (including different perspectives such as post-structuralism, experimentalism and critical theory) is beyond the scope of this study. However, this school of research principally relies on the assumption that people do not have the ability to objectively measure reality due to cognitive prejudices. As such, research efforts focus on discovering multiple realities based on personal narratives or observed behaviors and activities (Guest et al, 2013, 5-6).

Similarly, discussion of the complex world of positivism (logical or rigid) and post-positivism is beyond the scope of this study. However, this school of research principally relies on the assumption that people have at least some capacity to objectivity measure reality. For post-positivists, research efforts focus on the quest to approximate such reality through reliance on interpretations based on observed data and application of systematic and transparent data collection and analysis methods (Guest et al, 2013, 6).

This study constructs a research methodology which incorporates elements of both schools of inquiry. Most of the study follows a post-positivist approach, particularly the methodology applied to data collection, analysis and interpretation. Data collection procedures are systematic and transparent and include secondary research comprised of literature reviews and primary research comprised of semi-structured interviews.[184] Interpretations and analyses of such data are based on a defined data universe. At the same time, many of the recommendations found within this study, particularly proposals for new programs to realise universal service and access to communications services in South Africa, draw on the personal experiences and independent thoughts of the author, which are hallmarks of the interpretivist school of inquiry.

Given these circumstances, the study likely adheres to a relatively new school of inquiry called 'model-dependent realism' (Hawking and Mlodinow, 2010). Model-dependent realism acknowledges the influence of cognitive bias on research and research outputs to dismiss the concept of a single objective reality (consistent with interpretivism) but emphasises the importance of data and the analysis and interpretation of data as the basis for conclusions and assertions (consistent with post-positivism). As such:

---

[184] Infra, sections 6.3 and 6.4.

> *. . . it is pointless to ask whether a model is real, only whether it agrees with observation. If there can be two models that both agree with observation . . . then one cannot say that one is more real than any other'* (Hawking and Mlodinow, 2010, 46).

Model-dependent realism has not been applied to any published consideration of universal service or access to communications services.[185] This is not surprising given the recent development of this school of inquiry. The absence of such application, however, does not vitiate the relevance or utility of this nascent tradition:

> *While model-dependent realism is new and has not yet been adapted in the behavioral and social sciences, the concept is certainly applicable and compatible with a post-positivist approach. Both perspectives emphasize data (observations) and the degree to which they can explain one's assertions and interpretation of the world (models). Both approaches strive to support interpretations of the world we present with the best supporting data possible* (Guest et al, 2013, 7).

In the view of some scholars, '*this is what applied research is all about'* (Guest et al, 2013, 7). It is also what this study is about.

#### 6.2.2.2 Quantitative research

This study generally relies on qualitative research methods. However, it incorporates primary research that includes the use of closed-ended questions during the semi-structured interviews which rely on quantitative methods of data collection and analysis.[186] As such, the study appropriates a mixed methods approach to research which leverages the benefits of quantitative methodologies within the overarching qualitative approach to research undertaken by this study.

Quantitative research serves two important purposes in this study. First, the data derived from the closed-ended questions and subsequent statistical analyses of such data is a useful means to test the trustworthiness of many of the findings based on qualitative research. This is not an uncommon role for quantitative methodologies in qualitative studies (Kuhn, 1961, 162). Second,

---

[185] Based on a search of academic and commercial databases and online library catalogues conducted in December 2013.

[186] Infra, sections 6.3, 6.4 and 7.2.

the quantitative data generated by this study and analysis thereof adds depth and complexity to the data universe by establishing inter-relationships between the 'numbers' recorded in the quantitative analysis and the contextual information recorded in the qualitative analysis. The extrapolated meanings and values of data are enhanced through such interactions. Again, this is not an uncommon marriage of methodologies in qualitative research (Abeyasekera, 2013, 1-12; Bryman, 2006, 97-113).

As much as the mix of epistemological perspectives that anchor this study influence the conclusions and recommendations arising from this study, the methodological approaches applied to the collection and subsequent evaluation, interpretation and analyses of data have an equally important influence on such conclusions and recommendations. As such, consideration of the principal approaches used by this study to collect and analyse data warrants equally prominent treatment.

## 6.3 DATA COLLECTION

A multitude of approaches are suited to the collection and analyses of data in this investigation of universal service and access to communications services in South Africa. Following a considered review of such approaches, this study draws upon applied inductive thematic analysis and a mixed methods approach as the optimal means to collect and analyse such data.[187] Table 6.2 summarises the key features and application of each approach in the study:

---

[187] Five other data collection and analysis techniques were considered for this study.

A case study approach '*examines a phenomenon within its real-life context'* and *'focus*[es] *largely on their defining case features and the differences they exhibit from other individuals/events in the larger population. The overall idea is to tease out what makes them so different and why'* (Guest et al, 2013, 14). This study does not conduct any case studies. However, it draws upon case studies from other jurisdictions as part of its discussion of the origins and definitions of universal service and access as well as the applications and performances of universal service and access policies and programs in international communications markets (Chapter 2). Beyond analyses of individual case studies, the study explores patterns within and between such case studies to identify homogeneity and heterogeneity of circumstances that may affect universal service and access to communications services under given market conditions.

Phenomenology is the '*study of individuals' perceptions, feelings, and lived experiences'* (Guest et al, 2013, 10). It focuses on individual experiences, beliefs and perceptions with text used as primary proxy for human experience (Guest et al, 2003, 10). This study generally does not rely on any text as a proxy for human experience as it includes semi-structured interviews that elicit the individual experiences and normative perceptions of interview participants.

Narrative analysis is '*based on the study of discourse and the textual representation of discourse'* (Guest et al, 2013, 16). It relies on narratives drawn from one or more sources (interviews, literature) as primary sources of data (Guest et al, 2003, 16). This study generally does not rely on any such narratives as it includes semi-structured interviews that elicit the individual experiences and normative perceptions of interview participants.

Ethnography means '*to write about a group of people'* (Guest et al, 2013, 11). It involves the study of shared meanings and practices (Guest et al, 2003, 11). This study generally does not focus on ethnographic considerations, although some interview participants cite socio-cultural norms that may influence the need for and realisation of universal service and access to communications services in South Africa.

**Table 6.2**
**Summary of common data collection approaches**

| Type of approach | Key features | Application in this study |
|---|---|---|
| **Inductive thematic analysis** | Use of inductive data collection and analytic methods that involve the coding of emergent themes within data. | Applied to the conduct of the literature reviews to collect and compare text and identify common themes and theories from such text that may be relevant to consideration of universal service and access to communications services in South Africa.<br>Applied to the conduct of semi-structured interviews with answers to questions generating data to identify emerging themes and build assertions from such data. |
| **Mixed methods** | Integration of quantitative and qualitative research methods within a single study, typically in a sequential or concurrent order. | Quantitative methods applied to collect, analyse and interpret quantitative data generated during semi-structured interviews. Quantitative analysis used to interpret some quantitative data collected during literature reviews. |

Source: Adapted from Guest et al, 2013, 8-10.

Further discussion of the key attributes of each approach and consequent implications for this study are found in succeeding paragraphs of this section.

### 6.3.1 Applied inductive thematic analysis

The dominant data collection and analysis approach adopted by this study is applied inductive thematic analysis.[188] Inductive thematic analysis '*consists of reading through textual data, identifying themes in the data, coding those themes, and then interpreting the structure and content of the themes'* (Guest et al, 2013, 13). Applied thematic analysis is appropriately defined as:

---

Discourse analysis is another commonly used data collection and analysis technique that involves the '*study of the ways in which people produce recognizable social orders and processes'* (Guest et al, 2013, 14). A subset of discourse analysis is conversation analysis. Both approaches are rooted in ethnomethodological tradition (Garfinkel, 2002; 1967) and typically '*require intricate dissection of words, phrases, sentences, and interaction among speakers*' and favour naturally-occurring language rather than structured responses to interview questions or interviewer-led conversations (Guest et al, 2013, 15). As such, discourse and conversation analyses are not adopted as data collection and analysis methods in this study as they are unlikely to generate the kinds of data or analyses helpful to answering the central problem or research questions and fulfiling the aim or objectives of the study.

188 One type of inductive thematic analysis is grounded theory. This approach relies on methods that '*consist of systematic, yet flexible guidelines for collecting and analyzing qualitative data to construct theories "grounded" in the data themselves'* (Charmaz, 2006, 2). Grounded theory is based on a '*constant comparison method*' that typically focuses on small units of text (often involving line-by-line or line-to-line comparisons) which are time consuming and ill-suited to analysis of large data sets or broadly focused studies (Guest et al, 2013, 13). Grounded theory also '*requires an iterative research design in which data collection and analysis are merged and sample sizes are not predetermined'* (Guest et al, 2013, 13). As such, grounded theory is not adopted as a data collection and analysis method in this study as it is unlikely to generate the kinds of data or analyses helpful to answering the central problem or research questions and fulfiling the aim or objectives of the study.

> *. . . a rigorous, yet inductive, set of procedures designed to identify and examine themes from textual data in a way that is transparent and credible. [It] draws from a broad range of several theoretical and methodological perspectives, but in the end, its primary concern is with presenting the stories and experiences voiced by study participants as accurately and comprehensively as possible* (Guest et al, 2013, 15-16).

Applied inductive thematic analysis is the central approach applied to the literature reviews conducted as part of this study. A broad range of textual data is collected and analysed to identify commonalities, differences and themes within this data which are interpreted to generate an evaluation of the potential influence of such matters on the realisation of universal service and access to communications services in South Africa.

### 6.3.2 Mixed methods approach

As discussed in the methodology section of this chapter, this study adopts a mixed methods approach to its research. This orientation enables the study to benefit from both qualitative and quantitative data and analyses that enhance the breadth and depth of the data universe that informs the evaluations, conclusions and recommendations arising from this study. Secondary data collected during the literature reviews comprises both qualitative and quantitative data. During evaluation efforts, some of this quantitative data is subject to further analysis using quantitative techniques. Primary data collected during the semi-structured interviews comprises both qualitative and quantitative data. During evaluation efforts, such data is subject to various analyses, including statistical analyses of quantitative data derived from answers to closed-ended questions presented during interviews.

Data collected during primary research is integrated into the data universe subsequent to the introduction and consideration of data collected during secondary research. Analyses of quantitative data derived from primary and secondary research are conducted after completion of the secondary research. As such, the quantitative data sets generated during primary and secondary research inform the qualitative data sets collected during primary and secondary research.

The integration of data into the data universe used for this study therefore follows a sequential exploratory approach (Creswell & Plano Clark, 2007, 180-182). In this study, analyses of qualitative data derived from secondary research inform development of the key questions (qualitative and quantitative) asked of participants in the semi-structured interviews. Data derived from primary research (both of a qualitative and quantitative nature) augment data derived during secondary research to add complexity and depth to the data universe which yields additional insights and, in many cases, a deeper understanding of key areas of interest and more grounded conclusions and recommendations.

The integrity of the methodological approaches applied to the collection and subsequent evaluation, interpretation and analyses of data are important to ensure the trustworthiness of the study's findings and results. However, such efforts (and consequent conclusions and recommendations) rely equally on the nature of data collected through such methodologies. As such, consideration of the types of data collected during the research process warrants prominent treatment.

## 6.4 TYPES OF DATA

As discussed earlier in this chapter, this study undertakes secondary and primary research that generates qualitative and quantitative data to populate the data universe. Secondary research is conducted principally through two literature reviews. Primary research is conducted principally through semi-structured interviews with key informants drawn from a representative sample of the population of public and private sector actors involved in South Africa's communications market. Such research is conducted in a sequential order with secondary research preceding primary research. Further particulars about the secondary and primary research conducted by this study are found in succeeding paragraphs.

### 6.4.1 Secondary research (literature reviews)

As noted earlier, secondary research is the collection and analyses of data that already exists. The principal means of secondary research conducted for this study are literature reviews. The aim of a literature review is to:

> [O]*ffer an overview of significant literature published on a topic* . . . . [and] *surveys scholarly articles, books and other sources (e.g. dissertations, conference proceedings) relevant to a particular issue, area of research, or theory, providing a description, summary, and critical evaluation of each work* (Concordia University, 2013, 1).

This study conducts two literature reviews. An initial review collects data related to the origins and definitions of universal service and access and the applications and performances of universal service and access policies and programs in a representative sample of the population of communications markets in countries other than South Africa. A subsequent review collects data related to the regulatory and commercial environments of South Africa's communications market between 1958 and 2013 and the policies and programs adopted by the Government of South Africa between 1996 and 2013 to improve the availability, accessibility and affordability of communications services in the country.

Each literature review relies on seven types of secondary data which are examined for validity, reliability and bias to ensure the integrity of the data. Each review adopts common methods for the organisation of literature reviews, including the use of a 'funnel technique', early discussion of key theoretical concepts and reliance on case studies, applied inductive thematic analysis and mixed methods. Further particulars about each literature review are found in succeeding paragraphs.

#### 6.4.1.1 Purpose of literature reviews

Secondary research conducted for this study comprises of two literature reviews which may be broadly divided by their divergent purposes and chronological order of completion into two stages of review as follows:

- Literature review of international communications markets

  This study conducts a literature review of the origins and definitions of universal service and access as well as the applications and performances of universal service and access policies and programs in international communications markets. It identifies and analyses a representative sample of case studies drawn the population of developed and developing countries.

  The purpose of this literature review is twofold:

- It acquires a substantial understanding of the field of study, applications of key concepts and nature of policy interventions in a representative sample of the population of international communications markets.

- It identifies key variables that may be germane to the study of similar concepts and policy interventions in South Africa's communications market.

This literature review represents a highly useful means to further understand and evaluate the 'tried and tested' public policy tools that were available to the Government of South Africa in crafting its universal service and access policies and programs between 1996 and 2013 (considered in Chapter 5) and the prospective suitability of such policies and programs to accelerate the realisation of universal service and access to communications services under prevailing policy, regulatory and market conditions in South Africa (considered in Chapter 8).

- Literature review of South Africa's communications market

This study subsequently conducts a literature review of the availability, accessibility and affordability of communications services in South Africa through the perspective of universal service and access constructs, including:

- A review of the regulatory and commercial environments of South Africa's communications market between 1958 and 2013, particularly the period between 1996 and 2013.

- A review of the origins and definitions of universal service and universal access constructs in South Africa as well as the applications and performances of universal service and access policies and programs adopted by the Government of South Africa between 1996 and 2013 to increase the availability, accessibility and affordability of communications services in the country.

The purpose of this literature review is to acquire a substantial understanding of the historic and current state of communications services in South Africa and identify key variables that may have affected and may continue to affect the realisation of universal service and access to communications services in the country.

This literature review represents a highly useful means to understand the relevance of historic public policy interventions and historic and current environmental variables that may assist or impede the amendment or introduction of public policy interventions that may accelerate the realisation of universal service and access in South Africa's communications market in the years ahead. It also facilitates a correlation between lessons learned from the applications of universal service and access policies in international communications markets with lessons arising from the application (or absence) of similar policies and programs in South Africa conducive to a nuanced consideration of future public policy interventions.

#### 6.4.1.2 Sources and treatment of secondary data

The literature reviews conducted for this study collect secondary data from seven principal types of sources as described in Table 6.3:

**Table 6.3**
**Summary of sources of secondary data**

| Types of authors | Types of information |
|---|---|
| **Public sector institutions** | Publications of public sector institutions, including statutes, policy papers, research papers, performance reviews, speeches, press releases, policy directions and the like. |
| **Private sector participants** | Publications of private sector market participants, including financial statements, annual results, investor relations presentations, press releases and the like. |
| **Investment banks** | Publications of various investment banks, including analyst reports. |
| **Consultants, analysts, research firms** | Publications of research and consulting companies, including market reports, market intelligence reports and industry reports. |
| **Public policy houses** | Publications of bilateral and multilateral institutions, including development reports, development indices and socio-economic indicators. |
| **Academia** | Publications by scholars associated with any university, college, academy, institute or school, including books, papers, journal articles, conference proceedings and the like. |
| **Commercial publications** | Publications of commercial printing houses, including newspaper articles, magazine articles and other general interest or industry-specific publications of a commercial nature. |

Source: Author.

Secondary data was initially collected by third parties for purposes other than the furtherance of this study. This pedigree challenges the use of such data in two ways:

- Secondary data may have contained an incomplete assessment of various subjects of interest to this study.

- Secondary data may have been tainted by various sources of unreliability, bias or invalidity introduced by these third parties that undermine the trustworthiness of such data.

Such defects may affect the construct validity, predictive validity, concurrent validity and reliability of such data.[189] To overcome these deficiencies, the veracity of secondary data is checked against alternate sources of information whenever practicable. Multiple sources of data are used wherever practicable. In the absence of alternative data, the study identifies the inadequacy of such data and acknowledges the limitations on conclusions and recommendations arising therefrom.

Given the longitudinal nature of this study:

- Secondary data considers different time periods, generally ranging between 1958 and 2013.

- Secondary data is collected over different time periods, generally ranging between 2002 and 2013.

Wherever possible, this study uses the most recent available data to inform its consideration of any specific subject matter.

---

189 Reliability is '*the degree to which an assessment tool produces stable and consistent results'* while validity refers to '*how well a test measures what it is purported to measure*' (Phelan & Wren, 2006, 1).

Predictive validity refers to '*the degree to which a measure accurately measures the specific construct that it claims to be measuring . . . [it] uses the scores from the new measure to predict performance on a criterion measure administered at a later point in time'* (Mislevy & Rupp, 2010, 1).

Concurrent validity refers to '*the extent to which scores on a new measure are related to scores from a criterion measure administered at the same point in time'* (Mislevy & Rupp, 2010, 1).

Construct validity refers to 'test validation' which is '*the process whereby data are collected to establish the credibility of inferences to be made from test scores—both inferences about use of scores (as in decision making) and inferences about interpretation (meaning) of score*s' (Chao-Ying & Mueller, 2004, 1).

Bias refers to the influence of a researcher on data collected through the researcher's data collection efforts and may include, *inter alia*, prejudices, attitudes, subjectivity, reactivity and selection bias (Rajendran, 2001, 1-6).

Secondary data originally produced for purposes other than this study may use different measurement criteria (such as different units or durations of measurement) or different definitions or concepts (such as the same term defined differently) to present information. Wherever possible, this study reconfigures data into comparable units and durations of measurement and identifies discrepancies in such definitions or concepts or, absent this capacity, acknowledges such differences and limitations arising therefrom in drawing comparisons, conclusions and recommendations.

Secondary data is collated and aggregated to facilitate evaluation, interpretation and analyses of phenomena under consideration. Such efforts inform the creation, examination and adoption of conclusions and recommendations in this study. The methodologies used to collate, aggregate, evaluate, interpret and analyse secondary data, including the identification of relationships between independent data sets within the data universe, are discussed earlier in this chapter.

#### 6.4.1.3 Organisation of information

A 'funnel technique' (O'Neil, 2010, 10) is used to present the literature reviews. Each review begins with consideration of the definitions of universal service and universal access (in the context of communications services) as key theoretical concepts underlying this study. Consideration of key theoretical concepts at the outset of each literature review is consistent with application of the funnel technique (O'Neil, 2010, 10) and common to the structure of many literature reviews (Mouton, 2001, 91-95).

The literature review of international communications markets relies on analyses of case studies to introduce more specific discussions of universal service paradigms in the communications sectors of developed countries in North America (United States of America), Oceania (Australia), Asia (Japan) and the European Union. Subsequent consideration of the treatment of universal service paradigms in the communications sectors of developing countries introduces the concept of universal access which informs discussion of additional case studies in South America (Brasil, Chile and Peru), Southeast Asia (Malaysia) and Africa (Uganda). Analyses of lessons that may be learned from consideration of such theoretical concepts and case studies in the context

of the availability, accessibility and affordability of communications services in South Africa form an important part of this literature review and allow the identification of questions and concerns not answered by previous research that may be addressed by this study.

Analyses of earlier case studies is a common way of structuring literature reviews (Mouton, 2001, 91-95). In the evaluation of universal service and access in international communications markets, the countries featured in such case studies were early influencers or proactive adopters of public policy interventions that established trends and precedents which many other countries followed in their subsequent implementation of universal service and access policies and programs.[190] Other case studies may have merited consideration in the study, but a literature review is '*a representative sample of what is out there'* (O'Neil, 2010, 4). The suite of countries analysed as case studies fairly constitutes a representative sample of the world's different countries and communications markets. Such representativeness is exhibited through ten key parameters: geography (every continent except Antarctica); topography (relatively flat to mountainous); economy (small to large); size of land mass (small to large); population (small to large); spread of population (rural to urban); state of development (developing to developed); level of competition in communications markets (monopoly to liberalised); regulatory regime (nascent to sophisticated); and teledensity (low to high).

The literature review of South Africa's communications market relies principally on applied inductive thematic analysis. It draws heavily on public sector documents, particularly statutes, regulations and other Government-generated information, to consider the regulatory environment of South Africa's communications market between 1958 and 2013 and principal policies and programs adopted by the Government to promote the availability, accessibility and affordability of communications services in the country between 1996 and 2013. It draws heavily on private sector documents, particularly corporate reports, analyst reports, consultant reports and other industry-generated information, to consider the commercial environment of South Africa's communications market between 1958 and 2013, particularly the period between 1993 and 2013.

---

[190] Supra, sections 2.3 and 2.4.

Both literature reviews generally describe events in chronological order, which is a common hallmark of literature reviews (Mouton, 2001, 91-95). A mix of quantitative and qualitative data sets is examined within each review, which is a further hallmark of many literature reviews (Mouton, 2001, 91-95). Applying the inductive thematic analysis approach, both literature reviews organise and evaluate information to identify homogeneity and heterogeneity between data sets as well as key themes that may inform subsequent conclusions and recommendations arising from analyses of such data.

Secondary research (literature reviews) serves an important role in this study. The availability and sufficiency of an adequate universe of existing (relevant) data that may be acquired inexpensively affords an early understanding of considerations that may need to be addressed to resolve the central problem, five research questions, aim and nine objectives of this study. Secondary research also generates data which help define the focus of subsequent primary research by highlighting gaps and deficiencies that may be addressed through bespoke data collection efforts. Finally, secondary research generates data sets which may be compared with data sets generated by primary research to create a rich, deep and complex data universe that likely improves the trustworthiness of the evaluation, interpretation and analyses of such information and the confidence of subsequent conclusions and recommendations arising from such efforts. As shown in this paragraph, however, unlocking optimal value from secondary data requires the presence of primary data collected through primary research.

### 6.4.2 Primary research (semi-structured interviews)

As noted earlier, primary research is the collection and analyses of data that does not already exist. Undertaking primary research for this study achieves four important benefits. First, it facilitates the collection of proprietary data specifically related to the study (rather than originally created for other purposes) which likely improves the utility of such data. Second, it generates primary data which specifically addresses the central problem and five research questions of the study. Third, it provides a high degree of control over the methods used to collect such data which likely heightens the trustworthiness of such data. Finally, it generates new data which adds to the body of existing information and academic consideration of the key areas of interest which may be used by other researchers in their exploration of universal service and access to communications services in South Africa and elsewhere.

The principal means of primary research conducted for this study are semi-structured interviews. In this interview format, '*most of the interview questions are the same for each person interviewed, but additional questions can be asked of individual participants'* (Southcentral Foundation, 2013, 5).[191] For this study, a questionnaire consisting of 92 questions divided between 25 closed-ended and 67 open-ended questions is used to elicit information from interview participants.[192] The questionnaire is attached as Appendix 1.

Interviews are conducted with key informants drawn from a representative sample of the population of public and private sector market actors involved in South Africa's communications market.[193] A purposive sampling plan that includes a range of deliberately worded and pre-tested questions and use of a suite of appropriately designed and executed interview techniques maximises the trustworthiness of primary data collected through such interviews. Further particulars about these considerations are found in succeeding paragraphs.

#### 6.4.2.1 Nature and purpose of questions

The study conducts semi-structured interviews using a questionnaire which relies on two types of questions. On the one hand, closed-ended questions generate an array of answers that constitute a quantitative data set that serves two principal purposes:

- It augments secondary data of a qualitative and quantitative nature collected during secondary research (literature reviews) and primary data of a qualitative nature collected during primary research (semi-structured interviews) to generate a rich, deep and complex data universe.

- It contributes new quantitative data that may be used to test the trustworthiness of findings and results based on analyses of secondary data collected during secondary research (literature reviews) and improve (or diminish) the trustworthiness of findings based on analyses of primary data of a qualitative nature collected during primary research (interviews).

---

191 In contrast, structured interviews (also called fixed format interviews or directive interviews) are interviews '*in which all the questions are prepared beforehand and are put in the same order to each interviewee'* (Business Dictionary, 2013c, 1).

192 Closed-ended questions are questions which limit answers to a range of finite choices. Open-ended questions are questions which do not compel or prescribe any specific answer but allow respondents to independently identify and provide their response to the question (Richardson Jr, 2002, 1).

193 Infra, sections 6.4.2.2 to 6.4.2.4.

On the other hand, open-ended questions generate answers that collectively constitute a qualitative data set that serves two principal purposes:

- It augments secondary data of a qualitative and quantitative nature collected during secondary research (literature reviews) and primary data of a quantitative nature collected during primary research (semi-structured interviews) to generate a rich, deep and complex data universe.

- It contributes new qualitative data that may be used to test the trustworthiness of findings and results based on analyses of secondary data collected during secondary research (literature reviews) and improve (or diminish) the trustworthiness of results based on analyses of primary data of a quantitative nature collected during primary research (interviews).

The collective utility of such data likely strengthens the trustworthiness of conclusions and recommendations arising from the interpretation and analyses of the data universe. Further particulars about the nature of the closed-ended and open-ended questions used in the questionnaire are found in the two succeeding paragraphs, respectively.

#### 6.4.2.1.1 Closed-ended questions

The study conducts semi-structured interviews with key informants based on a questionnaire that includes 25 standard closed-ended questions. The questions are grouped into eight key areas related to universal service and access policies and programs in South Africa's communications market. Sample members are invited to rate the performance of a particular public sector actor, policy or program related to the delivery of universal service and access to communications services in South Africa.

An interval scale is used for such purposes.[194] The interval scale ranges from a value of 1 to 10 units with the lowest possible rating representing 'not successful' and the highest possible rating representing 'highly successful'.

---

[194] An interval scale is a rating scale where each unit of measurement falls within a prescribed range of defined units with equidistance between each unit in the continuum (Graphpad, 2009, 1).

An interval scale represents a useful unit of measurement for answers to the closed-ended questions. Because the distance between each unit of measurement is known, consistent and measurable, the difference between answers may reliably be considered to be of the same magnitude. Since the use of a 1 to 10 unit scale by itself is arbitrary and does not convey any meaning about the value of the numbers (a scale ranging from -5 to 5 units serves the same purpose), the data is not available for ratio analysis and cannot be manipulated by means of multiplication or division. Since the interval between the numbers is the same and facilitates accurate observations of the distances between each data point, however, this data is available for measurement by mode, median and mean.[195] As such, it is an appropriate scale to use for the kind of analyses undertaken by this study.

In terms of face validity, closed-ended questions measure satisfaction with the performance of the Government of South Africa's principal policies, programs and public sector actors in the pursuit of available, accessible and affordable communications services in South Africa.[196] In terms of construct validity, questions solicit specific views on each element of each policy. In terms of concurrent validity, the closed-ended questions generate multiple indicators of the intensity of satisfaction or dissatisfaction with the performance of such policies, programs and public sector actors.[197] In terms of predictive validity, the questions obtain views on the performances of such policies, programs and actors which may be compared to other measurements of such performances.[198] The ordering of questions minimises the likelihood of any response set.[199]

The independent variable is the performance of certain public sector actors, programs and policies associated with the realisation of universal service and access to communications services in South Africa. The dependent variable is the availability, accessibility and affordability of communications

---

195 Infra, sections 7.2.3 to 7.2.5.

196 Face validity is '*an estimate of the degree to which a measure is clearly and unambiguously tapping the construct it purports to assess. Thus, face validity refers to the "obviousness" of a test—the degree to which the purpose of the test is apparent to those taking it. Tests wherein the purpose is clear, even to naïve respondents, are said to have high face validity'* (Bornstein, 2004, 1).

197 Infra, note 189.

198 Ibid.

199 A response set is '*the tendency to exhibit a particular pattern of response independent of the question being asked or the stimulus (person) being judged*' (Spector, 2004, 1).

services in South Africa as affected by the performance of such actors, policies and programs. The intervening variable is the perceptions of sample members.[200]

#### 6.4.2.1.2 Open-ended questions

This study conducts semi-structured interviews with key informants based on a questionnaire that includes 67 open-ended questions. As with the closed-ended questions, these questions are grouped into eight key areas related to universal service and access. The open-ended questions support a broad-based dialogue between the interviewer and sample members which generates significant qualitative data germane to the study.[201]

Along with the closed-ended questions, the open-ended questions represent an optimal means to collect high quality, reliable primary data. The ability to motivate sample members to answer a diverse range of questions, including some related to complex and multi-faceted public policy issues, is a significant benefit derived from use of this interview approach. The opportunity to solicit additional information based on the substance of answers given to earlier closed-ended questions generates data of greater breadth and depth than through the purely numerical answers to the closed-ended questions or information derived from other collection means such as written questionnaires or telephone interviews.

Open-ended questions rely on the questionnaire as an *aide mémoire* to guide the interviews. Based on the backgrounds of sample members, the nature of the organisations associated with sample members and initial answers provided by sample members to earlier questions, the interview permits significant deviations for unscripted questions and explorations of areas that may shed further insights into universal service and access to communications services in South Africa not anticipated by the questionnaire. Such flexibility represents a significant benefit derived from the use of the semi-structured interview approach.

---

200 An independent variable is the variable expected to influence the outcome measure. A dependent variable is the variable influenced by the independent variable. An intervening variable is the variable that links the independent variable to the dependent variable (Fraser Health, 2013, 11-12).

201 Infra, sections 7.2 and 7.3.

The purpose and nature of questions asked during interviews affect the substance of primary data collected from such interviews. At the same time, the identification of a population of interest and the selection of a representative sample from this population to participate in the interviews affects the nature of primary data collected through the interview process. As such, the population identified to undertake the interviews warrants consideration.

#### 6.4.2.2 Population

A population is '*an entire collection of people, animals, plants or things from which we may collect data. It is the entire group we are interested in, which we wish to describe or draw conclusions about'* (Easton & McColl, 1997, 1). The population of all constituencies with an interest in the availability, accessibility and affordability of communications services in South Africa is vast. It includes public sector actors that make policies and private sector actors affected by such policies. It embraces each of the estimated 66.75 million mobile phone SIM card holders in South Africa as well as the millions of South Africans that subscribe for fixed line and value added network services in the country.[202] It includes scholars, journalists and citizens with any specific or general interest in such matters. Fortunately, this is not the population of interest to the study.

This study considers public policies and programs as well as reforms to existing policy, regulatory and commercial paradigms that might accelerate the realisation of universal service and access to communications services in South Africa. As such, the population of interest to this study consists of the body of public sector actors that develop such policies and affect such paradigms as well as the body of private sector actors that are the target of those policies and operate in those paradigms. It is this population that '*we wish to describe or draw conclusions about'* (Easton & McColl, 1997, 1).

It is a population that may be readily identified and segmented for study. As shown in Chapters 3 and 5, it consists of three public sector actors (the Department of Communications, ICASA and the USAASA). As shown in

---

[202] Based on 126% mobile teledensity (supra, Table 4.1) and an estimated South African population of 52.982 million people as of the middle of 2013 (South Africa, Statistics South Africa, 2013, 2).

Chapters 3 and 4, it consists of Electronic Communications Services (ECS) and Electronic Communications Network Services (ECNS) license holders who may be broadly segregated into four major market segments: the mobile market; the fixed line market; the infrastructure market; and the VANS market.

It is economically, logistically, temporally and methodologically untenable to interview the entire population. As such, the identification of an appropriate cross-section of the population to interview is an essential component of the primary research conducted for this study. To ensure an accurate representation of the population and accuracy of conclusions drawn from the information derived from the interviews, this sample should present the key attributes and characteristics of this population. This sample should therefore constitute a representative sample of the population.

#### 6.4.2.3 Representative sample

To draw conclusions about the population of interest, this study relies on a representative sample. A representative sample is '*a group of units selected from a larger group (the population). By studying the sample it is hoped to draw valid conclusions about the larger group'* (Easton & McColl, 1997. 1). For the purpose of this study, this sample is drawn from the target population using a purposive sampling method. This sampling approach (also known as judgment sampling) is succinctly defined as:

> *A form of non-probability sampling in which decisions concerning the individuals to be included in the sample are taken by the researcher, based upon a variety of criteria which may include specialist knowledge of the research issue, or capacity and willingness to participate in the research. Some types of research design necessitate researchers taking a decision about the individual participants who would be most likely to contribute appropriate data, both in terms of relevance and depth* (Oliver, 2006, 1).

For this study, the sample consists of one representative drawn from each of the six major elements of the population: every public sector actor as well as a representative of each major market segment that constitute the population. Table 6.4 identifies the elements and strata of the sample:

**Table 6.4**

**Overview of key informant sample**

| Organisation | Description of organisation | Stratum |
|---|---|---|
| **Department of Communications** | *Policy maker*<br>The Department of Communications is responsible, *inter alia*, for development of ICT policies and legislation, ensuring development of ICT infrastructure, strengthening ICASA and overseeing and strengthening state owned enterprises involved in the provision of communications services in South Africa.[203] | Public sector |
| **ICASA** | *Regulator*<br>The Independent Communications Authority of South Africa is responsible for the licensing and regulation of telecommunications and broadcasting services and regulation of postal services in South Africa.[204] | Public sector |
| **USAASA** | *Policy and program champion*<br>The Universal Service and Access Agency of South Africa holds the sole statutory mandate to promote the goals of universal service and access in South Africa.[205] | Public sector |
| **Telkom** | *Largest integrated operator (fixed, mobile, infrastructure and VANS)*<br>Telkom SA Limited is the largest integrated communications company and one of two fixed line communications network operators in South Africa. It is a JSE and NYSE listed company with significant public sector shareholders, including the Government of South Africa.[206] | Private sector |
| **Vodacom** | *Largest mobile operator (mobile and infrastructure segments)*<br>Vodacom Proprietary Limited is a JSE listed company and the largest mobile communications company (by number of subscribers) in South Africa. It is majority owned by Vodafone plc, one of the world's largest mobile communications companies (by revenues).[207] | Private sector |
| **ISPA** | *Largest VANS industry association (VANS segment)*<br>The Internet Service Providers' Association is a not-for-profit association that represents Internet service providers in South Africa and facilitates dialogue between members and the Department of Communications, ICASA, operators and other service providers in the country (ISPA, 2013b, 1). | Private sector |

Source: Author.

As Table 6.4 shows, the sample is divided into equal sized public and private sector strata comprised of three public sector organisations (the public sector stratum) and three private sector organisations (the private sector stratum).[208] Semi-structured interviews are conducted with individuals drawn from this representative sample. As such, the purposive sample may be more accurately

---

[203] Supra, section 3.2.

[204] Supra, section 3.3.4.4.

[205] Supra, section 5.2.2.

[206] Supra, sections 3.2.2 and 4.3.1.2.1.

[207] Supra, section 4.3.2.2.1.

[208] Stratum is defined generally as '*one of a number of portions or divisions likened to layers or* levels' (Dictionary, 2013, 1). In qualitative research, it generally refers to a group within a population with a particular characteristic of interest to a researcher (Brown, 2006, 1). Strata is the plural of stratum.

classified as a ‘key informant sample’ which is a type of purposive sampling. A ‘key informant’ is described as:

> *. . . the person with whom an interview about a particular organization, social problem, or interest group is conducted. In a sense, the key informant is a proxy for her or his associates at the organization or group. Key informant interviews are in-depth interviews of a select (nonrandom) group of experts who are the most knowledgeable of the organization or issue* (Parsons, 1997, 1).

The informed consent of each sample member to participate in the study was obtained as part of the interviews. Every sample member also consented to the publication of comments attributable to them during the interviews in the study and any subsequent publications derived from the study. Beyond the identification of the organisation associated with each sample member, however, the privacy and anonymity of each member is preserved in the study. This approach is adopted for various reasons, including:

- Some sample members have advanced to other positions in their organisations or senior positions in other organisations or are no longer involved in the communications market and may not want such comments to encroach upon their new environment.

- Changing circumstances in South Africa’s communications market suggest that some of the organisations represented by sample members may not wish the identity of such members to be published in the study, particularly if they have left their employment.

As such, the following steps are taken to preserve the privacy and anonymity of sample members:

- The names of samples members are withheld from publication.

- Any comments provided by any sample member that could reasonably be construed to identify such member are withheld from publication.

- Possessive pronouns that indicate the gender of any sample member are not used in relation to any sample member (with nominal use of the gender neutral 'their' or 'them' pronouns in lieu thereof).

- Every sample member is referred to as a representative of their organisation without any reference to their title or position.

- The interviews are referenced under the author rather than the name of the sample member.

- The year during which the interviews were conducted is omitted from all references (with nominal use of 2014 as the year of record) to avoid an ability to identify any sample member employed by the relevant organisation at the time of their interview.

The institutional consent of organisations represented by sample members was not obtained as part of the study. Sample members are senior officials of public sector organisations or senior executives of private sector organisations who routinely speak on the record on behalf of their organisations in their official capacities. As such, institutional consent was not sought from such organisations. Due to the absence of expressed written institutional consent, however, all comments attributed to sample members should be regarded as their personal views which may or may not reflect the views of the organisations that they represented at the time of the interviews.

Some researchers question the validity of information obtained from small samples (Canada, Statistics Canada, 2013a, 1). By itself, however, the use of a small sample does not invalidate the utility of data derived from such a sample: '*the size of a sample does not increase in proportion to the size of the population. In fact, the population size plays an almost non-existent role as far as large populations are concerned'* (Canada, Statistics Canada, 2013a, 1).[209] Different factors play a more important role in the trustworthiness of information derived from samples other than sample size:

---

[209] Consider the sample fraction or '*ratio between the sample size and the population size'* (Mazzocchi, 2008, 107).

> *Qualitative researchers often fail to understand the usefulness of studying small samples. . . . An appropriate sample size for a qualitative study is one that adequately answers the research question. For simple questions or very detailed studies, this might be in single figures; for complex questions large samples and a variety of sample techniques might be necessary. In practice, the number of required subjects usually becomes obvious as the study progresses, as new categories, themes or explanations stop emerging from the data (data saturation). Clearly this requires a flexible research design and an iterative, cyclical approach to sampling, data collection analysis and interpretation* (Marshall, 1996, 523).

This study relies on a substantial body of secondary research (two literature reviews) prior to conducting primary research (semi-structured interviews). Interpretation and analyses of data derived from secondary research inform the formulation of primary research, including the identification of the population, sample elements, key informants and questions to be raised with key informants. Based on such considerations, this study addresses three sampling concerns to minimise non-sampling and sampling errors[210] and maximise the trustworthiness of the sample and data derived therefrom.

A desire to realise a degree of representativeness within the sample of the population is a critical selection factor. The size of the population and ability to clearly identify elements within the population favour a representative sampling plan that supports a sample with representatives of every stratum. The three dominant public sector actors are included in the sample, namely the Department of Communications, ICASA and the USAASA. The largest (and perhaps most influential) members of the fixed line market segment (Telkom) and mobile market segment (Vodacom) are included in the sample. The infrastructure market segment is represented by Telkom and Vodacom as both companies operate substantial communications networks, particularly Telkom. Given the fragmented nature of the VANS market, the industry association that represents most of the VANS providers (the Internet Service Providers' Association) is included in the sample to achieve a consensus view on behalf of the hundreds of VANS operators in South Africa.

---

[210] Sampling error '*arises from estimating a population characteristic by looking at only one portion of the population rather than the entire population. It refers to the difference between the estimate derived from a sample survey and the "true" value that would result if a census of the entire population were taken under the same conditions*' (Canada, Statistics Canada, 2013a, 1). Non-sampling error refers to any error attributable to '*measurement errors and survey biases not associated with the sampling process'* (Mazzocchi, 2008, 104). Supra, notes 189 and 196 for further discussion of validity.

Members of historic segments of the private market stratum are not considered relevant to the aim and objectives of this study. Four substrata within the historic private market stratum (Carrier of Carriers market, Multimedia Services market and Private Telecommunications Network market) are excluded from the representative sample for various reasons, including their limited size, historic lack of input into universal service and access or consolidation into larger strata under new legislation. The Under Serviced Area License (USAL) stratum is excluded from the sample for various reasons, including the availability of secondary data which addresses the focus of the interviews and the consolidation of USAL operators into larger strata under new legislation.

A desire to recognise the different roles of different members of the population within the sample is a second critical selection factor. From the public sector stratum, the dominant policy making institution (the Department of Communications), the dominant regulatory authority (ICASA) and the sole policy and program champion (USAASA) are included in the sample to capture population elements responsible for policy development, enforcement and promotion in relation to the delivery of universal service and access to communications services in South Africa. From the private sectors stratum, the population elements most affected by public sector interventions to date are included in the sample, namely Telkom (universal service obligations), Vodacom (community service obligations) and ISPA (right to infrastructure).

The availability of members of the population to participate in the interviews conducted as part of this study is a third critical selection factor. Due to access points within South Africa's communications industry, the study benefits from the participation of all major population elements from public and private sector strata. Moreover, the study benefits from the participation of senior representatives of such elements. These individuals generally have direct knowledge of the state of universal service and access in South Africa's communications market and informed views about such matters because they have been directly involved in the development, implementation or management of relevant policies and programs. The response burden[211] is within manageable levels.

---

[211] Response burden refers to the time and effort required to participate in the sample (Canada, Statistics Canada, 2013b, 1).

As shown in the preceding paragraphs, the identification of a representative and accessible sample to interview from within the target population is a central concern in the undertaking of primary research as the selection process fundamentally affects the nature, utility and trustworthiness of primary data derived from the sample. At the same time, the means used to collect such data represents another central concern as collection methodologies may similarly affect the nature, utility and trustworthiness of primary data derived from the sample. As such, the structure, wording, explanation and pre-testing of questions as well as the use of appropriate interview techniques represent key concerns in the conduct of interviews.

#### 6.4.2.4 Structure, wording, explanation and pre-testing of questions

The structure and wording of questions found in the questionnaire used for the interviews optimise the trustworthiness of responses. Questions are grouped according to subject matter to leverage train-of-thought synergies. Applying the 'funnel' principle, general inquiries are followed by specific questions to stimulate interest and participation by interview subjects.

Precise definitions for terms are explained at the outset of each interview to avoid any misunderstanding or misapplication of any term considered during any interview. Ambiguous, vague and biased words are not used in questions or during the interview process. Most questions solicit specific responses to specific inquiries to elicit the most precise and therefore most accurate information. Short and simple questions place the key idea behind each inquiry at the end of the question to avoid premature formation of any answer. Use of plain language and lay terms enhances the comprehensibility of questions and measurement units by interview subjects. Such considerations minimise opportunities for misperceptions or misunderstandings of questions or answers, thereby reducing non-sampling error.

Every question was pre-tested prior to use in the interview process. The study's supervisor vetted the questionnaire prior to circulation to any third party. A focus group of five persons familiar with the activities of public and private sector actors in South Africa's communications market vetted each question used in the questionnaire. Feedback from this pre-testing exercise resulted in modifications to some questions which improved their completeness, comprehensibility and trustworthiness, among other benefits.

#### 6.4.2.5 Interview techniques

Beyond the use of a suite of well-crafted and pre-tested questions, the sampling methodology adopts a range of interview techniques commonly found in qualitative research. The availability of a controlled environment, optimal sequencing of questions, ability to achieve a complete response rate and management of various interview and interviewer effects form important parts of the sampling methodology used to collect primary data in this study. Combined with the identification of an appropriate sample and the use of well-designed questions, the management of interviews likely improves the trustworthiness of data collected during the interview process.

Interviews are conducted by the author with sample members on an individual basis. Interviews occur in a controlled environment, typically the sample member's office, to assure of a relaxed and non-threatening environment that likely reduces interview effects.[212] The author has an assistant present during interviews. Most sample members have a colleague present during interviews.

The low response rate that plagues some primary research is overcome through direct contact and follow-up with sample members. Indeed, use of the personal interview technique yielded a perfect response rate from the sample, a participation level unlikely realised through other data collection means. Use of this technique also maximises control over the context of interviews which avoids bias arising from the presence of any unacknowledged people.

The principal pitfalls of the personal interview technique, namely a range of interviewer effects,[213] are acknowledged and addressed during the data collection design process or interview process. Notwithstanding such measures, the study acknowledges an inability to overcome many interviewer effects inherently part of the interview process. Given the purpose of data collection efforts, however, the advantages of this interview technique substantially outweighed its disadvantages.

---

[212] Interview effect refers to '*the impact that the artificial situation of the interview has on the information respondents are prepared to provide, their attitudes and opinions'* (Harvey, 2013, 1).

[213] Interviewer effect (also called interviewer error or interviewer bias) refers to the influence that an interviewer exerts over the answers provided by an interview participant and may represent subtle factors attributable to the interviewer's presence, appearance and mannerisms (Harvey, 2013, 1) or more obvious factors such as the communication of ideology or expectations (Singleton & Straits, 2012, 77-99).

Application of this purposive sampling plan better suits the underlying purpose of the sampling exercise than use of any probability sampling model. Given the limited universe and critical selection factors, probability sampling is not deemed to generate a more valid sample than the set achieved through non-probability sampling. Moreover, the use of semi-structured interviews is designed to sample for information as well as subjective attitudes and ideas rather than any estimation of pervasive population values. The hazards of sampling and non-sampling errors,[214] among other deficiencies of non-probability sampling, are rendered largely immaterial given the purpose of the interviews. Indeed, purposive sampling represents the preferred methodology: '*if our goal is to obtain ideas, good insights, and experienced critical appraisals, we select a purposive sample with this in mind*' (Judd, Smith & Kidder, 1991, 139).

Purposive sampling also helps ensure that study recommendations represent viable public policy choices. Public policy making is a political process that involves trade-offs between public and private sector interests. Given the substantive role of sample members in introducing, implementing or adjusting to any new policies, programs or reforms recommended by this study, feedback from sample members forms an important part of any assessment of the practicality of study recommendations and helps identify obstacles to and opportunities for implementation of such recommendations. Purposive sampling enables the study to benefit from the expertise and experience of sample members:

> *The situation is analogous to one in which a number of expert consultants are called in on a difficult medical case. These consultants – also a purposive sample – are not called in to get an average opinion that would correspond to the average opinion of the entire medical profession. They are called in precisely because of their special experience and competence* (Judd et al, 1991, 139).

A purposive sampling thereby provides greater external validity, albeit at the expense of some construct validity.[215] Yet the more informative measurements obtained through such purposive sampling represent an acceptable trade-off against sample design concerns. Further consideration of the trustworthiness of the study's findings and results is found in the succeeding section.

---

[214] Supra, note 210.

[215] External validity refers to the '*extent to which one can generalize the results of the research to the population and settings of interest'* (Judd et al, 1991, 28). Supra, notes 189 and 196 for further discussion of reliability, validity, bias, construct validity, concurrent validity, predictive validity and face validity,

## 6.5 ESTABLISHING TRUSTWORTHINESS IN STUDY FINDINGS AND RESULTS

The trustworthiness of findings and results is of paramount importance in any academic study. In qualitative research, the aim of 'trustworthiness' is to demonstrate that the '*research findings of an inquiry are worth paying attention to'* (Lincoln & Guba, 1985, 290). As such, this concept has received considerable attention in relation to qualitative research in recent years (Krefting, 1991; Kirk & Miller, 1986; Leininger, 1985; Lincoln & Guba, 1985; Guba, 1981). Scholars have generally focused on reliability and validity as benchmarks of the trustworthiness of findings (Shenton, 2004; Golafshani, 2003; Kirk & Miller, 1986).[216]

There is often substantial overlap between scholarly treatments of such matters. Some approaches focus on the degree of consistency of any measurement, the stability of measurements over time and the similarity of measurements within any period (Kirk & Miller, 1986, 41-42). Other models focus on the '*subjectivity, reflexivity, and other social interactions of interviewing'* as determinants of reliability and validity (Davies & Dodd, 2002, 281). This study adopts four criteria to measure the trustworthiness of its findings, namely: truth value; applicability; consistency; and neutrality (Guba, 1981, 79-81). Such criteria '*have won considerable favour'* (Shenton, 2004, 63) and acceptance among qualitative researchers (Shenton, 2004, 64). Further particulars about the ways in which this study addresses these four benchmarks are described in succeeding paragraphs of this section:

### 6.5.1 Truth value (credibility)

The 'truth value' of findings may be described as '*the truth of the findings for the subjects or informants and the context in which the study was undertaken'* (Krefting, 1991, 215). In qualitative research, the truth value of findings is characterised as the credibility of such findings (Lincoln & Guba, 1985, 296). Consistent with the model-dependent realism model adopted by this study,[217] it assumes the existence of multiple realities and tasks the researcher with '*representing those multiple realities revealed by informants as adequately as possible'* (Krefting, 1991, 215). It may represent '*the most important criterion for the assessment of qualitative research'* (Krefting, 1991, 216).

---

[216] Supra, notes 189 and 196.

[217] Supra, section 6.2.2.1.

The credibility of the findings and results of this study is enhanced through use of the following strategies:

- Prolonged engagement

  Prolonged engagement between a research and study participants is one of the means available to enhance the credibility of findings of qualitative research (Guba, 1981, 83-84, 88). In this study, the semi-structured interviews conducted occur over a one year period which likely mitigates the influence of any unusual or seasonal events. The interviews constitute lengthy engagements that probe sample members for numerical answers to 25 closed-ended questions and solicit substantial, in-depth answers to 67 open-ended questions. The rapport developed between the interviewer and sample members likely encourages members to volunteer accurate and sensitive information about their views on various subjects related to universal service and access in South Africa's communications market. Beyond the ordering of questions, the response set[218] is minimised through prolonged engagements with sample members.

- Triangulation

  Triangulation represents a '*validity procedure where researchers search for convergence among multiple and different sources of information to form themes or categories in a study'* (Creswell & Miller, 2000, 126). The study employs three types of triangulation to cross-check data generated by the study. First, a triangulation of data methods is undertaken through the comparison of data between and within data sets collected during secondary and primary research. Second, a triangulation of seven different types of data sources is conducted as part of secondary research and the interview of multiple sample members from multiple organisations in multiple settings during primary research. Such triangulation maximises the range of data collected as part of the study. Third, a theoretical triangulation is undertaken which tests a diverse range of theories and concepts during secondary research and with sample members during primary research.

---

[218] Supra, section 6.4.2.4.1 and note 199.

- Peer examination

  Peer examination involves '*the researcher's discussing the research process and findings with impartial colleagues who have experience with qualitative methods'* (Krefting, 1991, 219). This study relies extensively on peer examination. The research design is subject to peer examination by the study's supervisors. The questionnaire is subject to peer examination from one of the study's supervisors and a focus group of five independent observers. The robustness of methodological approaches is subject to peer examination by the supervisors and an independent scholar. The credibility of findings and results is subject to peer examination by the supervisor, co-supervisor and external examiners as well as scholars at other universities.

- Interview techniques

  The management of interviews is another means used to enhance the truth value of qualitative research (Krefting, 1991, 220). In this study, various protocols are followed to enhance the consistency of the interview process, including the use of a pre-tested questionnaire. Safeguards are implemented to guard against interview effects and interviewer effects.[219]

- Researcher authority

  The authority of the researcher may be measured in four ways:

  > *(a) the degree of familiarity with the phenomenon and the setting under study; (b) a strong interest in conceptual or theoretical knowledge and the ability to conceptualize large amounts of qualitative data; (c) the ability to take a multidisciplinary approach, that is, to look to at the subject under investigation from a number of different theoretical perspectives, and (d) good investigative skills, which are developed through literature review, course work, and experience in qualitative research methods* (Krefting, 1991, 220).

---

[219] Supra, section 6.4.2.4.4 and notes 212 and 213.

The author of this study is familiar with the phenomena and settings under study. He has 17 years of experience as an investment banker in numerous communications markets, including South Africa. The author has a sound grasp of relevant knowledge and, through this study, demonstrates an ability to conceptualise large amounts of qualitative data (as well as quantitative data). The study's adherence to a multidisciplinary approach is grounded in the education that the author received as part of six previous university degrees, including a juris doctor and three master's degrees, as well as his training as an investment banker. Good investigative skills are practiced throughout this study, particularly during the organisation and completion of two substantive literature reviews and six semi-structured interviews. The author also has extensive experience with qualitative research methods, including graduate course work completed as part of earlier degrees.

- Structural coherence

Structural coherence refers to '*the ensurance that there are no unexplained inconsistencies between the data and their interpretations'* (Krefting, 1991, 220). In relation to secondary research undertaken by this study, the interpretation and analyses of data derived from the seven principal types of secondary sources are well documented in each chapter along with the methodologies and approaches adopted to conduct the interpretation and analyses of such data. In relation to primary reach undertaken by this study, the methodologies and approaches used to interpret and analyse the data derived from the semi-structured interviews are communicated as part of the study. Interpretation and analyses of quantitative data is based on the results of established statistical analysis techniques (for closed-ended questions). Interpretation and analyses of qualitative data is grounded in direct feedback obtained from sample members (for open-ended questions). In each instance, extensive references and footnotes direct the reader to supporting information.

- Referential adequacy

Referential adequacy refers to '*testing analyses and interpretations made after completion of the field portion of the study against documents, recordings, films, and the like that were collected or especially produced for this purpose while the study was under way'* (Guba, 1981, 86). As part of this study, a copy of the

questionnaire, the two-way array of answers to closed-ended questions raised during the interviews and a redacted transcript of one of the interviews are included as appendices.[220] Such documentation creates an audit trail that enables other researchers to critically assess the context of interviews and trustworthiness of interpretations, analyses and conclusions drawn therefrom.

### 6.5.2 Applicability (transferability)

The 'applicability' of findings may be described as '*the ability to generalize from the findings to larger populations'* (Krefting, 1991, 216). In qualitative research, the applicability of findings is characterised as the transferability (or fittingness) of such findings (Lincoln & Guba, 1985, 297). The representativeness of sample members relative to the larger population under study represents a key consideration in relation to the transferability of findings (Krefting, 1991, 220). Such representativeness is bolstered in this study by reliance on a purposive sampling plan. The methodologies and criteria used to achieve this plan are clearly communicated as part of the study.[221]

In the circumstances at hand, such representativeness is particularly germane to the key informant sample and the sample of case studies:

- Nominated sample

  Significant measures are taken to ensure that organisations represented by key informants constitute a 'nominated sample' representative of the target population of interest.[222] Such measures minimise non-sampling and sampling errors and maximise the trustworthiness of the sample and data derived therefrom.[223]

---

220 Infra, Appendices 1, 2 and 3.
221 Supra, sections 6.4.1.3 and 6.4.2.
222 Supra, section 6.4.2.3.
223 Supra, note 210.

- Case studies

  The selection of case studies incorporated into the literature reviews conducted by this study is not a random occurrence. It represents the outcome of a deliberate process based on a non-probability sampling approach that relies on 10 key parameters to assure a representative sample of international communications markets within the range of case studies considered as part of this study.[224]

In both instances, data derived from such research is subject to cross-examination for consistencies, inconsistencies, heterogeneity, homogeneity, patterns and underlying structures that could, in many instances, reasonably be inferred to transfer to other circumstances, either in South Africa or international communications markets.

The transferability of the recommendations made by this study also warrants discussion. As will be seen in Chapter 8, the recommendations made by this study are tailored to the particular circumstances of South Africa's communications market. Since such circumstances are not necessarily unique among international communications markets, however, many of these recommendations may merit consideration as remedies for the lingering challenges of improving the availability, accessibility and affordability of communications services in other countries. However, the utility of this study for such purposes does not represent a central concern in the test of applicability (transferability): '*as long as the original researcher presents sufficient descriptive data to allow comparison, he or she has addressed the problem of applicability'* (Krefting, 1991, 216). This study satisfies such test.

### 6.5.3 Consistency (dependability)

The 'consistency' of findings considers '*whether the findings would be consistent if the inquiry were replicated with the same subjects or in a similar context'* (Krefting, 1991, 216). In qualitative research, the consistency of findings is characterised as the dependability of such findings (Lincoln & Guba, 1985, 300). Beyond triangulation and peer examination, the dependability of the findings and results of this study is enhanced by satisfying the following criterion:

---

[224] Supra, section 6.4.1.3.

- Dense description

  Due to the bespoke nature of qualitative research, it is important to describe '*the exact methods of data gathering, analysis, and interpretation'* (Krefting, 1991, 221). As such, this study includes substantive consideration of research design and methodologies, data collection approaches and types of data.[225] It conveys the circumstances under which interviews are conducted[226] and describes the statistical analysis techniques used to evaluate quantitative data derived from such interviews.[227]

- Inquiry audit

  Another important consideration in the evaluation of the dependability of findings in qualitative research is an ability to '*follow the decision trail'* made by the researcher (Krefting, 1991, 221). This may be achieved through use of an 'inquiry audit' (Lincoln & Guba, 1985, 317). In the circumstances at hand, the 10 step bespoke research design, data collection approaches and types of data considered by the author are clearly communicated as part of the study.[228] The rationale for the selection of the research design, methodologies, questionnaire structure and questions, analysis techniques, case studies and key informant sample are described as part of the study.[229] Furthermore, the bases of interpretations are conveyed as part of every chapter of this study.[230] As such, the elements required to facilitate any inquiry audit are present in the study.

### 6.5.4 Neutrality (confirmability)

The 'neutrality' of findings refers to '*the degree to which the findings are a function solely of the informants and conditions of the research and not of other biases, motivations, and perspectives'* (Krefting, 1991, 216). In qualitative research, such neutrality is characterised as the confirmability of findings (Lincoln & Guba, 1985, 299-300). Beyond triangulation, one of the principal tools for determining the

---

225 Supra, section 6.2.
226 Supra, section 6.4.2.
227 Supra, section 7.2.
228 Supra, sections 6.2, 6.3 and 6.4.
229 Supra, sections 6.2, 6.3 and 6.4.
230 For example, see sections 2.5, 3.5, 4.4 and 5.4.

confirmability of findings in qualitative research is the '*auditability*' of such research which involves consideration of the '*process of research as well as the product, data, findings, interpretation and recommendations'* (Krefting, 1991, 221).

This study includes each of the six categories of records (Krefting, 1991, 221) required for other researchers to complete an audit of the study:

- Raw data (audio recordings of interviews).
- Data reduction and analysis products (summaries of the two-way array derived from answers to the closed-ended questions asked during interviews and audio recordings of the interviews reduced to typed transcripts).
- Data reconstruction and synthesis products (thematic categories, interpretations and inferences).
- Process notes (procedures and design strategies).
- Materials related to intentions and dispositions (study proposal, central problem, research assumptions, aim, objectives and research questions).
- Instrument development information (pre-testing of the questionnaire and subsequent implementation of the questionnaire).

The principal measurement of the confirmability of qualitative research is the ability of other researchers to '*arrive at comparable conclusions given the same data and research context'* (Krefting, 1991, 221). Based on the six categories of records generated as part of this study, the conclusions proffered by this study are sound and defensible. Similarly, the recommendations made by this study (Chapter 8) are sound and defensible based on the data universe compiled for this study.

Collectively, the strategies and measures undertaken by the study to assure the truth value (credibility), applicability (transferability), consistency (dependability) and neutrality (confirmability) of its findings and results suggest a strong degree of trustworthiness in the same. At the same time, the veracity of the study's findings and results rely on the implementation of such strategies and measures in accordance with ethical principles required of credible qualitative research. The next section of this chapter considers such matters.

## 6.6 ETHICAL CONSIDERATIONS

The meaning of 'ethics' is '*hard to pin down'* but commonly consists of two precepts:

> *First, ethics refers to well based standards of right and wrong that prescribe what humans ought to do, usually in terms of rights, obligations, benefits to society, fairness, or specific virtues. . . . Secondly, ethics refers to the study and development of one's ethical standards* (Andre and Velasquez, 1987, 1).

A robust debate exists within academia about the precise nature of ethical issues surrounding qualitative research, with '*no agreed guidelines for judging the ethics of qualitative research proposals'* (Richards & Schwartz, 2002, 135). Among the guidelines to emerge from this dialogue, the *Ethical Principles and Guidelines for the Protection of Human Subjects of Research* (United States of America, National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979)[231] prescribes three basic ethical principles[232] which have become widely accepted as benchmarks for qualitative research involving human participants (Orb, Eisenhauer & Wynaden, 2000, 95). In this study, the role of human subjects is limited to participation in the semi-structured interviews. As such, manifestations of these three basic ethical principles in respect of such interviews and the treatment of interview participants are described in the following sections:

### 6.6.1 Respect for persons

Ethical research needs to respect human subjects involved in such research, particularly through acknowledgment of their autonomy, and to ensure that sufficient safeguards exist to preserve and protect such autonomy (United States of America, National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979, 3). This study demonstrates a respect for interview participants in six ways identified by the Belmont Report (United States of America, National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979, 5):

---

231 Commonly known as the 'Belmont Report' after the location at which the document was drafted by its authors (United States of America, Office of Science and Technology Policy, 1991, 1).

232 The term 'basic ethical principles' refers to '*those general judgments that serve as a basic justification for the many particular ethical prescriptions and evaluations of human actions*' (United States of America, National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979, 3).

- Every interview participant is given adequate information about the study as part of the invitation to participate in the interviews and at the outset of interviews. Such information includes confirmation that the study will constitute a published manuscript and prospectively a book.[233]

- Every interview participant is involved in the study on a voluntary basis and is not subject to any coercion or undue influence of any nature whatsoever. No inducements are offered to any interview participant other than the opportunity to contribute to critical thought on an area of mutual interest and the gratitude of the interviewer. The interviews are conducted in a non-threatening environment. At least one other person is present during every interview.[234]

- Informed consent is obtained from every interview participant. Such informed consent is verified through three means:

  - Sufficient information is imparted to interview participants in a clear, orderly and comprehensible manner to enable them to understand the purpose of the interviews.

  - Specific questions ensure that interview participants comprehend such information and the implications of their consent.

  - Feedback questions ensure that interview participants understand that such consent should be voluntary, they could choose not to answer any question and they could withdraw from the interview at their discretion.

  - Such consent is confirmed at the outset of interviews and subsequently reduced to written consent through transcriptions of each interview.[235]

  As with other data collected during the study, transparent data storage, protection and destruction policies exist to preserve such informed consent.[236]

---

233 Supra, section 6.4.2.3 and Appendix 3.
234 Supra, section 6.4.2.5.
235 Supra, section 6.4.2.3 and Appendix 3.
236 Infra, section 6.7.

- Due weight is given to the considered opinions and choices of interview participants.[237]

- The anonymity and privacy of interview participants are preserved in the study.[238]

- Respect and courtesy is shown to all interview participants at all times.

Institutional consent is not obtained from the organisations represented by interview participants. Such consent may not be required in the circumstances at hand. Given the absence of expressed written institutional consent, however, the study confirms that all comments attributed to sample members should be regarded as their personal views which may or may not reflect the views of the organisations that they represented at the time of the interviews.[239]

### 6.6.2 Beneficence

Ethical research needs to ensure that efforts do not harm human participants. It needs to maximise possible benefits and minimise potential harms to human participants as well as society at large (United States of America, National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979, 3). This study adheres to such principles.

No physical, psychological, social, legal or economic harm is inflicted upon any interview participant in any manner whatsoever. Interviews are conducted in a relaxing, friendly environment. Interviews consist of prolonged engagements with participants that foster rapport and familiarity which, combined with the semi-structured format of such interviews, facilitate the robust exchange of ideas. Interviews involve discussions of existing or prospective public sector policies, programs and actors that do not require disclosure of any personal, sensitive or identifying information unless spontaneously volunteered by interview participants. The anonymity and privacy of interview participants are protected to avoid the attribution of any consequences arising from the revelation of such information.

---

[237] Infra, section 7.3.
[238] Supra, section 6.4.2.3.
[239] Ibid.

The study contributes to the body of academic work on universal service and access to communications services in South Africa. It unites a diverse range of secondary data and generates meaningful (new) primary data which may be used by other scholars in their investigations of the same or similar subjects in South Africa or abroad. The quality of research is ensured through the application of a rigorous research design, multi-disciplinary research methodologies, purposive sampling and various quantitative and qualitative analysis techniques which are documented throughout the study. Through such means, the study maximises the research value for academia.

More importantly, the study includes interpretations, analyses, conclusions and recommendations which may be considered by policy makers to accelerate the realisation of universal service and access to communications services in South Africa (and prospectively other countries). Used for such purposes, the study may facilitate a meaningful improvement in the quality of lives of people in South Africa and elsewhere who may not currently enjoy the benefits of communications services or suffer from inadequate or inferior communications services.

### 6.6.3 Justice

Ethical research needs to ensure the equitable distribution of the burdens and benefits of research among human participants (United States of America, National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979, 4). It requires '*fair procedures and outcomes in the selection of research subjects'* (United States of America, National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979, 6). This study adheres to such requirements.

Interview participants are selected from a representative sample of the population of public and private sector actors involved in the design or implementation of universal service and access policies in South Africa's communications market using a purposive sampling methodology. No bias is shown in terms of the classes or types of individuals drawn as key informants from this representative sample. The organisations selected as the sample and key informants drawn from this sample are selected solely for reasons related to the problem under study. Key informants are highly qualified senior officials or representatives of such organisations with

extensive experience in the subject matters of the interviews and dealing with interviews. They are not a vulnerable population. They are intelligent, rationale and mature individuals with a superior grasp of the English language and a sound command of various theoretical concepts and technical terms used during the interviews. The principal burden placed on such informants is the inconvenience of several hours of their time consumed by the interviews.

In addition to these measures to assure respect for persons, beneficence and justice, this study complies with the requirements of the *Policy on Research Ethics 1* maintained by the University of South Africa (UNISA, 2012) as confirmed by the compliance certificate obtained from the relevant Ethics Review Committee.[240] In accordance with this Policy and customary qualitative research practices, this study adheres to relevant data curation and management protocols which are described in the next section of this chapter.

## 6.7 DATA RETENTION AND DESTRUCTION

Data collected during this study is stored in a secure vault at a location known to the author. This location is only accessible to the author or other people with the author's permission. Data stored on any electronic, digital, analog, optical or magnetic media are password protected by the author.

Data shall be destroyed when it is no longer of any functional value but not later than five years from the date of publication of this study. Audiotapes used during interviews shall be destroyed by fire on the same basis. Records stored on any computer hard drive shall be erased using commercial software designed to remove all data from the storage device. Any Universal Serial Bus (USB) drive that contains data shall be physically destroyed. A record confirming the identity of each record, the methodology used to destroy each record and date of such destruction shall be kept by the author for a period of at least five years.

---

[240] Infra, Appendix 5.

## 6.8 CONCLUSION

This chapter presents the research design and methodologies, data collection and analysis approaches and types of data used by this study. It describes a 10 step bespoke research design that involves three major stages of effort: an invention stage; a data collection stage; and a drafting and revision stage. It discusses the principal epistemological perspectives adopted by this study. In this regard, it asserts a 'model-dependent realism' school of inquiry that incorporates post-positivist perspectives with elements of interpretivism.

The chapter describes the two principal methods adopted to collect and analyse data for the study. It highlights the use of applied inductive thematic analysis and a mixed methods approach to further investigations of the study. It describes the different types of research undertaken for the study. Secondary research principally consists of two literature reviews that generate secondary data of a qualitative and quantitative nature. Primary research principally consists of six semi-structured interviews that generate primary data of a qualitative and quantitative nature. The chapter discusses key strategies used to enhance the trustworthiness of the study's findings and results. It reviews key ethical considerations associated with the conduct of the study. The chapter concludes with a description of the data retention and destruction policy adopted by the study.

Yet the generation (and subsequent destruction) of a data universe through sound methodological considerations is not the aim of this study. Research and data collection are intended to facilitate the subsequent evaluation, interpretation and analyses of data generated by such research. Such efforts inform the creation of answers to the central problem and research questions in fulfilment of the aim and nine key objectives of the study. As such, analyses of primary data generated through the interviews may yield significant insights that complement analysis of secondary data obtained through the literature reviews. Chapter 7 considers such matters.

# CHAPTER 7

# ANALYSIS AND INTERPRETATION OF PRIMARY RESEARCH DATA

## 7.1 INTRODUCTION

Chapter 6 discussed the research design and methodologies used by this study. As part of this discussion, it reviewed the format and substance of the interviews conducted with key informants drawn from a representative sample of the population of public and private sector actors involved in the development or implementation of policies and programs related to the realisation of universal service and access to communications services in South Africa. It highlighted the utility of primary data derived from such interviews.

This chapter focuses on analyses of such primary data. It evaluates and interprets data derived from the interviews to benchmark the perception of sample members regarding the performance of key public sector policies, programs and actors involved in the realisation of universal service and access to communications services in South Africa. It commences with an introduction of the statistical techniques used to evaluate quantitative data derived from the interviews. It subsequently organises data derived from the interviews into meaningful units of study (broadly based on the format of the questionnaire) that facilitate the identification and comparison of structures, relationships and patterns between and within such data on a robust basis. Statistical analysis techniques are used to interpret quantitative data obtained through the interviews which, along with analyses of qualitative data obtained through such interviews, support conclusions about the views of sample members regarding the performances of key public policies, programs and actors in relation to the realisation of universal service and access to communications services in South Africa.

## 7.2 TYPES OF STATISTICAL ANALYSIS TECHNIQUES

One of the principal benefits of quantitative research is the ability to use statistical analyses to evaluate and interpret quantitative data generated from such efforts.[241] Responses to the 25 closed-ended questions of the interview questionnaire form a quantitative data set which consists of 150 answers. This data set is organised as a table of 25 rows (r) x 6 columns (c) which records answers as a two-way array, with

---

[241] Supra, sections 6.2.2.2, 6.3.3 and 6.4.2.

one answer value (a raw score provided according to the unit of measurement available along the interval scale) occupying each of the r x c cells on this table. A copy of this table is found in Appendix 2.

For purposes of comparative analysis, the six members of the population represented in the sample by key informants are divided into public and private sector strata. This segmentation is performed to expedite comparisons of answer values within and between these strata. There is no variance in the treatment of answers from any sample member in any stratum or otherwise in any manner whatsoever.

The utility of each answer (cell) on its own is minimal. As such, answers are studied to see whether there is structure in the two-way array using a combination of five statistical analysis techniques: multivariate graphical display analysis; multivariate distance analysis; multivariate mean analysis; multivariate median analysis; and multivariate mode analysis. Further information about the nature and utility of each statistical analysis techniques used in this study is found in succeeding paragraphs.

### 7.2.1 Multivariate graphical display analysis

A multivariate graphical display is a means to calculate descriptive statistics by presenting data in tables or graphs (Moses, 1987, 309). Graphical displays carry two kinds of information: the data and the descriptions of data such as labels, scale markers and the title. Analysis of quantitative data through graphical analysis achieves three important benefits. First, it facilitates comparison of a relationship between at least two variables. Second, it presents this relationship in a compact, comparison-friendly manner. Third, it uses a vivid means to highlight, compare and contrast elements of this relationship (Moses, 1987, 309).

The four multivariate graphical displays built to interpret the quantitative data derived from the interviews conducted by this study leverage each of these benefits. In three instances (sections 7.3.2, 7.3.3 and 7.3.8), this study uses line graphs with markers to identify the position of answers on the interval scale and facilitate comparisons between the perceptions of different sample members regarding the subject matter considered by the relevant display. In one instance (section 7.3.9), this study uses a stem and leaf display[242] to highlight the distances of the values of answers (variables) subjected to analysis.

---

[242] A stem and leaf display is an exploratory data analysis technique developed by John Tukey that illustrates the distribution of data values in any given sample by using leading digits from each data value to create a stem and the following digits to create leaves (Statgraphics Centurion, 2013, 1).

### 7.2.2 Multivariate distance analysis

Multivariate distance analysis is a complex field (Templin, 2011). Discussion of the many facets of this discipline is beyond the scope of this study. However, most multivariate distance analysis techniques may be classified into one of the following five categories: data reduction or structural simplification; sorting and grouping; investigation of the dependence among variables; prediction; and hypothesis construction and testing (Templin, 2011, 5).

The multivariate distance analysis formulated for this study falls into three of the five categories. First, it isolates and simplifies the structure of relevant data. Second, it sorts and groups relevant data into units capable of comparison. Third, it investigates dependencies among variables in relevant data.

In one instance (section 7.3.4), this study uses multivariate distance analysis to compute the distance between relevant variables to facilitate the comparison of perceptions of different sample members regarding the topic considered by the analysis. In eight instances (sections 7.3.1 through 7.3.8), the study uses multivariate distance analysis to identify the distances between variables by quartile to compare the perceptions of different sample members regarding the topic considered by the analysis.

### 7.2.3 Multivariate mean analysis

The 'mean' is '*the most popular and well known measure of central tendency* (Lund Research, 2013a, 1).[243] It refers to the total of all numbers in any given data set divided by the number of numbers in the set (Getstats, 2013, 1). Analysis of the mean is one of the most fundamental forms of data analysis (MacMillan, Preston, Wolfe & Yu, 2007, 1).

---

[243] Central tendency is '*a single value that attempts to describe a set of data by identifying the central position within that set of data. As such, measures of central tendency are sometimes called measures of central location. They are also classed as summary statistics'* (Lund Research, 2013a, 1.). In simplistic terms, central tendency is regarded as one of the ways to measure the 'average' of a data set (Getstats, 2013, 1).

The mean is '*a good estimate for predicting subsequent data points'* when data points are clustered closely together (MacMillan et al, 2007, 1). At the same time, calculations of the mean are susceptible to the influence of outliers[244] which may skew the value of the mean (Lund Research, 2013a, 1). This concern over the susceptibility of analysis of the mean to the influence of outliers and the small size of the sample considered in this study favour prudent use of this benchmark in the study. Consequently, statistical analysis techniques based on the mean, including calculations of standard deviations from the mean and mean absolute deviations[245] are not relied upon as part of the quantitative analyses conducted for this study. In lieu of these techniques, multivariate analysis of the median using the median polish technique is adopted as the preferred methodology to explore distances between variables as well as the breadth and depth of relationships and patterns between and within such data on a more robust and reliable basis.

The means of the values of answers (rows and columns) provided by sample members are calculated for nine quantitative data sets derived from the interviews (sections 7.3.1 through 7.3.9). Given concerns with the suitability of analysis of the mean in the evaluation of such data, this study adopts a conservative approach which uses such information to identify superficial relationships between answers and within answer sets provided by sample members. It also uses such information to establish superficial patterns that may exist between or within such relationships. The study subsequently relies on other methodologies to test the existence and nature of such relationships and patterns.

### 7.2.4 Multivariate median analysis

The 'median' is a well-established way to measure the central tendency of data (Lund Research, 2013a, 2). It refers to the middle number in an odd set of numbers or the midway number between the two middle numbers in an even set of numbers (Getstats, 2013, 1). Analysis of the median is one of the most fundamental forms of data analysis (MacMillan et al, 2007, 1). It is a preferred methodology to analysis of the mean due to its ability to account for outliers.

---

[244] An outlier is '*an extremely high or an extremely low data value when compared with the rest of the data values'* (Bluman, 2000, 123).

[245] Standard deviation refers to '*the average distance between any score and the mean of the distribution'* (Price, 2000, 1). Mean absolute deviation refers to '*the average of the absolute differences between each score and the overall mean*' (Gorard, 2004, 1).

Various forms of exploratory statistical analysis are available to analyse the median. For this study, the median polish technique pioneered by statistician John Tukey (Tukey, 1977, 399) is applied to estimate the median of specific data sets. As with multivariate distance analysis, discussion of the many aspects of this technique is beyond the scope of this study. However, the central function and output of the technique is succinctly described as follows:

> *The Median Polish procedure constructs a model for data in a two-way table by sweeping out column and row medians. The resulting model for the data consists of a typical value common to all cells in the table, plus specific row and column effects* (Statgraphics Centurion, 2013, 1).

Using this technique to analyse the quantitative data derived from the interviews, cell values are partitioned as follows:

*Constant term (4.5) + Column Effect + Row Effect + Residual Value*

The median polish technique is similar but more robust to the analysis of variance (ANOVA) technique commonly used in multivariate statistical analyses (Dataplot Reference Manual, 1997, 3-81). Given the small size of the sample in this study, the median polish technique represents a particularly appropriate method of analysis which focuses on the median (rather than the mean) and estimates the main, row and column effects to achieve a meaningful understanding of data results. The technique finds an additively-fit model for data in a two-way array which is preferred to other statistical analysis methodologies that focus on per centum differences between variables because it allows for independent study of more than one effect and remains particularly resistant to the influence of outliers (Kearfott & Rucker, 1989, 932).

The median polish technique is used five times to analyse quantitative data derived from the interviews (sections 7.3.1, 7.3.5, 7.3.6, 7.3.7 and 7.3.9). It highlights the distribution of data values and investigates for outliers. Beyond reliance on the median polish technique to provide a sophisticated analysis of the median with effects, the medians of the values of answers provided by each sample member (median rows and/or columns) are calculated for nine data sets (sections 7.3.1 through 7.3.6 as well as 7.3.8 and 7.3.9). Such analysis provides a ‘snapshot’ of the relative positions of the medians of the values of answers provided by each

sample member. It facilitates a high level comparison with the medians, means and modes of the values of all answers provided by other sample members and the means and modes of the values of answers provided by all sample members to each question.

### 7.2.5 Multivariate mode analysis

The 'mode' is another way to calculate the central tendency of data sets (Lund Research, 2013a, 2). It refers to the number that occurs most frequently in a set of numbers (Getstats, 2013, 1). Analysis of the mode is one of the most fundamental forms of data analysis (MacMillan et al, 2007, 1). At the same time, it is '*the least used of the measures of central tendency*' (Lund Research, 2013b, 1).

The mode identifies the most common option or category (Lund Research, 2013a, 2) found within a data set. At the same time, the mode does not reflect the range of variables found within any data set (MacMillan et al, 2007, 2). It does not account for all the values in a data set (Lund Research, 2013a, 3). It is not a unique value which may lead to the occurrence of more than one mode in data sets with two or more values that share the highest frequency (Lund Research, 2013a, 2). The mode may also not accurately reflect central tendency if the most common variables are outliers (Lund Research, 2013a, 3). As such, this study adopts a conservative use of multivariate analysis of the mode and relies on multivariate analysis of the median as the preferred methodology for statistical evaluation of the quantitative data derived from the interviews.

The mode is calculated for nine quantitative data sets derived from the interviews (sections 7.3.1 through 7.3.9). Given the limitations of analysis of the mode, this approach is used to identify superficial relationships between answers and within answer sets provided by sample members. It is also used to establish superficial patterns that may exist between or within such relationships. Due to deficiencies inherent in this technique,[246] multivariate analysis of the median using the median polish technique is used as the preferred methodology to explore the breadth and depth of such relationships and patterns.

---

[246] As described in the preceding paragraph.

The types of statistical analyses used in this study explore the validity and reliability of the quantitative data set derived from the interviews and seek to identity objectively verifiable relationships and patterns within this data set and various subsets derived therefrom. Equally important, such analyses complement interpretations of the qualitative data set derived from the interviews and qualitative and quantitative data sets captured as part of secondary research. Taken together, this mix of quantitative and qualitative techniques facilitates deep and complex analyses of the data universe collected for this study which likely leads to more trustworthy interpretations of underlying data and confidence in the *a posteriori* conclusions found in this chapter.

## 7.3 NATURE AND ANALYSES OF PRIMARY DATA

Analyses of primary data generated by this study follow the format of the questionnaire used in the interviews. Data related to each of the eight main areas of interest explored during primary research is initially considered on an individual basis to expose patterns or relationships *within* each area but subsequently considered on an aggregated basis to expose patterns or relationships *between* each area. This mixed methods approach ensures that the breadth and depth of data collected during primary research is subject to rigorous analysis and interpretation.

The order of analysis of answers to questions varies according to each question and key area of interest. Attitudinal measures collected in response to the closed-ended questions are initially collated and evaluated using specified quantitative analysis techniques. Given inherent difficulties with coding open-ended questions, feedback from open-ended questions collected as part of the interviews is evaluated on a qualitative basis and compared against quantitative data acquired during the interviews as well as data collected during secondary research.

As such, the following sections commence with descriptions of the questions and the values of answers provided by sample members to closed-ended questions raised within each area of interest canvassed by the interviews. Quantitative analyses of the values of such answers explore for the existence of any patterns or relationships within such data. Qualitative analysis subsequently seeks to understand the basis for any such patterns or relationships and examine any further opinions obtained from sample members on relevant matters through answers to the open-ended questions. Following consideration of each main area of interest on an isolated basis, the values of answers provided by sample members to questions raised within each area of

interest are aggregated into a cross-sectional data set. Quantitative analyses of the values of answers to closed-ended questions test for any patterns or relationships that may exist between these main areas of interest. Qualitative analysis of answers to open-ended questions subsequently seeks to understand the basis for any patterns or relationships identified within such data and examine any further opinions obtained from sample members regarding such matters.

### 7.3.1 The Government of South Africa's success in realising universal service, including the availability, accessibility and affordability of communications services

The interviews commence with an exploration of the general perceptions held by sample members regarding the Government of South Africa's success in realising universal service and access to communications services (Question 1). They investigate the basis for these perceptions by soliciting the specific opinions of sample members about the Government's success in promoting the availability, accessibility and affordability of communications services in the country (Question 1.2). Quantitative analyses of answers to closed-ended questions provide insights into the perceptions of the success of such efforts among key informants. Qualitative analyses of answers received from sample members to open-ended questions explore the rationale for such answers and investigate their perceptions of other relevant matters.

Table 7.1 extrapolates Questions 1.1 and 1.2 from the questionnaire. It further extrapolates the values of answers provided by sample members to these questions from the two-way array of answers to the closed-ended questions.[247] It includes a cross-sectional analysis of the medians, means and modes of the vales of such answers by rows and columns:

---

[247] Answer values are based on the 10 point interval scale with 1 representing 'not successful' and 10 representing 'highly successful'. Supra, section 6.4.2.1. Infra, Appendix 2 for the full array of answers.

**Table 7.1**

**Views of sample members of the Government of South Africa's success in realising universal service, including each element of universal service**

| **Questions** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **1.1** | Rate the success of the South African Government in realising universal service? | | | | | | | |
| **1.2** | Break down your answer into each of the three elements of universal service: | | | | | | | |
| **1.2.1** | Availability | | | | | | | |
| **1.2.2** | Accessibility | | | | | | | |
| **1.2.3** | Affordability | | | | | | | |
| **Answers (raw scores)** | | | | | | | | |
| | **ISPA** | **Vodacom** | **Telkom** | **ICASA** | **USAASA** | **DOC** | **Mean** | **Mode** |
| **1.1** | 3.5 | 7.5 | 3 | 6 | 6 | 4 | **5** | **6** |
| **1.2.1** | 3 | 8.5 | 3 | 5 | 5 | 6 | **5.1** | **3 and 5** |
| **1.2.2** | 4 | 8 | 3 | 8 | 6 | 4 | **5.5** | **4 and 8** |
| **1.2.3** | 3.5 | 6 | 2 | 4 | 3 | 2 | **3.4** | **2** |
| **Median** | **3.5** | **7.8** | **3** | **5.5** | **5.5** | **4** | **4.7** | **5.5** |
| **Mean** | **3.5** | **7.5** | **2.7** | **5.7** | **4.7** | **4** | **4.8** | **na** |
| **Mode** | **na** | **na** | **3** | **na** | **na** | **na** | **na** | **na** |

Source: Extracted from Appendices 1 and 2.

Question 1.2 has three components that specifically address the Government of South Africa's success in realising the availability (Question 1.2.1), accessibility (Question 1.2.2) and affordability (Question 1.2.3) of communications services in the country. Answers provided by sample members to these three questions are analysed using the median polish technique. Table 7.2 shows the model of residual values derived through this process:

**Table 7.2**

**Analysis of the residual values of answers to Question 1.2 using the median polish technique**

| | **Residual values** | | | **Residual values** | | | |
|---|---|---|---|---|---|---|---|
| Element | **ISPA** | **Vodacom** | **Telkom** | **ICASA** | **USAASA** | **DOC** | Row effects |
| **Availability** | -1 | 0.5 | 0 | -0.9375 | 0 | 2 | 0 |
| **Accessibility** | 0 | 0 | 0 | 2.0625 | 1 | 0 | 0 |
| **Affordability** | 1.4375 | -0.0625 | 0.9375 | 0 | -0.0625 | -0.0625 | -1.9375 |
| Column effects | -0.5 | 3.5 | -1.5 | 1.4375 | 0.5 | -0.5 | 4.5 |
| | | | | | | | Main effect |

Source: Analysis of data found in Table 7.1.

As Table 7.1 shows, ICASA's representative has a favourable view (8 units) of the Government of South Africa's success in realising accessible communications services as part of its universal service and access policies and programs. Through application of the median polish technique as shown in Table 7.2, this answer (expressed as Cell ICASA, Accessibility) is written as:

| *Constant term* | + | *Column Effect* | + | *Row Effect* | + | *Residual Value* |
|---|---|---|---|---|---|---|
| *4.5* | + | *1.4375* | + | *0.0* | + | 2.0625 |

The corresponding residual value is the largest of the positive residual values. The model estimates that the Cell ICASA, Accessibility has a value of 5.9375 units or 2.0625 units lower than the observed 8 unit answer value. This result implies that ICASA's representative rates the Government of South Africa's success in achieving accessibility to communications services better than expected by the model.

Further analysis of data found in Table 7.2 shows that 3.5 units is the largest column effect and corresponds to answers provided by Vodacom's representative. This result implies that Vodacom's representative holds the most favourable view, on average, of all sample members regarding the Government of South Africa's success in realising universal service to communications services in the country (including the availability, accessibility and affordability of such services). Analyses of the medians and means of the values of answers provided by sample members to each question confirm this conclusion. As shown in Table 7.1, the values of answers provided by Vodacom's representative to each question are materially higher than the means of the values of answers provided by the sample to such questions. Furthermore, Vodacom's representative provides answers with the highest median (7.8 units) and highest mean (7.5 units) among all sample members. Such answers are well above the median (5 units) of the medians and the mean (4.7 units) of the means of the values of all answers in the data set.

The residual values shown in Table 7.2 have the following distribution pattern:

**Table 7.3**
**Distribution of the residual values found in Table 7.2**

| Sorted residual values | Strung out and sorted from small to large (ascending) |
|---|---|
| -1.0000 | Smallest |
| -0.9375 | |
| -0.0625 | Represents a near fit by the model |
| -0.0625 | |
| -0.0625 | |
| 0 | |
| 0 | |
| 0 | |
| 0 | |
| 0 | |
| 0 | |
| 0 | |
| 0.5 | |
| 0.9375 | |
| 1.0000 | |
| 1.4375 | |
| 2.0000 | |
| 2.0625 | Largest |

Source: Analysis of data found in Table 7.2.

A study of the distribution of residual values shown in Table 7.3 indicates that seven cells have a perfect fit (residual values equal to nil) while 11 cells have a nearly perfect fit. This distribution pattern suggests the presence of a strong relationship and significant degree of reliability between the values of answers provided by sample members to each part of Question 1.2.

Most sample members hold moderately negative or moderately positive views of the Government of South Africa's overall success in realising universal service to communications services in the country, including the availability, accessibility and affordability of such services. The values of answers provided by individual sample members to Questions 1.1 and 1.2 generally hug the means of the values of answers provided by all sample members to each question. Two of three public sector stratum members (representatives of ICASA and the USAASA) hold the most favourable views of the Government of South Africa's success in realising universal

service to communications services in the country. The Department of Communications' representative holds moderately negative views of such success which are consistent with the views of two of three private sector stratum members (representatives of ISPA and Telkom). As mentioned earlier in this section, Vodacom's representative holds the most favourable views of such success among all sample members.

Based on the means of the values of answers to each part of Question 1.2, sample members hold the most favourable views (5.5 units) of the Government of South Africa's success in realising accessibility to communications services and marginally less favourable views (5 units) of the Government's success in realising the availability of communications services. Such members perceive the Government's success (3.4 units) in realising the affordability of communications services as the area of greatest concern. Private sector stratum members hold the most negative views among sample members of the Government's success in realising the availability and accessibility of communications services. Public sector stratum members hold the most negative views regarding the Government of South Africa's success in realising affordable communications services. Aggregated by stratum, public sector members hold marginally more favourable perceptions (4.8 units) of the Government's success in realising the three elements of universal service in the domestic communications market relative to the views (4.57 units) of their private sector counterparts.

Based on the values of answers to Question 1.1 and the means of the values of answers to each part of Question 1.2, private sector stratum members hold a marginally higher opinion (4.67 units) of the Government of South Africa's success in realising universal service to communications services (Question 1) relative to their perceptions (4.57 units) of the Government's success in implementing each of the three principal elements of universal service (Question 1.2). The inverse pattern applies to perceptions held by public sector stratum members: the mean (5.33 units) of the values of their answers to Question 1.1 is materially lower than the mean (4.8 units) of the means of the values of their answers to Question 1.2. Private sector stratum members, as a whole, hold a moderately negative view of the Government of South Africa's success in realising universal service (and each component of universal service). Public sector stratum members, as a whole, hold a marginally positive view of the Government's success in realising universal service (Question 1.1) and a marginally negative view of the Government's success in implementing each element of universal service (Question 1.2).

Beyond data presented in Table 7.1 through 7.3, the distribution patterns of the values of answers to Question 1.1 and the means of the values of answers for each part of Question 1.2 by quartile confirm these conclusions. Table 7.4 summarises such distribution patterns:

**Table 7.4**
**Distribution of the values of answers to Questions 1 and 2 by quartile**

| Question | First quartile | Second quartile | Third quartile | Fourth quartile |
|---|---|---|---|---|
| **1.1 (actual)** | | Telkom (3)<br>ISPA (3.5)<br>DOC (4) | ICASA (6)<br>USAASA (6)<br>Vodacom (7.5) | |
| **1.2 (mean)** | | Telkom (2.7)<br>ISPA (3.5)<br>DOC (4)<br>USAASA (4.7) | ICASA (5.7)<br>Vodacom (7.5) | |

Source: Analysis of data found in Table 7.1.

As these distribution patterns show, the values of answers provided by five of six sample members to Question 1.1 strongly correlate to the means of the values of answers provided by such sample members to each part of Question 1.2. Only the value (6 units) of the answer provided by the USAASA's representative to Question 1.1 differs materially from the mean (4.7 units) of the values of answers provided to Question 1.2. This discrepancy is likely attributable to their low regard (3 units) for the Government of South Africa's success in realising affordable communications services relative to their much higher regard for the Government's success in realising the other two elements of universal service contemplated by Question 1.2.

As further shown in Table 7.4, three of six sample members rate the Government of South Africa's success in implementing universal service (Question 1.1) in the second quartile of the interval scale while three of six sample members rate such success in the third quartile of the scale. Among the different strata within the sample, two of three private sector members rate such success in the second quartile while one member (Vodacom's representative) rates such success in the third quartile of the scale. Conversely, two of three public sector members rate such success in the third quartile while one member (the Department of Communications' representative) rates such success in the second quartile of the scale.

In terms of the Government's success in implementing each element of universal service in South Africa's communications market (Question 1.2), four of six sample members rate such success in the second quartile of the interval scale while two members place such success in the third quartile of the scale. Among the different strata within the sample, two of three private sector members and two of three public sector members rate such success in the second quartile of the interval scale. Ratings provided by representatives of Vodacom and the USAASA fall into the third quartile of the scale. The material distance (1.3 units) between the values of answers provided by the USAASA's representative is likely attributable to a materially more negative view of the Government of South Africa's success in realising affordable communications services relative to views of the Government's success in realising the other two elements of universal service contemplated by Question 1.2.

The mean (5 units) of the values of answers to Question 1.1 suggests that sample members hold a neutral view of the Government of South Africa's success in realising universal service to communications services. In terms of the three principal elements of universal service (Question 1.2), the median (4.7 units) of the medians and the mean (4.8 units) of the means of the values of answers provided by sample members to each part of Question 1.2 suggest that such members hold a marginally negative view of the Government of South Africa's success in implementing such elements on an aggregated basis. The close proximity of the mean (5 units) of the values of answers to Question 1.1 and the range of the means (3.4 to 5.5 units) of the values of answers to each part of Question 1.2 as well as the median (4.7 units) of the medians and mean (4.8 units) of the means of the values of answers provided by sample members to each part of Question 1.2 suggest the presence of a strong relationship and significant degree of consistency between the values of answers provided by such members to Question 1.1 and 1.2 (all parts).

Interpretations of answers provided by sample members to the open-ended questions asked during the interviews support and expand upon the interpretations of answers given by such members to the closed-ended questions. Among the three elements of universal service, sample members generally agree that significant strides have been made by the Government of South Africa to improve the availability and accessibility of communications services. Many sample members concede, however, that such strides have come due to the natural play of market forces rather than any public policy intervention.

Telkom's representative argues that operators '*would have done it without the policy'* (Bate, 2014e, 5). The Department of Communications' representative suggests that the widespread availability of communications services might be '*thanks to Government policies and other policies, not universal service policy'* (Bate, 2014c, 2). Yet ICASA's representative proposes that universal service policy '*did make a difference'* and cites the CST Program's reduced interconnection rates as an achievement of the Government's universal service efforts because '*market policies would not have detected that* [opportunity] *. . .* [and] *it would have been more expensive'* (Bate, 2014d, 6). Taking the middle ground, the USAASA's representative suggests that the Government's universal service policy '*remains a work in progress'* (Bate, 2014a, 2).

Consistent with ratings provided as answers to the closed-ended questions, most sample members agree that affordability represents the most challenging ongoing obstacle to the realisation of universal service and access to communications services in South Africa. The Department of Communications' representative says that '*we have not done very well in this area at all'* (Bate, 2014c, 3). The USAASA's representative confirms that '*affordability is a big problem'* (Bate, 2014a, 2) and notes '*that was one of the first things that they* [the Government] *should have done, because if they had made it affordable, most of the people in the rural areas would have better availability and access'* (Bate, 2014a, 2). Yet ISPA's representative posits the reverse argument:

> *I think that access is probably rated higher than affordability* [as a priority]. *It's one of those scenarios: if an individual needs to make a call, if he is prepared to make a call, then how do you define when affordability should be different to service which is not in that universal service portfolio? People use what they can afford, that is the real answer here. . . . If the actual affordability component was such a big issue, would the prepaid cellphone market have taken off as it has?* (Bate, 2014b, 2).

Overall, the quantitative and qualitative data derived from the interviews collectively suggest that sample members recognise that the availability and accessibility of communications services in South Africa has improved dramatically in recent years. Most sample members suggest that the Government of South Africa has had some hand in such improvements but generally attribute much of the progress in these areas to the hands of private sector actors. Notwithstanding such differences of opinions, the affordability of communications services in South Africa remains a key concern of all sample members.

### 7.3.2 The Government of South Africa's success in defining universal service goals and implementing universal and community service obligations

Having established the general perceptions of sample members regarding the Government of South Africa's success in realising universal service (including the availability, accessibility and affordability of communications services), the interviews solicit opinions from sample members regarding the Government's performance in defining universal service goals (Question 2.1). They also solicit opinions from sample members regarding the success of the Government's USAO policy that required communications network operators to discharge specific universal and community service obligations (Question 3.1). Quantitative analyses of answers to closed-ended questions provide insights into the perceptions of the success of such efforts among key constituencies in South Africa's communications market. Qualitative analyses of answers received from sample members to open-ended questions explore the rationale for such answers and investigate their perceptions of other relevant matters.

Table 7.5 extrapolates Questions 2.1 and 3.1 from the questionnaire. It further extrapolates the values of answers provided by sample members to these two questions from the two-way array of answers to the closed-ended questions.[248] It includes a cross-sectional analysis of the medians, means and modes of the values of such answers by rows and columns:

**Table 7.5**

**Views of sample members of the Government of South Africa's success in defining the universal service goals and requiring operators to fulfil universal and community service obligations**

| **Questions** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **2.1** | How well has the Government of South Africa defined the goals of universal service? | | | | | | | |
| **3.1** | Rate the success of the Government of South Africa's policy of requiring operators to implement universal service and/or community service obligations? | | | | | | | |
| **Answers (raw scores)** | | | | | | | | |
| | **ISPA** | **Vodacom** | **Telkom** | **ICASA** | **USAASA** | **DOC** | **Mean** | **Mode** |
| **2.1** | 7 | 4 | 4 | 7 | 5 | 9.5 | **6.1** | **7** |
| **3.1** | 3 | 8 | 1 | 9 | 3 | 9 | **5.5** | **3** |
| **Median** | **5** | **6** | **2.5** | **8** | **4** | **9.25** | **5.8** | **na** |
| **Mean** | **5** | **6** | **2.5** | **8** | **4** | **9.25** | **5.5** | **na** |
| **Mode** | **na** | **na** | **na** | **na** | **na** | **na** | **na** | **na** |

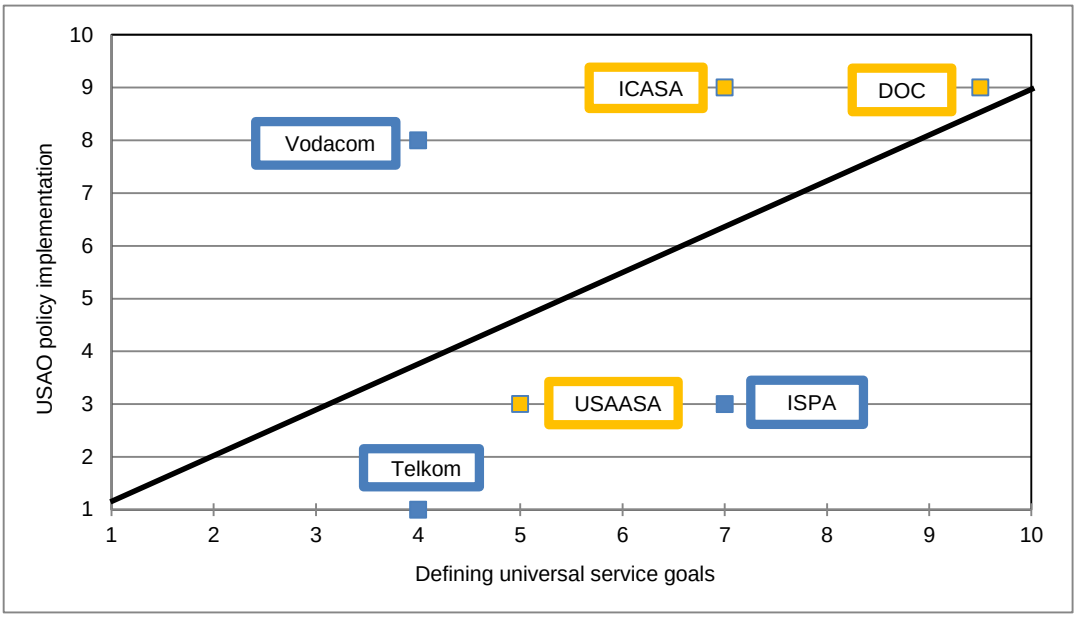
Source: Extracted from Appendices 1 and 2.

[248] Supra, note 247.

The distribution of the values of answers found in Table 7.5 is illustrated through the following multivariate graphical display (Figure 7.1) which includes a line of equality:

**Figure 7.1**

**Distribution of the values of answers to Questions 2.1 and 3.1**




Source: Analysis of data found in Table 7.5.

The further away the two-dimensional observation (point) is from the line of equality, the greater the discrepancy between the values of answers provided by individual sample members to Questions 2.1 and 3.1. Table 7.6 calculates the means of the values of each two-dimensional observation point and quantifies the distance between each mean and the line of equality:

**Table 7.6**

**Means and distances between means and the line of equality found in Figure 7.1**

| Benchmark | ISPA | Vodacom | Telkom | ICASA | USAASA | DOC |
|---|---|---|---|---|---|---|
| **Mean** | 5 | 6 | 2.5 | 8 | 4 | 9.25 |
| **Difference** | 4 | -4 | 3 | -2 | 2 | 0.5 |

Source: Analysis of data found in Figure 7.1.

The data found in Tables 7.5 and 7.6 show that the Department of Communications' representative gives the Government the most favourable scores on both measures (definition of universal service goals and implementation of universal and community service obligations). Conversely, Telkom's representative gives the Government of South Africa a very unfavourable score for its efforts to require operators to implement its USAO policy and a moderately unfavourable score (along with Vodacom's representative) for its efforts to define the goals of universal service.

A comparison of data found in Tables 7.5 and 7.6 shows that this trend is supported by the values of answers provided by sample members to the relevant questions. Two of three public sector stratum members hold the most positive views of the Government of South Africa's ability to define the goals of universal service and enforce its USAO policy with operators relative to views held on such matters by their private sector stratum counterparts. The Department of Communications' representative rates the Government's success in defining the goals of universal service quite favourably (9.5 units) and almost as favourably (9 units), along with ICASA's representative, for requiring operators to implement its USAO policy. The values of their answers are substantially higher than the means of the values of all answers provided by other sample members to each question. Furthermore, the medians and means of the values of their answers to each question are materially higher than corresponding values attributable to every other sample member.

Private sector stratum members generally hold more conservative views of the Government's success in defining the goals of universal service (Question 2.1) and requiring operators to implement specific universal and community service obligations (Question 3.1) relative to views held on such matters by their public sector stratum counterparts. Telkom's representative rates the Government's success in enforcing its USAO policy quite unfavourably (1 unit) and holds marginally unfavourable views (4 units) of the Government's success in defining the goals of universal service. The medians and means of the values of answers provided by Telkom's representative to both questions are substantially lower than the median and mean of the values of answers provided by all sample members to each question. Furthermore, the medians and means of the values of answers provided by Telkom's representative to each question are the lowest among corresponding values attributable to every other member. The medians and means of the values of answers provided by ISPA's representative and Vodacom's representative are clustered in the middle of the distribution of values and lower than corresponding values attributable to two of three public sector stratum members.

There does not appear to be any consistent relationship between answers provided by sample members between each question. Two of three private sector stratum members and one public sector stratum member give the Government more favourable marks for defining the goals of universal service to communications services relative to their marks for the Government's success in implementing its

USAO policy. Conversely, two of three public sector stratum members and one private sector stratum member give the Government more favourable marks for the effectiveness of its USAO policy relative to their marks for the Government's ability to define the goals of universal service to communications services.

Distances between the values of answers provided by private sector stratum members are much larger than distances found between the values of answers provided by public sector stratum members. Indeed, the average distance (3.67 units) between the values of answers provided by private sector stratum members is much greater than the average distance (1.5 units) between the values of answers provided by public sector stratum members. These phenomena suggest that public sector stratum members perceive a much closer correlation between the Government of South Africa's success in defining the goals of universal service to communications services and its success in implementing its USAO policy relative to perceptions held on such matters by their private sector stratum counterparts.

Variances in the values of answers provided between individual private sector sample members suggest the absence of a discernable consensus among such members regarding the Government of South Africa's success in defining the goals of universal service to communications services (Question 2.1) and implementing its USAO policy (Question 3.1). ISPA's representative holds a materially more favourable opinion of the Government's success in defining the goals of universal service to communications services relative to opinions on such matters held by their private sector stratum colleagues. The spread of the values of answers regarding the Government of South Africa's success in implementing its USAO policy highlights the lack of consensus among private sector stratum members on this matter. As such, the medians and means of the values of answers provided by individual private sector stratum members are likely the most reliable indicators of their overall perceptions of the aggregated success of the Government of South Africa's efforts in these two areas of interest. In this regard, Telkom's representative holds a materially unfavourable view (2.5 units) while ISPA's representative holds a neutral view (5 units) and Vodacom's representative holds a marginally favourable (6 units) view of such success.

Variances in the values of answers provided by individual public sector stratum members suggest the presence of consensus among at least two of three members regarding the Government of South Africa's success in defining the goals of

universal service to communications services (Question 2.1) and implementing its USAO policy (Question 3.1). Representatives of the Department of Communications and ICASA hold very favourable opinions of the Government's success in these areas of interest. Breaking with public sector stratum colleagues, the USAASA's representative holds a materially unfavourable opinion of the Government of South Africa's success in implementing the USAO policy and a neutral view of the Government's success in defining the goals of universal service to communications services. Analysis of the medians and means of the values of answers provided by individual public sector stratum members confirms such views: representatives of the Department of Communications and ICASA hold very favourable views of the Government's success in these areas while the USAASA's representative holds a marginally negative view of such success.

The distribution of the values of answers provided by sample members to Questions 2.1 and 3.1 by quartile confirms these conclusions. Table 7.7 summarises such distribution patterns:

**Table 7.7**
**Distribution of the values of answers to Questions 2.1 and 3.1 by quartile**

| Question | First quartile | Second quartile | Third quartile | Fourth quartile |
|---|---|---|---|---|
| **2.1 (actual)** | | Telkom (4)<br>Vodacom (4)<br>USAASA (5) | ICASA (7)<br>ISPA (7) | DOC (9.5) |
| **3.1 (actual)** | Telkom (1) | ISPA (3)<br>USAASA (3) | | Vodacom (8)<br>DOC (9)<br>ICASA (9) |

Source: Analysis of data found in Table 7.5.

As the distribution patterns show, significant variances exist between the values of answers provided by sample members to each question. Answers to Question 2.1 are clustered in the second and third quartiles of the interval scale with one answer located in the fourth quartile of the scale. Three of six answers to Question 3.1 are found in the fourth quartile of the interval scale with two answers located in the second quartile and a single answer found in the first quartile of the scale.

These distribution patterns appear to confirm a lack of consensus among sample members regarding the Government of South Africa's success in each area of interest. Three of six answers to each question are located above the middle point of the interval scale and three of six answers to each question are located on or

below the middle point of the scale. Moreover, these distribution patterns confirm that public sector stratum members generally hold more favourable views of the Government of South Africa's success in each area of interest relative to the views of their private sector counterparts on such matters. The values of the answers of two of three public sector stratum members are found above the middle point of the interval scale while the values of the answers of two of three private sector stratum members are found below the middle point of the scale.

Overall, such analyses suggest that the sample, as a whole, appears to hold marginally favourable views of the Government of South Africa's success in defining the goals of universal service to communications services in the country (Question 2.1) and implementing its USAO policy (Question 3.1). The mean (6.1 units) of the values of all answers to Question 2.1 and the mean (5.5 units) of the values of all answers to Question 3.1 support this conclusion. The median (5.8 units) of the median and the mean (5.5 units) of the means of the values of all answers to both questions support this conclusion. While the distribution of values by quartile acknowledges a material variance in the opinions of individual sample members, the nature of such distribution supports this conclusion. Moreover, the close proximity of such benchmarks suggests a significant degree of validity in the values of answers provided by sample members to Questions 2.1 and 3.1.

Some of the reasons likely behind the distribution of the values of answers provided by sample members to Questions 2.1 and 3.1 are explored and examined through subsequent open-ended questions. Within the private sector stratum, sample members suggest that the Government of South Africa fails to translate noble intentions into clearly defined strategies. ISPA's representative notes that the Government '*have probably defined the goals relatively well but they have not had the follow-up to ensure that the goals are reached'* (Bate, 2014b, 4). They also say that '*all the processes, even in terms of universal service, are just taking so long and nothing is actually coming out of it'* (Bate, 2014b, 3). Telkom's representative laments that '[t]*here was a big dream that we are all trying to aspire to but, in reality, I don't think our policy objectives evolved with forward thinking'* (Bate, 2014e, 3). Such comments may explain the range of generally higher marks awarded by private sector stratum members to the Government of South Africa for its success in defining the goals of universal service relative to the range of generally lower marks awarded by such members to the Government for its success in implementing its USAO policy.

Public sector stratum members generally acknowledge a failure by the Government of South Africa to implement well-defined goals. The Department of Communications' representative notes that:

> *We have legislation that talks about intent, but I think for us to be effective we need to have something that is very clear. Clear roles for people. A clear program with respect to implementation and also with respect to milestones. . . . So for that reason I think the intent has been there but I don't think that the establishment of the strategy has existed. . . . I think that there is a passion and clarity in terms of universal service and it is something that we feel strongly about. But whether we have put mechanisms in place for achieving it, I think this is where we have fallen short. . . . moving from defined goals and policies to actual implementation, which I believe is what we have not done* (Bate, 2014c, 2-3).

ICASA's representative indicates that:

> *The policy framework and everything are leaving no one in doubt as to what the Government's objectives are. So from a policy framework point of view, one could say that they* [the Government] *have covered all or some of the bigger bases* (Bate, 2014d, 10).

They add that '[m]*aybe the question that arises is the people who are now responsible for implementation?'* (Bate, 2014d, 10).

The quantitative and qualitative data derived from the interviews collectively suggest that sample members generally recognise that the Government of South Africa has done a reasonable job of defining the goals of universal service in the domestic communications market. Sample members generally fault the Government for its failure to follow-up with policies and programs that deliver on the promises of such goals. In terms of the USAO policy, further analysis of the perceptions of sample members regarding the Government of South Africa's success in the implementation of this policy in relation to specific operators may yield insights into the basis for perceptions held by sample members about this policy. As such, the discernable divergence of opinions held by sample members regarding the Government of South Africa's success in implementing this policy is considered in the subsequent section.

### 7.3.3 The Government of South Africa's success in implementing universal and community service obligations, by key communications network operator

Beyond eliciting the general perceptions of sample members regarding the success of the Government of South Africa's USAO policy (Question 3.1), the interviews solicit opinions from participants regarding the perceived performances of individual operators in discharging their obligations under the USAO policy (Question 3.2). Quantitative analyses of answers to closed-ended questions provide insights into the views of members on such matters. Qualitative analyses of answers received from sample members to open-ended questions subsequently explore the rationale for such answers and investigate their perceptions of other relevant matters.

Table 7.8 extrapolates Questions 3.1 and 3.2 from the questionnaire. It further extrapolates the values of answers provided by sample members to these questions from the two-way array of answers to the closed-ended questions.[249]

**Table 7.8**

**Views of sample members of the success of the Government of South Africa's policy of requiring operators to implement universal service and access obligations, including by key operator**

| **Questions** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **3.1** | Rate the success of the Government of South Africa's policy of requiring operators to implement universal service and/or community service obligations? | | | | | | | |
| **3.2** | Break down your answer by each key operator: | | | | | | | |
| **3.2.1** | Telkom | | | | | | | |
| **3.2.2** | Vodacom | | | | | | | |
| **3.2.3** | MTN | | | | | | | |
| **3.2.4** | Cell C | | | | | | | |
| **Answers (raw scores)** | | | | | | | | |
| | **ISPA** | **Vodacom** | **Telkom** | **ICASA** | **USAASA** | **DOC** | **Mean** | **Mode** |
| **3.1** | 3 | 8 | 1 | 9 | 3 | 9 | **5.5** | **3** |
| **3.2.1** | 2 | 7 | 10 | 4 | 3 | 7.5 | **5.6** | **na** |
| **3.2.2** | 4.5 | 8.5 | 5 | 9 | 3 | 7.5 | **6.3** | **na** |
| **3.2.3** | 4.5 | 8.5 | 5 | 9 | 3 | 7.5 | **6.3** | **na** |
| **3.2.4** | 4.5 | 8.5 | 5 | 9 | 3 | 7.5 | **6.3** | **na** |
| **Median** | **4.5** | **8.5** | **5** | **9** | **3** | **7.5** | **6.3** | **na** |
| **Mean** | **3.9** | **8.1** | **6.3** | **7.8** | **3** | **7.5** | **6.1** | **na** |
| **Mode** | **4.5** | **8.5** | **5** | **9** | **3** | **7.5** | **na** | **na** |

Source: Extracted from Appendices 1 and 2.

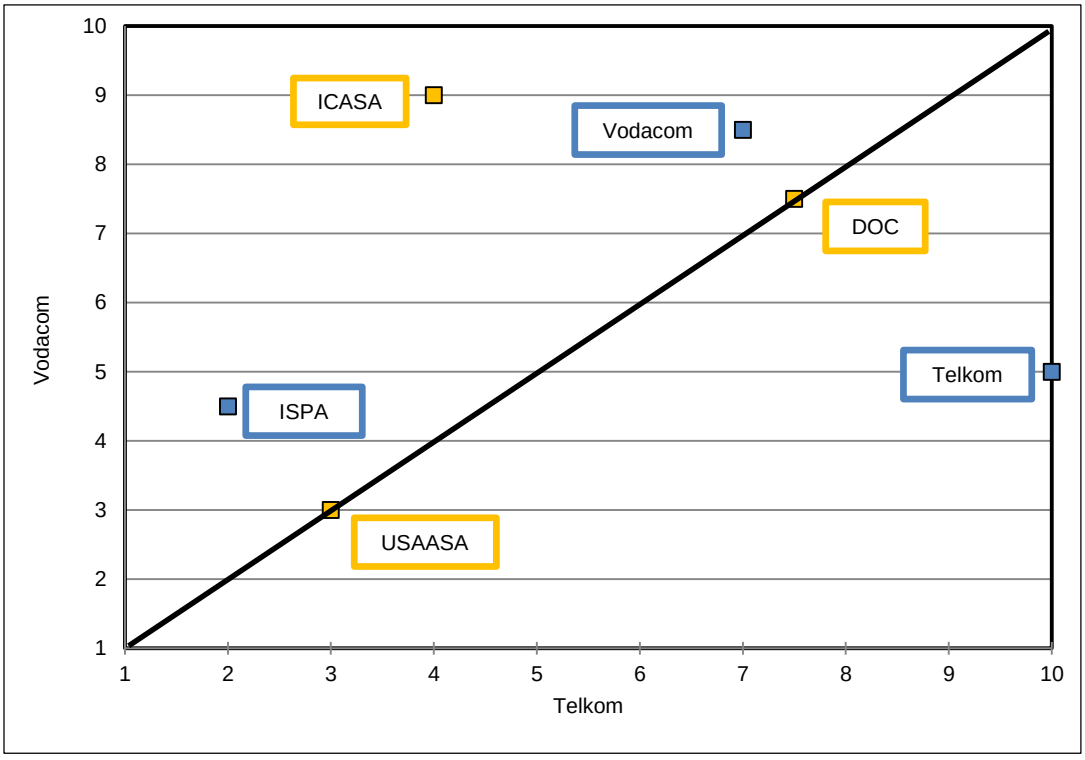
[249] Supra, note 247.

Table 7.8 includes a cross-sectional analysis of the medians, means and modes of the values of such answers by rows and columns. As this table shows, remarkable homogeneity exists in the values of answers provided by sample members in terms of the USAO policy's success in requiring mobile operators to implement their community service obligations. At the same time, a moderate amount of heterogeneity exits between the values of answers provided by sample members in terms of the USAO policy's success in requiring Telkom to implement its universal service obligations.

The spread of opinions among sample members regarding the USAO policy's success in requiring Telkom's to implement its universal service obligations (Question 3.2.1) and Vodacom' to implement its community service obligations (Question 3.2.2) is illustrated through a multivariate graphical display (Figure 7.2) which includes a line of equality. The further away the two-dimensional observation (point) is from the line of equality, the greater the discrepancy between the values of answers provided by sample members to each question:

**Figure 7.2**

**Distribution of the values of answers to Questions 3.2.1 and 3.2.2**




Source: Analysis of data found in Table 7.8.

Vodacom is used as a proxy for mobile operators for two reasons. First, it is the largest mobile communications network operator in South Africa.[250] Second, every sample member rated every mobile operator equally in the performance of their community service obligations under the USAO policy.[251] As such, the distance (5.874 units) between the values of answers provided by sample members to Questions 3.2.1 and 3.2.2 reasonably infers that members generally perceive the USAO policy as more successful in requiring mobile operators to implement their community service obligations relative to requiring Telkom to implement its universal service obligations.

Answers provided by sample members to Questions 3.2.1 through 3.2.4 are not very different in statistical terms. Members provide answers with identical values in their evaluation of the USAO policy's success in requiring mobile operators to implement their community service obligations. The distance between answers provided by sample members to Questions 3.2.2 through 3.2.4 is nil because the values of such answers coincide and are exactly equal. Moreover, two of three public sector stratum members provide answers with identical values in their evaluation of the USAO policy's success in requiring Telkom to implement its universal service obligations and mobile operators to implement their community service obligations. The distance between their answers to Question 3.2.1 and Questions 3.2.2 through 3.2.4 is nil because the values of such answers coincide and are exactly equal. Given such conditions, only four of 24 answers (16.67%) of the data set are unique. Furthermore, such uniqueness is limited to consideration of the USAO policy's success in requiring Telkom to implement its universal service obligations (Question 3.2.1).

Although each sample member provides answers with the same values in terms of the USAO policy's success in requiring mobile operators to implement their community service obligations, the values of such answers differ by sample member. The distribution of the values of answers provided by sample members to Questions 3.2.1 through 3.2.4 by quartile is summarised in Table 7.9:

---

[250] Supra, section 4.3.2.2.1.

[251] Supra, Table 7.8.

**Table 7.9**

**Distribution of the values of answers to Questions 3.2 by quartile**

| Questions | First quartile | Second quartile | Third quartile | Fourth quartile |
|---|---|---|---|---|
| **3.2.1 (actual)** | ISPA (2) | USAASA (3)<br>ICASA (4) | Vodacom (7)<br>DOC (7.5) | Telkom (10) |
| **3.2.2 (actual**<br>**3.2.3 (actual)**<br>**3.2.4 (actual)** | | USAASA (3)<br>ISPA (4.5)<br>Telkom (5) | DOC (7.5) | Vodacom (8.5)<br>ICASA (9) |

Source: Analysis of data found in Table 7.8.

Table 7.9 contrasts the perceptions of sample members regarding the USAO policy's success in requiring Telkom to implement its universal service obligations (Question 3.2.1) with their perceptions of the policy's success in requiring mobile operators to implement their community service obligations (Questions 3.2.2 through 3.2.4). With the value of one answer found in the first quartile and only one answer found in the fourth quartile of the interval scale, perceptions of sample members regarding the USAO policy's success in requiring Telkom to implement its universal service obligations are materially lower in some respects to perceptions held by such members in respect of the policy's success in requiring mobile operators to implement their community service obligations. At the same time, the values of answers provided by sample members to each question are distributed equally on each side of the middle point of the interval scale, with the values of three answers located above the middle point and the values of three answers located on or below the middle point of the scale. This distribution pattern suggests that a relatively broad balance of views exists within the sample regarding the general success of the USAO policy.

Analysis of the distribution of the values of answers provided by private and public sector strata members supports such conclusions. Two of three public sector stratum members hold unfavourable views of the USAO policy's success in requiring Telkom to implement its universal service obligations while two of three private sector stratum members hold favourable views of such success. This distribution of the values of answers from these two strata may reflect positional bias: public sector stratum members may under-estimate private sector efforts to implement public policy priorities while private sector stratum members may over-estimate such efforts. The perfect score (10 units) awarded by Telkom to itself seems to suggest the presence of some bias as this rating is not warranted by

quantitative and qualitative data sourced during secondary research,[252] the views of fellow sample members[253] or, indeed, by Telkom's own admission that it did not satisfy its universal service obligations.[254]

The distribution of the values of answers provided by private sector stratum members suggests that a material divergence of opinions exists among such members regarding the USAO policy's success in requiring Telkom to implement its universal service obligations. A significant distance (8 units) spans the value of the lowest score (2 units) provided by ISPA's representative to the value of the highest score (10 units) provided by Telkom's representative. Moreover, the location of such values at the extremes of the interval scale, with the value of the answer provided by Vodacom's representative's placed between such extremities, suggests a lack of consensus among private sector stratum members regarding the success of this particular aspect of the Government's USAO policy.

Conversely, the distribution of the values of answers among public sector stratum members suggests that a greater degree of cohesiveness of opinions exists among such members on the matter. The distance (4 units) between the values of the lowest score (3 units) provided by the USAASA's representative and the highest score (7.5 units) provided by the Department of Communications' representative is half the distance of the spread of the values of answers found within the private sector stratum. Moreover, the location of two of three scores in close proximity to each other (3 and 4 units) suggests that a significant degree of consensus exists among two of three public sector stratum members regarding the USAO policy's success in requiring Telkom to implement its obligations.

Similar patterns emerge through evaluation of the values of answers tendered by public sector stratum members regarding the USAO policy's success in requiring mobile operators to implement their community service obligations. As Table 7.9 shows, two of three public sector stratum members hold strongly favourable views of the USAO policy's success in requiring mobile operators to implement such obligations. A significant distance (6 units) spans the value of the lowest score (3 units) provided the USAASA's representative to the value of the highest score (9

---

252 Supra, Table 7.8.

253 Infra, this section 7.3.3.

254 Ibid.

units) provided by ICASA's representative. However, the location of two of three scores in close proximity to each other (7.5 and 9 units) suggests that a degree of consensus exists among two of three public sector stratum members regarding the USAO policy's success in requiring mobile operators to implement their obligations.

As Table 7.9 further shows, the distribution of the values of answers provided by private sector stratum members suggest that a continuum of views exists among such members which ranges from marginally unfavourable (ISPA's representative) to neutral (Telkom's representative) to strongly favourable (Vodacom's representative). Despite the presence of such continuum, the distribution of the values of answers suggests that a greater degree of cohesiveness of opinions exists among private sector stratum members regarding the USAO policy's success in requiring mobile operators to implement their obligations relative to their opinions regarding the policy's success in requiring Telkom to implement its obligations. Furthermore, the distance (4 units) between the value of the lowest score (4.5 units) provided by ISPA's representative and the value of the highest score (8.5 units) provided by Vodacom's representative is half the distance of the spread of the values of answers found within this stratum in regards to the USAO policy's success in requiring Telkom to implement its obligations. Moreover, the location of two of three scores in close proximity to each other (4.5 and 5 units) suggests that a significant degree of consensus exists among two of three private sector stratum members in respect of the USAO policy's success in requiring mobile operators to implement their obligations.

Unlike consideration of the values of answers regarding the USAO policy's success in requiring Telkom to implement its universal service obligations, the distribution of the values of answers between stratum members regarding the policy's success in requiring mobile operators to implement their community service obligations does not readily suggest the presence of any positional bias. The highest values of answers to Questions 3.1 and 3.2 (all parts) are provided by sample members from organisations with direct knowledge of the nature of the USAO policy's community service obligations and operator performance of such obligations (ICASA, the Department of Communications and Vodacom). Earlier analysis of data related to operator performance of community service obligations generally supports such

ratings.[255] However, such members may have a vested interest in promoting the perceived success of the USAO policy due to their involvement with the design or implementation of this policy.

Analyses of the means of the values of answers provided by sample members to Question 3.2 show that, as a whole, such members perceive the USAO policy's success (6.3 units) in requiring mobile operators to implement their community service obligations as superior to the policy's success (5.6 units) in requiring Telkom to implement its universal service obligations. Such analysis is consistent with the general position of the values of answers provided by sample members to each question. Interestingly, the mean (5.5 units) of the values of answers provided by sample members in relation to the USAO policy's overall success (Question 3.1) is materially distant from the mean (6.3 units) of the values of answers provided by sample members in relation to the USAO policy's success in requiring mobile operators to implement their community service obligations (Questions 3.2.2 through 3.2.4) but closely correlates to the mean (5.5 units) of the values of answers provided by sample members in relation to the USAO policy's success in requiring Telkom to implement its universal service obligations (Question 3.2.1).

Two *a posteriori* conclusions may be drawn from such analyses. First, a reasonable degree of consistency exists between the perceptions of sample members about the USAO policy's overall success and the policy's success in requiring Telkom to implement its universal service obligations. Second, a material degree of inconsistency exists between the perceptions of sample members regarding the USAO policy's overall success and the policy's success in requiring mobile operators to perform their community service obligations. The disconnect between such views may be attributable to the belief that market conditions enabled mobile operators to satisfy community service obligations despite policy obligations.[256]

Analysis of the values of answers provided by sample members to Question 3.2 (all four parts) suggest that members, as a whole, hold a moderately positive view of the USAO policy's success in requiring Telkom to implement its universal service obligations and mobile operators to implement their community service obligations. The medians and the means of the values of answers provided by each member to

---

[255] Supra, section 5.3.1.2.

[256] Infra, this section 7.3.3.

each part of Question 3.2 indicates that three of six sample members hold strongly favourable views of the USAO's success in such areas with one member holding a neutral view and two members holding moderately negative views of such success. The median (6.3 units) of the medians and the mean (6.1 units) of the means of the values of such answers support the conclusion that sample members collectively hold a moderately positive view of the USAO policy's success in requiring operators to implement universal and community service obligations.

Answers obtained from sample members to subsequent open-ended questions generally validate conclusions drawn from analyses of answers provided by sample members to the closed-ended questions. Such feedback also provides valuable insights into the bases relied upon by sample members to provide specific values for answers given to the closed-ended questions. Most comments focus on Telkom's performance (or lack thereof) of its universal service obligations and the nature of mobile operators' performance of their community service obligations.

Telkom's performance of its universal service obligations receives mixed reviews from sample members. The Department of Communications' representative gives Telkom credit for finishing most of its obligations. They note that '*Telkom did not complete its obligations, but it did roll out a lot of lines and it faced a lot of special challenges'* (Bate, 2014c, 5). Similarly, Vodacom's representative articulates the perception that '*Telkom had some problems, but it still made a difference'* (Bate, 2014f, 3). Although they acknowledge that Telkom faced significant challenges (Bate, 2014a, 4), the USAASA's representative rates Telkom poorly for performance of its universal service obligations based on their opinion that Telkom '*basically said that we are finished. We are paying the penalties and we don't care'* (Bate, 2014a, 4).

ISPA's representative holds harsher opinions of Telkom's performance of its obligations. They say that '[t]*he major roll outs that were expected were totally ineffective'* and conclude that *'the whole Telkom environment is a failure from a universal service perspective'* (Bate, 2014b, 4). Interestingly, the USAASA's representative blames ICASA for permitting such behaviour:

> *. . . . the question is where does the responsibility lie [for Telkom's failure to satisfy its universal service obligations]? . . . the license came from ICASA offices and ICASA has the responsibility to monitor the license. . . . It's quite clear long before the end of Telkom's exclusivity that Telkom was already disconnecting. There was no loaded gun that came in and said "Don't disconnect." That was supposed to be the role of the regulator. I don't remember where the regulator came up to Telkom and said "You can't continue doing this. We need you to change." The regulator had the "could do so" if they wanted to and Government did not intervene and say "you can't do this"* (Bate, 2014a, 4).

Telkom appears to concede bias in awarding itself a perfect score. Such a score does not correlate well with Telkom's admission that it willfully failed to satisfy all of its universal service obligations.[257] Telkom's representative accepts this reality but argues for full credit for Telkom's efforts under a flawed public policy:

> *We did roll out three million lines. But did they achieve the intended purpose? No. We had to disconnect because it was just not the right thing to do. It seems right, but it was not the right thing to do for the purpose it was intended. . . . I would give it a 10 because we did roll out the lines. But did it serve any purpose? No, including Telkom* (Bate, 2014e, 4).

The mobile operators' performance of their community service obligations also receives mixed reviews from sample members. The USAASA's representative highlights the failure of mobile operators to satisfy their obligations (other than the CST component) (Bate, 2014a, 4). Several members concede that market conditions enabled operators to wildly exceed the numerical requirements for community service telephones (Bate, 2014c, 5; Bate, 2014a, 4; Bate, 2014f, 3). However, ISPA's representative challenges such perceptions:

> *I don't believe that the mobile operators have expressly gone out there and burned their butts to make universal service happen. I think a lot of that is coincidental. It's around building market share, possibly taking advantage of the less affluent society to utilise cleverly structured products, especially the rural area stuff. A typical example is the "just about free" card you can get in a supermarket. It's not expensive to put airtime on the card. So the airtime itself is very cheap but the calls are very expensive. So they have done no favours in terms of call charges, that's for sure* (Bate, 2014b, 4).

Telkom's representative supports this analysis (Bate, 2014e, 5).

---

[257] Supra, section 5.3.1.1.1.

Overall, quantitative and qualitative data derived from the interviews collectively suggest that sample members recognise that the USAO policy achieved certain benefits in terms of realising universal service to communications services in South Africa, particularly in the mobile market segment. Most members suggest that mobile operators contributed materially to such progress through community service obligations while Telkom's universal service obligations did not achieve intended benefits. They generally attribute the lacklustre performance of the USAO policy to implementation failures rather than defects in policy aspirations.

Sample members differ on the reasons for such failures. Public sector stratum members generally promote the positive role played by public policy in achieving such progress. Private sector stratum members generally highlight the inconsequential role played by public policy in realising such progress. In terms of the mobile market segment, private sector stratum members generally emphasise the proactive role played by operators in achieving community service obligations. Public sector stratum members generally assert the important role that public policy requirements played in nudging operators to realise such ambitions. Public sector stratum members generally view the satisfaction of the USAO policy's numerical requirements by operators as an accomplishment (for realising targets). Private sector stratum members generally view such achievement as a policy failure (for setting targets too low). There is probably some merit in the middle ground. As the Department of Communications' representative concedes, '[h]*ad we known that it was not going to be terribly onerous for the companies to do it, we probably would have made them a little bit more difficult'* (Bate, 2014c, 5).

### 7.3.4 The Universal Service and Access Fund's success in implementing its mandate, including the amount and application of the levy

The creation and administration of the Universal Service Fund (subsequently the Universal Service and Access Fund) is another key policy initiative undertaken by the Government of South Africa to promote the delivery of universal service and access to communications services. Closed-ended questions solicit the general perceptions of sample members about the success of the USAF (Question 4.1). They also investigate the relationship between such general perceptions and the specific opinions held by sample members about the amount and application of the USAF levy to further the Fund's objectives (Question 4.2). Open-ended questions

subsequently explore the rationale for the quantitative answers provided by sample members to the closed-ended questions and investigate the opinions of sample members on other matters germane to the study.

Table 7.10 extrapolates Questions 4.1 and 4.2 from the questionnaire. It further extrapolates the values of answers provided by sample members to these questions from the two-way array of answers to the closed-ended questions.[258] It includes a cross-sectional analysis of the medians, means and modes of the values of such answers by rows and columns:

**Table 7.10:**

**Views of sample members of the success of the Universal Service and Access Fund in implementing its mandate, including the amount and application of the levy**

| **Questions** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **4.1** | Rate the success of the USAF in implementing its mandate? | | | | | | | |
| **4.2** | Break down your answer by key area: | | | | | | | |
| **4.2.1** | Quantum of USAF levy | | | | | | | |
| **4.2.2** | Application of funds | | | | | | | |
| **Answers (raw scores)** | | | | | | | | |
| **4** | **ISPA** | **Vodacom** | **Telkom** | **ICASA** | **USAASA** | **DOC** | **Mean** | **Mode** |
| **4.1** | 1 | 2 | 1 | 4 | 2 | 6 | **2.7** | **1 and 2** |
| **4.2.1** | 1 | 2 | 1 | 4 | 2 | 6 | **2.7** | **1 and 2** |
| **4.2.2** | 1 | 1 | 2 | 2 | 3 | 4 | **2.2** | **1 and 2** |
| **Median** | **1** | **1.5** | **1.5** | **3** | **2.5** | **5** | **2** | **1** |
| **Mean** | **1** | **1.5** | **1.5** | **3** | **2.5** | **5** | **2.4** | **1.5** |
| **Mode** | **1** | **1 and 2** | **1 and 2** | **2 and 4** | **2 and 3** | **4 and 6** | **2** | **1** |

Source: Extracted from Appendices 1 and 2.

Applying the median polish technique, the row distances between the values of answers provided by sample members regarding the USAF's success in implementing its mandate (Question 4.1) and the values of answers provided by sample members regarding the quantum (Question 4.2.1) and application (Question 4.2.2) of the USAF levy range between 2.82 and 3.32 units. The distance between the values of answers provided by sample members regarding the quantum (Question 4.2.1) and application (Question 4.2.2) of the USAF levy is 3 units. Table 7.11 highlights these distances:

---

[258] Supra, note 247.

**Table 7.11**

**Row distances derived from application of the median polish technique to Questions 4.1 and 4.2**

| Distances between Question 4.1 and Questions 4.2.1 and 4.2.2 | Row distance |
|---|---|
| Distance between Question 4.1 and Question 4.2.1 | 2.82 |
| Distance between Question 4.1 and Question 4.2.2 | 3.32 |
| **Distance between Questions 4.2.1 and 4.2.2** | 3.00 |

Source: Analysis of data found in Table 7.10.

There is a reasonable degree of consistency in the distance between the values of answers provided by sample members to Question 4.1 and the values of answers provided by sample members to Questions 4.2.1 and 4.2.2. Such consistency suggests that a structural relationship exists between the answers provided by sample members to Question 4.1 and their answers to Questions 4.2.1 and 4.2.2. At the same time, such distance suggests that a reasonable degree of heterogeneity exists between these answers. Further consideration of the specific values of answers provided by sample members and analyses of the medians, means and modes within and between data sets may yield insights into the underlying relationships and rationale for the sizes of such distances.

The values of answers provided to Questions 4.1 and 4.2 by private sector stratum members are consistent and generally homogenous in nature. The distance between the means of the values of answers to Questions 4.2.1 and 4.2.2 and the value of the answer to Question 4.1 provided by ISPA's representative correlate exactly with each other. A marginal distance (0.5 units) exists between the values of answers provided by Vodacom's representative and Telkom's representative to Question 4.1 and the means of the values of their answers to Questions 4.2.1 and 4.2.2. The range of the values of answers provided by private sector stratum members (1 or 2 units) is also narrow with only one unit separating the value of any of the nine answers provide by this stratum. Interestingly, perceptions held by representatives of Vodacom and Telkom regarding the amount and application of the USAF levy are inversely correlated: Telkom's representative rates the USAF's success with application of the levy higher than the suitability of the amount of the levy while Vodacom's representative rates the suitability of the amount of the levy higher than the USAF's success with application of the levy.

Private sector stratum members generally rank the USAF very low (1 or 2 units) for performance of its mandate and the quantum and application of the USAF levy. Given the marginal distance that exists between these values as well as the position of the medians, means and modes of the values of such answers on the interval scale, it is reasonable to conclude that private sector stratum members regard the USAF as being 'not successful' in the discharge of its mandate. For the same reasons, they share similar views regarding the amount and application of the levy.

The values of answers provided to Questions 4.1 and 4.2 by public sector stratum members are more inconsistent and heterogeneous relative to the values of answers provided by private sector stratum members to these questions. A marginal distance (0.5 units) exists between the value of the answer to Question 4.1 and the means of the values of answers to Questions 4.2.1 and 4.2.2 provided by the USAASA's representative. A material distance (1 unit) exists between the means of the values of answers provided by ICASA's representative and the Department of Communications' representative to Question 4.2 and their answers to Question 4.1. The range of values (2 units) within answers provided by individual public sector stratum members are twice the distance (2 units) as the range of values found within answers provided by individual private sector stratum members. Moreover, the spread (4 units) of the values of answers within the public sector stratum data set is four times as large as the spread (1 unit) of the values of answers within the private sector stratum data set.

A significant degree of heterogeneity exists between perceptions held by individual public sector stratum members regarding the USAF's discharge of its mandate and the amount and application of the USAF levy. No public sector stratum member provides the same score as another member in reply to the same question within this data set. The ranges of the values of answers provided by such members is narrowest in terms of their perceptions regarding the application of the USAF levy (2 to 4 units) and greatest in terms of their perceptions regarding the amount of the USAF levy and the USAF's success in the performance of its mandate (2 to 6 units). Given the values of such answers and the positions of the medians, means and modes of the values of such answers on the interval scale, it is reasonable to conclude that public sector stratum members hold negative to marginally positive views of the USAF's performance of its mandate and the quantum and application of the USAF levy. Representatives of the USAASA and ICASA hold the most conservative views of such success (negative) while the Department of Communications' representative holds the most liberal views of such success (neutral to marginally positive).

Public sector stratum members generally hold more favourable views of the USAF's discharge of its mandate and the amount and application of the USAF levy. The values of six of nine answers provided to Questions 4.1 and 4.2 by public sector stratum members are higher than the values of answers provided to such questions by private sector stratum members. The medians, means and modes of the values of answers provided by each public sector stratum member are higher than corresponding benchmarks for each private sector stratum member. The USAASA representative's view of the USAF's success in implementing its mandate most closely resembles the views held by private sector stratum members on this subject. Their ranking of the USAF's performance of its mandate and the quantum of the USAF levy mirror the rankings of Vodacom representative's on such matters. Through the identical values of their answers, the representatives of ICASA and Telkom appear to commiserate over the application (or lack thereof) of the levy.

The distribution of the values of answers to Question 4.1 and the means of the values of answers to Question 4.2 provided by sample members by quartile is shown in Table 7.12:

**Table 7.12**
**Distribution of the values of answers to Questions 4.1 and 4.2 by quartile**

| Question | First quartile | Second quartile | Third quartile | Fourth quartile |
|---|---|---|---|---|
| **4.1 (actual)** | ISPA (1)<br>Telkom (1)<br>Vodacom 1)<br>USAASA (2) | ICASA (4) | DOC (6) | |
| **4.2 (mean)** | ISPA (1)<br>Vodacom (1.5)<br>Telkom (1.5)<br>USAASA (2.5) | ICASA (3.5)<br>DOC (5) | | |

Source: Analysis of data found in Table 7.10.

The distribution patterns shown in Table 7.12 confirm that the values of answers provided by five of six sample members to Question 4.1 are located below the middle point of the interval scale. Moreover, the means of the values of answers provided by every sample member to Question 4.2 are located on or below the middle point of the interval scale. Given such distribution patterns, it is reasonable to infer that the sample, as a whole, regards the USAF's performance of its mandate and the amount and application of the USAF subsidy as being 'not successful', albeit to varying degrees.

The distribution patterns shown in Table 7.12 further confirm that the values of answers provided by four of six sample members to Question 4.1 and the means of the values of such answers provided to Question 4.2 are located in the first quartile of the interval scale, including all values related to answers provided by private sector stratum members. For Question 4.2, the means of the values of answers provided by two public sector stratum members are located in the second quartile of the scale. For Question 4.1, the value of the answer provided by the Department of Communications' representative is located in the third quartile of the scale. Given these distribution patterns, it is reasonable to infer that public sector stratum members, as a whole, hold more favourable views of the USAF's implementation of its mandate and the amount and application of the USAF levy relative to views held on such matters by their private sector stratum counterparts.

Collectively, the aggregated values of all answers from the sample suggest that members generally hold strong negative views regarding the USAF's performance of its mandate (Question 4.1) and the amount and application of the USAF levy (Question 4.2). Despite variances between public and private sector strata and some variances between individual members, a significant structural relationship appears to exist between the sample's aggregated views of the USAF's success in the implementation of its mandate and the amount and application of the USAF levy. The mean (2.7 units) of the values of answers provided by all members to Question 4.1 correlates exactly with the mean (2.7 units) of the values of answers provided by all members to Question 4.2.1 and closely correlates with the mean (2.4 units) of the values of answers provided by all sample members to Question 4.2.2. Given the marginal distance that exists between these values as well as the positions of the medians, means and modes of the values of such answers on the interval scale, it is reasonable to conclude that the sample, as a whole, regards the USAF as being 'not successful' in the discharge of its mandate and holds substantially similar views regarding the amount and application of the levy.

Answers provided by sample members to the open-ended questions generally validate conclusions reached from analyses of answers provided by sample members to the closed-ended questions. They also illuminate insights into the rationale for some of the values of answers tendered by sample members to such closed-ended questions. As the succeeding discussion shows, sample members generally hold grave concerns over the performance of the Universal Service and Access Fund and the quantum and application of the USAF levy.

The USAF's failure to distribute the USAF levy represents a significant concern among sample members. Echoing comments raised by journalists and other stakeholders,[259] Telkom's representative asks '[w]*here's the money?*' (Bate, 2014e, 6). Vodacom's representative highlights the sub-optimal use of the USAF levy for the USAASA's proprietary projects:

> *They have put in telecentres. They make it their own private property but the universal service fund has provided the money, so some money has been spent. But I am not sure it has been spent wisely* (Bate, 2014f, 5).

The Department of Communications' representative notes that '[t]*he application of the funds has been difficult in the environment that we have*' (Bate, 2014c, 6). They attribute such difficulties to the complicated apportionment process applicable to USAF monies:

> *I think the Fund is a good thing and it has made certain things possible. However, the way the Fund functions is a little bit tricky because, as you know, the Fund is taken to Treasury and then we have to ask for the money from Treasury to do something and, of course, you always need a good plan and a business plan and so on and so forth.*
>
> *From that point of view, that is an issue that has to do with accountability and the money must be spent properly. But it puts the responsibility on the Department* [of Communications] *and the* [USAASA] *to do things that they are not experts or hired for - business plans, etc. The funds are needed, but their use is diminished by onerous bureaucracy* (Bate, 2014c, 6).

The USAASA's representative concurs with such comments, arguing that the Agency is unable to spend the money given to it because '*they* [the Government] *never capacitated anyone to be able to use that money'* (Bate, 2014a, 6). They speculate that '*it was their* [Government's] *intention probably to create a way of taxing the operators. . . . But this institution* [the USAASA] *is unable to spend the money given to them'* (Bate, 2014a, 6).

---

[259] Supra, section 5.3.2.4.

The Department of Communications' representative admits the need to improve the use of the Fund but indicates that resolving this issue represents another problem among many problems faced by their Department:

> *There is a lot of money building up. That is why we are saying we can think more strategically and that, in itself, is not the problem. But when you have to think about what we need to use this Fund for, this creates an additional headache to a thousand headaches that you already have. So if there was a way of perfecting it, that's what I would like* (Bate, 2014c, 6).

As a solution, Telkom's representative proposes direct payments to and from the USAF (Bate, 2014e, 7). Similarly, ISPA's representative recommends integration of the USAF into ICASA (Bate, 2014b, 9).

Opinions regarding the quantum of the USAF levy vary among sample members. Public sector stratum members generally downplay the quantum of the levy. The Department of Communications' representative says that '[t]*he amount of the levy is not an issue, particularly when we have all this money building up*' (Bate, 2014c, 6). The USAASA's representative agrees with this sentiment, noting that '[i[*f you cannot even access and spend the money you are collecting, the amount of the levy is not that important'* (Bate, 2014a, 6). Private sector stratum members generally adopt a more critical view of the quantum of the levy. Telkom's representative questions the rationale of the levy: '[h]*ow can you have a levy and then not spend the money? What's the point of the levy?'* (Bate, 2014e, 6). Vodacom's representative dismisses the relevance of the quantum of the USAF levy: '[u]*nless we are clear that the funds are going to work where they are intended to go, there is no point to talk about the amount of the levy'* (Bate, 2014f, 4). Indeed, ISPA's representative highlights ambiguities in the definition of the USAF levy which complicate its transparency and utility:

> *The whole process of universal service funding in the first place has been a botch up from the regulatory perspective. This was a process that has been broken as well. Coming to other operators, other than Telkom, it has been incredibly difficult to figure out what universal services obligation applies – does it apply to the whole service revenue or revenue associated to telecommunications services only? Do you subtract the services which are telecommunications services where universal services have already been paid on, so you have a tax on a tax? All of these issues are still up in the air* (Bate, 2014b, 8).

Sample members generally hold unfavourable opinions of the USAF's implementation of its mandate (Question 4.1). Representatives of the USAASA and Vodacom call the USAF '*a disaster'* (Bate, 2014f, 5; Bate, 2014a, 5). Telkom's representative laments the USAF's '*very dismal'* performance (Bate, 2014e, 6). ICASA's representative notes that '*the policy was good, but it was not implemented properly'* (Bate, 2014d, 8). ISPA's representative says that the USAF is '*ineffective*' and expresses concern with a '*lack of transparency*' in the use of its funds (Bate, 2014b, 8).

Combined with the qualitative and quantitative data sourced during secondary research,[260] the opinions of sample members expressed during the interviews paint a bleak picture of the USAF's performance, including the amount and allocation of the USAF levy. As a whole, the sample holds strongly negative perceptions of the USAF's success in implementing its mandate and the amount and the allocation of the USAF levy. Among sample members, the public sector stratum generally holds more favourable views of such success. Sample members support their opinions with specific criticisms of the implementation of the USAF policy, particularly the lack or inefficient spending of USAF monies and reliance on a cumbersome apportionment process that frustrates the release of such funds.

### 7.3.5 The Universal Service and Access Agency of South Africa's success in implementing its mandate, including its four key functions

In parallel with the creation and administration of the Universal Service Fund, the creation and administration of the Universal Service Agency (subsequently the Universal Service and Access Agency) is another key policy initiative undertaken by the Government of South Africa to promote the delivery of universal service and access to communications services. The interviews solicit the general perceptions of sample members about the success of the USAASA (Question 5.1) through various closed-ended questions. They also investigate the relationship between such general perceptions and the specific opinions held by sample members about the success of the USAASA in discharging its four key functions (Question 5.2). Open-ended questions subsequently explore the rationale for the quantitative answers provided by sample members to the closed-ended questions as well as opinions of sample members on other matters germane to the study.

---

[260] Supra, section 5.3.2.

Table 7.13 extrapolates Questions 5.1 and 5.2 from the questionnaire. It further extrapolates the values of answers provided by sample members to these questions from the two-way array of answers to the closed-ended questions.[261] It includes a cross-sectional analysis of the medians, means and modes of the values of such answers by rows and columns:

**Table 7.13**

**Views of sample members of the success of the Universal Service and Access Agency in implementing its mandate, including its four key functions**

| **Questions** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **5.1** | Rate the success of the USA/USAASA in implementing its mandate? | | | | | | | |
| **5.2** | Break down your answer by key area: | | | | | | | |
| **5.2.1** | Enabling function | | | | | | | |
| **5.2.2** | Advisory function | | | | | | | |
| **5.2.3** | Monitoring function | | | | | | | |
| **5.2.4** | Administration function | | | | | | | |
| **Answers (raw scores)** | | | | | | | | |
| **5** | **ISPA** | **Vodacom** | **Telkom** | **ICASA** | **USAASA** | **DOC** | **Mean** | **Mode** |
| **5.1** | 1 | 4 | 2 | 5 | 4 | 4 | **3.3** | **4** |
| **5.2.1** | 4 | 4 | 1 | 6 | 3 | 4 | **3.7** | **4** |
| **5.2.2** | 4 | 4 | 1 | 5 | 4 | 4 | **3.7** | **4** |
| **5.2.3** | 1 | 4 | 1 | 3 | 3 | 4 | **2.7** | **1, 3 and 4** |
| **5.2.4** | 1 | 4 | 2 | 5 | 3 | 4 | **3.2** | **4** |
| **Median** | **2.5** | **4** | **1** | **5** | **3** | **4** | **3.5** | **1 and 4** |
| **Mean** | **2.5** | **4** | **1.3** | **4.8** | **3.3** | **4** | **3.3** | **4** |
| **Mode** | **4** | **4** | **1** | **5** | **3** | **4** | **4** | **4** |

Source: Extracted from Appendices 1 and 2.

As Table 7.13 shows, the mean (3.3 units) and mode (4 units) of the values of answers provided by sample members to Question 5.1 are identical to and correlate exactly with the mean (3.3 units) of the means and the mode (4 units) of the modes of the values of answers provided by all sample members to each part of Question 5.2. A marginal distance (0.2 units) exists between the median (3.5 units) of the medians of the values of answers to each part of Question 5.2 and the mean (3.3 units) of the means of the values of such answers. As such, a consistent relationship appears to exist within and between the values of all answers provided by all sample members to Questions 5.1 and 5.2 (all parts).

---

[261] Supra, note 247.

Relationships between the values of answers provided by sample members to each part of Question 5.2 are further examined using the median polish technique. Table 7.14 shows the additive model of residual values, with a main effect, row and column effects, for the values of answers provided by each sample member for each key function canvassed on an individual basis as part of Question 5.2:

**Table 7.14**

**Analysis of the residual values of answers to Question 5.2 using the median polish technique**

| | Residual values | | | Residual values | | | |
|---|---|---|---|---|---|---|---|
| Function | ISPA | Vodacom | Telkom | ICASA | USAASA | DOC | Row effects |
| **Enabling** | 1.477 | -0.023 | 0.0 | 0.0 | 1.000 | -0.023 | 0.0 |
| **Advisory** | 1.477 | -0.023 | 0.0 | 0.0 | 0.0 | 0.977 | 0.0 |
| **Monitoring** | -1.477 | 0.023 | 0.047 | 0.047 | -1.953 | 0.023 | -0.047 |
| **Administration** | -1.523 | 0.977 | 0.0 | 0.0 | 0.0 | -0.023 | 0.0 |
| Column effects | -1.0 | -2.500 | 0.477 | 0.477 | 1.477 | -0.500 | 3.523 |
| | | | | | | | Main effect |

Source: Analysis of data found in Table 7.13.

As Table 7.14 shows, many of the individual residual values have a nil value and three of four row effects are equal to zero (for the enabling function, advisory function and administration function). Only the values of answers provided by Vodacom's representative are materially different (approximately 2.5 units) from the values of answers provided by other sample members to the same questions. Given that row effects are either zero or very small, sample members do not appear to be influenced by differences between (among) the four parts of Question 5.2 when responding to inquiries.

Table 7.15 illustrates the distribution of residual values found in Table 7.14. The distribution of residual values within the 24 cells shown in Table 7.15 indicates that eight cells had a perfect fit (residual values equal to zero) after analysis by the median polish technique. Moreover, sudden jumps in the magnitude of residual values in the tails of the distribution occur as well. As such, application of the median polish technique indicates that the values of answers provided by individual sample members to each part of Question 5.2 are generally consistent with and support the values of answers provided by other members to such questions.

**Table 7.15**
**Distribution of the residual values found in Table 7.14**

| Sorted residual values | Strung out and sorted from small to large (ascending) |
|---|---|
| -1.953 | Smallest |
| -1.523 | |
| -1.477 | |
| -0.023 | Represents a near fit by the model |
| -0.023 | |
| -0.023 | |
| -0.023 | |
| 0 | |
| 0 | |
| 0 | |
| 0 | |
| 0 | |
| 0 | |
| 0 | |
| 0 | |
| 0.023 | |
| 0.023 | |
| 0.047 | |
| 0.047 | |
| 0.977 | |
| 0.977 | |
| 1.000 | |
| 1.477 | |
| 1.477 | Largest |

Source: Analysis of data found in Table 7.14.

The values of answers provided by private sector stratum members to Questions 5.1 and 5.2 are generally consistent and homogenous. Vodacom's representative provides the same answer to Question 5.1 and each part of Question 5.2 which results in an exact correlation between the values of answers. Telkom's representative provides the same answer to three of four parts of Question 5.2. Only a marginal distance (1 unit) exists between values of such answers and the value of the answer to the fourth part of the question. Moreover, a strong relationship exists between the value of this answer and mean of the values of answers to the other parts of Question 5.2. ISPA's representative provides a low

value (1 unit) in answer to two parts of Question 5.2 and a higher value (4 units) in answer to the other two parts of Question 5.2. A material distance (3 units) exists between the values of these answers and the mean of the values of answers to Question 5.2 and the value of the answer to Question 5.1.

The values of answers provided by public sector stratum members are generally consistent and homogenous. The Department of Communications' representative provides the same answer to Question 5.1 and each part of Question 5.2 which results in an exact correlation of the values of answers to such questions. The USAASA's representative provides the same answer to three of four parts of Question 5.2. Only a marginal distance (1 unit) exists between the values of these answers and the value of the answer to the fourth part of the question. Moreover, a strong relationship exists between the value of this answer and mean of the values of the answers to the other parts of Question 5.2. ICASA's representative provides three different values (ranging from 3 to 6 units) as answers to the four parts of Question 5.2 with a material distance (3 units) between the values of these answers. However, a negligible distance exists between the mean of the values of the answers to Question 5.2 and the value of the answer to Question 5.1.

A remarkable degree of homogeneity exists between sample perceptions about the USAASA's performance of its four principal functions (Question 5.2). A modest distance (1 unit) exists between the means of the values of answers to each part of Question 5.2. Based on these benchmarks, the sample gives the USAASA the highest marks (3.7 units) for discharge of its enabling and advisory functions and the lowest marks (2.7 units) for performance of its monitoring function. The sample's perception of the USAASA's performance of its administration function (3.2 units) falls between these extremities. Such variances suggest that sample members perceive differences in the USAASA's performance of its four principal functions. At the same time, the low values of such benchmarks indicate that sample members generally perceive a significant lack of success by the USAASA in its efforts to implement its four principal functions.

Private sector stratum members hold negative views of the USAASA's performance of its mandate and four principal functions. The values of every answer to Questions 5.1 and 5.2 provided by private sector stratum members are located below the middle point of the interval scale. The medians, means and modes of the values of answers to each part of Question 5.2 provided by private sector stratum members are located

below the middle point of the interval scale, with two answers located in the first quartile of the scale. Telkom's representative holds the most negative view of the USAASA's performance of its mandate and four principal functions. ISPA's representative holds a moderately negative view and Vodacom's representative a slightly negative view of such performance. Given the values of individual answers as well as the positions of the medians, means and modes of the values of such answers on the interval scale, it is reasonable to conclude that private sector stratum members regard the USAASA as being materially 'not successful' in the performance of its mandate and four principal functions.

Public sector stratum members hold moderately negative to neutral views of the USAASA's performance of its mandate and four key functions. The values of two of three answers provided by public sector stratum members to Question 5.1 are located below the middle point of the interval scale while the value of the third answer is found at the middle point of the scale. The values of nine of 12 answers provided by public sector stratum members to the four parts of Question 5.2 are located below the middle point of the interval scale with two of the remaining answers found on the middle point and only one answer located above the middle point of the scale. The majority of the medians, means and modes of the values of answers to each part of Question 5.2 provided by public sector stratum members are located below the middle point of the interval scale (seven of nine times) with the remaining benchmarks located on the middle point of the scale. Given the positions of the values of individual answers as well as the medians, means and modes of the values of such answers on the interval scale, it is reasonable to conclude that public sector stratum members, as a whole, regard the USAASA as being moderately 'not successful' in the performance of its mandate and four principal functions.

ICASA's representative holds the most favourable view of the USAASA's performance of its mandate among the public sector stratum (and the entire sample). However, the value of the answer (5 units) to Question 5.1 suggests a neutral view of such performance. ICASA's representative also holds a neutral view (5 units) of the USAASA's discharge of its advisory and administrative functions and a slightly positive view (6 units) of the USAASA's discharge of its enabling function. At the same time, ICASA's representative holds a negative view (3 units) of the USAASA's discharge of its monitoring function. As such, the medians, means and modes of the values of such answers to all four parts of Question 5.2 suggest a neutral to slightly negative perception of the USAASA's performance of its four key functions.

Comparison of the values of answers between public and private sector strata members suggests the presence of a continuum of generally negative to neutral views of the USAASA's performance of its mandate and four principal functions. Private sector stratum members hold severely negative to moderately negative views of such performance while public sector stratum members hold moderately negative to neutral views of such performance. Analyses of the distribution of the values of answers provided by sample members to Question 5.1 and the means of the values of answers provided by sample members to Question 5.2 by quartile support this conclusion. Table 7.16 illustrates these distribution patterns:

**Table 7.16**

**Distribution of the values of answers to Questions 5.1 and 5.2 by quartile**

| Question | First quartile | Second quartile | Third quartile | Fourth quartile |
|---|---|---|---|---|
| **5.1 (actual)** | ISPA (1)<br>Telkom (2) | Vodacom (4)<br>USAASA (4)<br>DOC (4)<br>ICASA (5) | | |
| **5.2 (mean)** | Telkom (1.3)<br>ISPA (2.5) | USAASA (3.3)<br>Vodacom (4)<br>DOC (4)<br>ICASA (4.8) | | |

Source: Analysis of data found in Table 7.13.

As these distribution patterns show, all sample members rate the USAASA's performance of its mandate and four principal functions in the first quartile or second quartile (based on the means of the values of answers to Question 5.2) of the interval scale. The values of individual answers to Question 5.2 are consistent with this phenomenon except for one answer provided by ICASA's representative to Question 5.2.1 which rates the USAASA's performance of its enabling function in the lower part of the third quartile of the scale.

Collectively, sample members appear to hold materially unfavourable views of the USAASA's performance of its mandate and four key functions. On an individual basis, the means of the values of answers provided by each sample member are located below the middle point of the interval scale. The medians and modes of the values of answers provided by five of six sample members are found below the middle point of the interval scale with the remaining benchmark found on the middle point of the scale. The mean of the values of answers to Question 5.1 (3.3 units) and the means of the values of answers to each part of Question 5.2 (2.7 to 3.7

units) are located well below the middle point of the interval scale. On an aggregated basis, the median (3.5 units) of the medians and the mean (3.3 units) of the means and the mode (4 units) of the modes of the values of all answers provided by all sample members to all parts of Question 5.2 are found below the middle point of the interval scale. As such, it is reasonable to conclude that the sample, as a whole, holds a materially unfavourable view of the USAASA's performance of its mandate and four principal functions.

Analyses of answers collected from sample members to the open-ended questions confirm analyses of answers collected from such members to the closed-ended questions. Comments from sample members generally confirm the presence of negative sentiment towards the USAASA's performance of its mandate and four principal functions. Among sample members, two of three public sector stratum members (representatives of the USAASA and the Department of Communications) are most forthcoming about the challenges that have confronted the USAASA in the discharge of its mandate and key programs.

According to the USAASA's representative, the institution's origins as a stop-gap political compromise orchestrated by the African National Congress to satisfy the competing interests of communications network operators and trade unions may have doomed the Agency to failure out of the gate. On the one hand, network operators received assurances that the amount of the USAF levy would be capped at a relatively low amount (Bate, 2014a, 7). On the other hand, trade unions received assurances that the realisation of universal service to communications services would represent a public policy priority in South Africa, with its own independent (albeit temporary) agency as its champion (Bate, 2014a, 7). They explain their position as follows:

> *. . . why did they* [the Government] *start a universal service agency? One must not look at the White Paper because the White Paper was a distillation of the Green Paper. One must look at the Green Paper and see whether the ANC was convinced by those that wanted a universal service agency because, whatever happened thereafter, it looked like they were just looking at five years and when the five years come up, we must lower this institution. That was the intention. . . . Look at the Green Paper and you will find a quid pro quo universal service agency. That's the most important thing. You see, it was never at the core of the RDP document to say that "we need to ensure that this is what we are going to do." So they said: "Okay, you get a universal service agency and then we will cap*."

> *So there was a contradiction just at conception and I think it was because they didn't really apply their mind to it. They used it more to be able to achieve the support of COSATU on some policy objectives they wanted* (Bate, 2014a, 7).

Having conceived the USAASA as a short term political solution not expected to age into a mature organisation, the Agency may have suffered from a lack of direction and guidance from its taskmaster. The USAASA's representative holds the Department of Communications accountable for such lacuna:

> *You can't start an organisation here before the proper strategic documentation to guide us. We think the Department of Communications should have given us direction. What was their idea of a universal service agency or the universal service fund? What do they plan? There is totally no policy paper that we can bring on the universal service agency from Government. . . . I don't think Government can sit down and say that there is a strategy document or a plan for this institution* (Bate, 2014a, 6).

Beyond a failure to provide direction and guidance, the USAASA's representative holds the Department of Communications responsible for exercising rigid administrative and fiscal controls over the Agency that choked its performance:

> *If we look at the type of mistakes that happened within this institution at that time, it said nothing about the USA but mostly about the DOC* [Department of Communications*] because under-dealing has an influence on its own staff members. I remember starting this institution and advertising posts every year saying we are looking for people who are able to capacitate it. Whenever we did advertise, it was the* [Department of Communication's] *advisors who were there which created a certain impression. I don't think it was their intention at that time, but it left an impression.*
>
> *But* [then] *they said "You know what, there is something that can be done to this institution. . . . If we get it working properly, it can do amazing things." And remember, also, at* [the beginning], *its life was limited to five years. So if you look at the funding in the initial years of the five years you will realise that there was no intention at all to have a universal service agency* (Bate, 2014a, 6-7).

Once the Government decided to retain the organisation, however, the USAASA's representative asserts that the Agency came under the complete control of the Department of Communications. As part of such control, they highlight the influence of the Director General of the Department of Communications who served as the USA's initial Chairperson:

> *The DOC* [Department of Communications] *had total control of the USA from 1997 until the amendment of the [*Telecommunications] *Act around 2000. Then the amended Act says "extend the USA again for five years and then all you must do is have a Board and, of course, increase the fund". Look what happens. They appoint the Board in 2003. It took a long time before they appointed the Board. Towards 2002 they appoint the DG* [Director General of the Department of Communications] *who is the chairperson of the whole thing* [the USA]. *Just normally it has never happened anywhere where they would take the stalwart and simply make him the chairperson. They will never take an employee that is a Director General to be a chairperson of what is supposed to be a standing governing body* (Bate, 2014a, 8).

The Department of Communications' representative acknowledges that '*there are not many of these agencies in the world'* (Bate, 2014c, 7) and that '*a lot of debate'* about whether '*maybe we should do this, maybe we should do that'* (Bate, 2014c, 7) occurred within ANC circles prior to the formation of the Agency:

> *We had very passionate discussions when establishing the USAASA. The task that we assigned the USAASA actually was a core task for any regulator in a developing country. But anyway, with discussions we were convinced that maybe it should be done separately* (Bate, 2014c, 7-8).

They concede that the USAASA suffered from a lack of direction:

> *I think the issue is clarity of strategy – what is it you want to achieve and then how do you narrow your program for particular people to do that kind of thing? So I think that sometimes you might find that there is something you want them to do and you think "Okay, maybe this is an Agency that can do this" but then the law does not allow them to. . . . I do believe you need a very clear vision of where you want to go to and start milestones and targets and time frames* (Bate, 2014c, 7-8).

The Department of Communications' representative disagrees, however, with claims that the Department exercises undue influence over the USAASA. Indeed, they claim that the Agency enjoys more independence than it acknowledges:

> *I actually think they have more independence than they think they do. If they feel they don't have it because we don't call them every time, and I frankly think if there had been more direction or leadership from the operators or the Board, they would have looked more independent because there is nothing we do to restrain them. The only thing we say to them is that: "Look, universal service is a policy objective of Government. The priorities of Government are poor areas, and so on. Go and do your job"* (Bate, 2014c, 8-9).

The opportunity to reposition the USAASA within ICASA or as a division within the Department of Communications does not appear to stir strong opinions among sample members. Vodacom's representative suggests that '*there is a structural problem, which is still debatable, about whether the Agency should be part of ICASA or should remain part of the Department* [of Communications]' (Bate, 2014f, 7). Telkom's representative proposes to '*make* [the USAASA] *a constitutional institution with independency. There is no way you can get away from that. Keep the policy makers away'* (Bate, 2014e, 7). The Department of Communications' representative, however, indicates that creating clarity of mission represents a more significant consideration than the precise position of the Agency in the regulatory environment of South Africa's communications market:

> *I don't have any strong views about whether it should be part of ICASA or it shouldn't. I just think you need clarity of task; coordination because they have to coordinate with Government as a regulator* (Bate, 2014c, 6).

In terms of specific functions, the lack of clarity and uncertainty of mandate raised by representatives of the USAASA and the Department of Communications surface in comments regarding the USAASA's discharge of its enabling function. In particular, the Department of Communications' representative notes that:

> *I think here is one place where you have a lot of things but perhaps not in a very coordinated manner, not with a very clear program and the impact of what they have done is not clearly visible. It's difficult to say there has been a big impact, but there hasn't because it is not something that you can very easily say "This is what has happened, and this is how it has impacted"* (Bate, 2014c, 7).

Vodacom's representative summarises popular sentiment among sample members when they note that:

> *. . . the Agency has been trying to implement policies and what they should have been doing is enabling policies. Without the necessary scale, they should be enabling. They have been focusing on implementing, but they just didn't have the capacity to implement* (Bate, 2014f, 5).

The USAASA's representative lays responsibility for the USAASA's historic lack of performance of its research function on the doorsteps of the Department of

Communications. They note that improvements to the Agency's performance of its research function are largely attributable to a shift in management tactics:

> *Research has done good work because of the number of documents that they have done. But you see, what is interesting is that, for the first time, I can say we did studies and we took those studies to the operators and the public.*
>
> *What they did* [before] *was make the study and give it to the Department and the Department just buried it. But you can see that, with the Director General controlling it like that. I mean he was advising himself in every other instance. The studies never went to the public* (Bate, 2014a, 8).

Overall, the range of answers obtained from sample members to the open-ended questions validates the answers collected from sample members to the closed-ended questions. Such comments confirm the presence of generally negative sentiments among sample members towards the USAASA's performance of its mandate and four principal functions. The understanding of the rationale for such sentiments gained through the interviews, particularly the nature of historic tensions between the USAASA and the Department of Communications, may help inform the creation of solutions to overcome such challenges as part of any new policies or programs designed to accelerate the realisation of universal service and access to communications services in South Africa.

### 7.3.6 The success of the Universal Service and Access Agency's four key universal service and access programs

Beyond the Universal Service and Access Agency's performance of its mandate and four principal functions, the interviews test the perceptions of sample members regarding the performance of the USAASA's four principal programs. Insights gained from such perceptions complement analyses of quantitative and qualitative data collected during secondary research. Such insights also add complexity to the understanding of universal service and access policies and programs examined in other parts of the interviews.

Table 7.17 extrapolates Question 6 (all four parts) from the questionnaire. It further extrapolates the values of answers provided by sample members to each part of

this question from the two-way array of answers to the closed-ended questions.[262] It includes a cross-sectional analysis of the medians, means and modes of the values of such answers by rows and columns:

**Table 7.17**

**Views of sample members of the performance of the Universal Service and Access Agency's four principal programs**

| **Questions** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **6.1** | Rate the success of the telecentre program? | | | | | | | |
| **6.2** | Rate the success of the multi-purpose community centres? | | | | | | | |
| **6.3** | Rate the success of the cyberlab program? | | | | | | | |
| **6.4** | Rate the success of the public information terminal program? | | | | | | | |
| **Answers (raw scores)** | | | | | | | | |
| **6** | **ISPA** | **Vodacom** | **Telkom** | **ICASA** | **USAASA** | **DOC** | **Mean** | **Mode** |
| **6.1** | 1 | 3 | 2 | 6 | 5 | 4 | **4.4** | **na** |
| **6.2** | 2 | 4 | 4 | 5.5 | 5 | 6 | **4** | **4** |
| **6.3** | 2 | 2 | 4 | 5 | 5 | 6 | **4** | **2 and 5** |
| **6.4** | 4.5 | 4 | 2 | 4 | 5 | 3 | **3.8** | **4** |
| **Median** | **2** | **3.5** | **3** | **5.25** | **5** | **5** | **4.25** | **5** |
| **Mean** | **2.4** | **3.25** | **3** | **5.13** | **5** | **4.75** | **3.92** | **na** |
| **Mode** | **2** | **4** | **2 and 4** | **na** | **5** | **6** | **4** | **2 and 4** |

Source: Extracted from Appendices 1 and 2.

As Table 7.17 shows, the median (4.25 units) of the medians of the values of all answers provided by each sample member to each part of Question 6 closely correlates with the mean (3.92 units) of the means of such values. The marginal distance (0.6 units) between the means of the values of answers provided by sample members to each question (ranging from 3.8 to 4.4 units) suggests that significant and consistent relationships exist between and within the values of answers provided by sample members to each part of Question 6.

Relationships between the values of answers provided by sample members to each part of Question 6 are further examined using the median polish technique. Table 7.18 shows the additive model of residual values, with a main effect, row and column effects, for the values of answers provided by each sample member for each key program canvassed on an individual basis as part of Question 6:

---

[262] Supra, note 247.

**Table 7.18**

**Analysis of the residual values of answers to Question 6 using the median polish technique**

| | Residual values | | | Residual values | | | |
|---|---|---|---|---|---|---|---|
| Program | ISPA | Vodacom | Telkom | ICASA | USAASA | DOC | Row effects |
| **Telecentres** | -0.063 | 0.063 | -0.438 | 1.750 | 0.563 | -0.438 | -0.563 |
| **MPCCs** | -0.188 | -0.063 | 0.438 | 0.125 | -0.563 | 0.438 | 0.563 |
| **Cyberlabs** | 0.063 | -1.813 | 0.688 | -0.125 | -0.313 | 0.688 | 0.313 |
| **PITs** | 3.188 | 0.813 | -0.688 | -0.500 | 0.313 | -1.688 | -0.313 |
| Column effects | -2.563 | -0.688 | -1.188 | 0.625 | 0.813 | 0.813 | 4.188 |
| | | | | | | | Main effect |

Source: Analysis of data found in Table 7.17.

The overall main effect (4.188 units) provides a good central value (similar to a mean) of all scores. Analysis of row effects shows that all other residual values are generally clustered around this main effect (within 1 unit). Taken together, such a distribution pattern suggests that the values of all answers to all parts of Question 6 are measured on the same interval scale with no excessive effect in relation to any answer to any question.

The likely presence of a consistent relationship between the answers provided by sample members to each part of Question 6 is tested by analysis of the ranges of the values of such answers. The distribution of answers provided by sample members to each part of Question 6 by strata is summarised in Table 7.19:

**Table 7.19**

**Analysis of the range of answers provided by sample members to Question 6**

| ISPA | Vodacom | Telkom | ICASA | USAASA | DOC |
|---|---|---|---|---|---|
| Maximum = 4.5 | | | | Maximum = 6 | |
| Minimum = 1 | | Both maximum and minimum values were larger for the public sector stratum | | Minimum = 3 | |
| Range = 3.5 | | | | Range = 3 | |

Source: Analysis of data found in Table 7.17.

As highlighted by Table 7.19, the moderate distances of the respective ranges (3 to 3.5 units) of the values of answers provided by public and private sector strata members to each part of Question 6 suggest that a significant correlation and

consistency exists between the values of such answers. At the same time, the larger values of the maximum and minimum values of answers provided by public sector stratum members relative to the values of answers provided by private sector stratum members suggest that the public sector strata retains more favourable views of the performance of each USAASA program relative to views on such performance held by the private sector strata.

Answers provided by private sector stratum members demonstrate a degree of homogeneity within the lower end of the interval scale but a degree of heterogeneity between answers. Each private sector stratum member provides the same answer to two of four parts of Question 6. Telkom's representative also provides the same answer to two other parts of Question 6. ISPA's representative provides two different answers on opposite sides of the median, mean and mode of the values of their answers. Vodacom's representative provides two different answers with values below the median, mean and mode of the value of their answers. A modest but material distance (2 units) separates the values of the highest and lowest answers of private sector stratum members from the mean of the values of their answers. The location of the values of such answers below the middle point of the interval scale suggest that private sector stratum members hold negative views of the success of each USAASA program. At the same time, the distribution of values suggests that private sector stratum members regard some USAASA programs as more successful than other Agency programs.

The Telecentre Program receives the lowest average set of marks among private sector stratum members. The MPCC Program receives the second lowest average set of marks while the Cyberlab Program and the PIT Program receive the third and fourth lowest set of marks, respectively, among such members. The Telecentre Program is rated as the least successful USAASA program by representatives of ISPA and Telkom (jointly with the PIT Program). Vodacom's representative regards the Cyberlab Program as the least successful USAASA program while Telkom's representative regards this Program as the most successful of the relatively unsuccessful USAASA programs. Compared to other USAASA programs, two of three private sector stratum members (representatives of ISPA and Vodacom) regard the PIT Program as the most successful of the relatively unsuccessful USAASA programs.

A reasonable spread exists between the values of answers provided by individual private sector stratum members regarding the success of the four USAASA programs. A material distance (3.5 units) exists between the lowest value (1 unit) and highest value (4.5 units) of answers provided by ISPA's representative which shows, in this instance, that the PIT Program's success is perceived to be materially better than the success of the three other USAASA programs. Similarly, a material distance (2 units) exists between the lowest value (2 units) and highest value (4 units) of answers provided by representatives of Vodacom and Telkom. The distance shows that Telkom's representative regards the success of the MPCC Program and Cyberlab Program as materially better than the success of the Telecentre Program and PIT Program. The distance also shows that Vodacom's representative perceives the success of the MPCC Program and PIT Program as materially better than the Cyberlab Program and marginally better than the Telecentre Program.

Although some differences of opinions exist between private sector stratum members regarding the absolute success and relative success of each USAASA program, the distribution of the values of answers provided by such members indicates that each member holds a negative view of the success of each USAASA program. Each of the 12 answers to Question 6 provided by private sector stratum members is located below the middle point of the interval scale. Based on the medians, means and modes of the values of answers provided by these members, ISPA's representative holds very negative views of the success of the four principal USAASA programs. Telkom's representative holds severely negative views and Vodacom's representative moderately negative views of such success. Given these conditions, it is reasonable to conclude that private sector stratum members regard the four principal USAASA programs as being 'not successful' in the discharge of their mandate or responsibilities.

Answers provided by public sector stratum members to Question 6 generally demonstrate a substantial degree of homogeneity. The USAASA's representative provides the same answer for each part of Question 6 which results in an exact correlation of the values of answers and the median, mean and mode of the values of such answers. A material distance (2 units) exists between the lowest and highest values of answers provided by ICASA's representative but such answers closely approximate the median and mean of the values of such answers without any outliers. The Department of Communications' representative provides the same

answers to two of four parts of Question 6 with two different answers on opposite sides of the median, mean and mode of the values of such answers. A material distance (3 units) exists between the lowest and highest values of such answers as well as the lowest value of answers and the median and mean of the values of answers. A modest but material distance (2 units) separates the values of the highest and lowest answers from the mean of the values of all answers provided by public sector stratum members to each part of Question 6.

The values of answers provided by public sector stratum members to Question 6 suggest that such members generally hold neutral views of the collective success of the USAASA's four principal programs. Five of 12 answers provided by public sector stratum members are found on the middle point (5 units) of the interval scale with six answers located within one unit of this middle point. Only one of 12 answers exceeds this clustering of the values of such answers at the middle point of the scale. Furthermore, the ranges of the medians (5 to 5.25 units) and the means (4.75 to 5.13 units) of the values of answers provided by each public sector stratum member to each part of Question 6 are essentially located on the middle point of the interval scale. These distribution patterns confirm that public sector stratum members, as a whole, generally hold a neutral view of the success of each USAASA program. At the same time, the ranges of values within these distribution patterns suggest that individual public sector stratum members hold different views regarding the success of specific USAASA programs.

The PIT Program receives the lowest average set of marks among public sector stratum members. The Telecentre Program receives the second lowest average set of marks while the Cyberlab Program and the MPCC Program receive the third and fourth lowest set of marks, respectively, among such members. Perceptions of the PIT Program's poor performance are consistent among public sector stratum members. ICASA's representative rates the Telecentre Program's performance much higher than the representatives of the Department of Communications and the USAASA. The relative rankings of the performances of the Cyberlab Program and MPCC Program are consistent across public sector stratum members.

As with the values of answers provided by individual private sector stratum members, a reasonable spread exists between the values of answers provided by individual public sector stratum members regarding the success of the four USAASA programs. A material distance (3 units) exists between the lowest value

(3 units) and highest value (6 units) of answers provided by the Department of Communications' representative which shows, in this instance, that the success of the Cyberlab Program and the MPCC Program is perceived by them to be materially better than the PIT Program's success. Similarly, a material distance (2 units) exists between the lowest value (4 units) and highest value (6 units) of answers provided by ICASA's representative which shows, in this instance, that the Telecentre Program's success is perceived by them to be materially better than the PIT Program's success. The USAASA's representative provides the same values for all four answers to Question 6 which suggests the perception of a parity of success by each USAASA program.

Some differences exist between the perceptions of public sector members regarding the absolute success and relative success of each USAASA program. ICASA's representative holds a marginally positive view of the success of two programs and a neutral view and negative view of the success of two other programs. The Department of Communications' representative holds a marginally positive view of the success of two USAASA programs and a marginally negative and negative view of the success of two other programs. The USAASA's representative holds a neutral view of the success of each USAASA program. Accepting that perceptions of the performance of each USAASA program vary by and between each member, the distribution of the values of answers by individual public sector stratum members and the medians and means of the values of such answers generally suggest that these members hold a neutral to marginally positive view of the success of the four principal USAASA programs.

Such conclusions are supported by analyses of the distribution pattern of the means of the values of answers provided by sample members to Question 6 by quartile. Table 7.20 illustrates this distribution pattern:

**Table 7.20**

**Distribution of the values of answers to Question 6 by quartile**

| Question | First quartile | Second quartile | Third quartile | Fourth quartile |
|---|---|---|---|---|
| **6.1 through 6.4 (mean)** | ISPA (2.4) | Telkom (3)<br>Vodacom (3.25)<br>DOC (4.75)<br>USAASA (5) | ICASA (5.13) | |

Source: Analysis of data found in Table 7.17.

As this distribution pattern shows, four of six sample members rate the success of the USAASA's four principal programs in the second quartile of the interval scale. One private sector stratum member rates such success in the first quartile and one public sector stratum member narrowly rates such success in the third quartile of the scale. The values of all answers provided by individual members are located within these quartiles. The majority (14 of 24) of such answers are located in the second quartile of the scale. Representatives of the Department of Communications and ICASA are responsible for four answers located in the third quartile of the interval scale while six answers are located in the first quartile of the scale.

Comparison of the values of answers between public and private sector strata suggests the presence of a continuum of negative to neutral to marginally positive views of the success of the USAASA's four principal programs among sample members. The values of answers provided by private sector stratum members range from severely negative to negative (1 to 4 units) while the values of answers provided by public sector stratum members range from moderately negative to moderately positive (3 to 6 units). Along with the distribution of the medians and means of the values of such answers, these ranges suggest that private sector stratum members generally hold negative views of the success of the USAASA's four principal programs while public sector stratum members generally hold neutral to marginally positive views of such success.

Collectively, the sample holds negative perceptions of the success of each USAASA program. The entire range (3.8 to 4.4 units) of the means of the values of individual answers provided by sample members to each question about specific USAASA programs is found below the middle point of the interval scale. The median (4.25 units) of the medians and the mean (3.92 units) of the means of the values of answers provided by each member to every part of Question 6 are located below the middle point of the scale. While it is important to acknowledge differences of opinion between individual members and between public and private sector strata, it is also important to acknowledge that the sample, as a whole, generally holds a moderately negative perception of the success of each USAASA program. This conclusion is consistent with earlier analyses of the values of answers provided by sample members on an individual, strata and aggregated basis.

Analyses of answers collected from sample members to the open-ended questions generally validate conclusions reached through analyses of answers provided by sample members to the closed-ended questions. Furthermore, analyses of such data generally reinforce conclusions reached through consideration of qualitative and quantitative data collected during secondary research.[263] Such analyses also confirm that sample members generally hold negative views of the success of each USAASA program, with nuances of opinions among sample members in respect of the success of specific programs.

The Telecentre Program receives mixed reviews by sample members. Telkom's representative admits that telecentres '*have done something'* but laments poor execution: '[t]*hey hit problems with maintenance and working properly. The people that operate them are not properly trained, and that does not help'* (Bate, 2014e, 8). Vodacom's representative highlights a lack of institutional accountability: [t]*he problem is that the telecentres have gone out in areas where it is basically poor and we don't have the ability to measure what they have done, what impact they have had'* (Bate, 2014f, 6). The Department of Communications' representative suggests that '*the challenges of the telecentres were accessibility'* (Bate, 2014c, 9).

Despite empirical evidence to the contrary, the USAASA's representative suggests that '*most of them* [the telecentres] *did marvelous work'* and '*added value'* based on the impact of telecentre operations in rural areas:

> *So don't judge it on the urban areas. But if you judge it on the rural areas, having to get these things* [a desktop, a computer, a fax machine], *especially like a fax machine, that was one of the revolutionary things for the people in the rural areas. Because people, for the first time, were able now to get access to data because, at the time, post offices were making use of a telegram. Now they can be able to take a letter and fax it to the rural areas. People can read it and fax it back and then collect it from there. So it did have a positive impact in rural areas* (Bate, 2014a, 10).

The USAASA's representative lays responsibility for the Telecentre Program's failure largely at Telkom's doorstep, suggesting that:

---

[263] Supra, section 5.3.

> *. . . if we look at the problems, it's always the cost of telephones. They set themselves up, and the Universal Service Agency will give what it gives them, but then the connection between themselves and Telkom – they cannot make any money* (Bate, 2014a, 10).

Yet the USAASA's representative also seems to agree with critics that suggest that the Agency exceeded its mandate by undertaking the Telecentre Program:[264]

> *. . . it's still questionable that, when Government said to the Universal Service Agency that what* [the USA] *must do is increase teledensity, that it meant* [for the USA] *to roll out telecentres. What* [the USA] *did on its own was set up those telecentres. I think Government wanted* [the USA] *to go and put up public phones. But basically what* [the USA] *did was put up those centres* (Bate, 2014a, 10).

Such comments validate information gathered during secondary research and the conclusions drawn therefrom in earlier chapters of this study. Such comments also communicate a generally negative view of the Telecentre Program consistent with the values of answers collected from members to the closed-ended questions.

The MPCC Program and Cyberlab Program are generally perceived more positively by sample members than the Telecentre Program. Vodacom's representative suggests that higher public interest in MPCC facilities may be driven by better human resources and the availability of a greater suite of Government services from integrated centres (Bate, 2014f, 6). The Department of Communications' representative suggests that a user-friendly environment may account for some of the success of the Cyberlab Program: '[p]*erhaps it has something to do with the fact that they are in schools as so on. It's a much friendlier environment'* (Bate, 2014c, 9). Telkom's representative commends the planning invested by the Government in the MPCC process, noting that '*there is a bit of coordination and alignment; there's a bit of thinking around how can we all work together. So that it's a little bit thought through'* (Bate, 2014e, 8-9).

Yet both programs also earn considerable criticism from sample members. Vodacom's representative laments '*the problem of ownership'* within the MPCC Program (Bate, 2014f, 6). The ICASA and ISPA representatives share common concerns over the transparency of the Cyberlab Program, with the former suggesting that '[t]*he main problem is that we don't really understand what benefit*

---

[264] Supra, section 5.3.2.1.1.1.

*people get from that program'* (Bate, 2014d, 10) and the latter saying that *'. . . we are not seeing the results. Maybe they are doing stuff but, if they are, they are not communicating it to us'* (Bate, 2014b, 10). As such, sample members generally regard the MPCC Program and Cyberlab Program as more effective initiatives than the Telecentre Program but continue to express significant reservations about the methodology, transparency and impact of such programs.

The Public Information Terminal Program retains mixed support among sample members. Although Telkom's representative suggests that the program '*is a brilliant idea'*, they express serious concerns with program design:

> *. . . if you look at the people that go to post offices, will they really need a PIT given the office hours of the post office? Logic depicts that the post office would be the easiest place for a normal average person to go to and utilise this thing, but I question really how many people utilise them. The distribution chain makes sense, but is it effective? I don't think so* (Bate, 2014e, 8).

Vodacom's representative expresses dissatisfaction with the cost of and distribution channel associated with the PIT Program:

> *I don't like this program. Number 1, it uses an expensive box that cost about R 90,000 for each box whereas all the PIT has is a computer and a printer with Internet access. It is basically a high quality computer. Number 2, it was also positioned badly. It was supposed to be in the post offices, and the post offices are supposed to be in the most accessible buildings in the country, but there was also no ownership. The post office was not going to take ownership of that. Now, who is going to take ownership? That's the major problem. It probably could have been a success operating on the Internet with a room that is more like cyberlab* (Bate, 2014f, 6-7).

The Department of Communications' representative agrees with most of these concerns, noting that the absence of a program champion is one of the critical factors contributing to the PIT Program's lack of success:

> *It's a little unfair on the Post Office because it's not their job to make sure those things are working. They just have to make sure they are accessible to the public and I think we* [the Department of Communications] *should have provided dedicated personnel to support these terminals because when you put such equipment in a post office, it is additional work to the already over-stretched staff that is there* (Bate, 2014c, 9-10).

ISPA's representative says that the PIT Program is '*a nice principle'* and *'a useful program'* but raises questions over the legality of the access regime:

> *. . . there is actually a public information terminal inside the Minister of Communication's office and right now we are looking at this and the Access to Information Act and its impact on service providers.*
>
> *One of the impacts on the service providers is that anyone using an Internet connection, at the end of the day, before you can use it, you must have a copy of the person's ID so if they have committed fraud you can trace back to who the actual person was using the terminal. But you can use a public information terminal provided by this process without giving any ID which is in contravention of this legislation* (Bate, 2014b, 10).

As such, a general consensus appears to exist among sample members about the desirability of public policies that promote access to the Internet and information through the Internet at convenient locations in South Africa. However, sample members also appear to retain significant concerns regarding the design, distribution channel, costs, implementation and efficacy of the PIT Program. As the Department of Communications' representative concludes, '[a]*t the end of the day, I think we could do much better with moderate resources to meet the challenges we face'* (Bate, 2014c, 9).

Overall, feedback obtained from sample members during the interviews generally suggests that most members appreciate the policy objectives underlying the USAASA's four principal programs. Feedback further suggests that most members identify flawed design and poor implementation practices as the principal reasons for the diminished performance of such policies and programs. These comments are consistent with values of answers provided by sample members to the closed-ended questions and correlate well with analyses of qualitative and quantitative data collected during secondary research.[265]

### 7.3.7 The success of the under serviced area license program

Beyond the four principal programs discussed in the previous section, the USAASA also played a central role in the creation and implementation of the under serviced area license program. As such, the interviews explore the perceptions of sample

---

[265] Supra, section 5.3.2.

members regarding the success of this Program. Data collected during such interviews may be compared to data collected during secondary research to facilitate a deep, rich and complex understanding of the performance of this Program and its contribution (or lack thereof) to the realisation of universal service and access to communications services in South Africa.

Table 7.21 extrapolates Question 7 from the questionnaire. It further extrapolates the values of answers provided by sample members to this question from the two-way array of answers to the closed-ended questions.[266] It includes a cross-sectional analysis of the means and modes of the values of such answers by row:

**Table 7.21**
**Views of sample members of the success of the under serviced area license program**

| **Question** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **7.1** | Rate the success of the under serviced area license program? | | | | | | | |
| **Answers (raw scores)** | | | | | | | | |
| **7** | **ISPA** | **Vodacom** | **Telkom** | **ICASA** | **USAASA** | **DOC** | **Mean** | **Mode** |
| **7.1** | 1 | 3 | 1 | 5 | 3 | 5 | **3** | **1 and 5** |

Source: Extracted from Appendices 1 and 2.

As Table 7.21 shows, a material distance (4 units) separates the values of answers provided by sample members to Question 7. This spread in the range of the values of such answers suggests a reasonable degree of heterogeneity among the opinions of sample members regarding the USAL Program's performance. However, the presence of only three sets of values (1, 3 and 5 units) for the answers provided by sample members to Question 7 suggests that a consensus of opinion exists among pairs of sample members at different points along the interval scale.

Relationships between the values of answers provided by sample members to Question 7 are examined using the median polish technique. Table 7.18 shows the additive model of residual values, with a row effect, for the values of answers provided by each sample member in reply to Question 7:

---

[266] Supra, note 247.

**Table 7.22**

**Analysis of the residual values of answers to Question 7 using the median polish technique**

| | Residual values | | | Residual values | | | |
|---|---|---|---|---|---|---|---|
| Program | ISPA | Vodacom | Telkom | ICASA | USAASA | DOC | Row effect |
| **USAL program** | -0.5625 | 0.0313 | -0.6875 | 0.1563 | 0.1875 | 0.0313 | -1.313 |

Source: Analysis of data found in Table 7.21.

Based on comparison of the values of answers provided by sample members to other questions,[267] sample members give the USAL Program's performance the lowest marks relative to every other policy, program and actor benchmarked as part of the interviews. As shown in the row effect, the values of answers provided by sample members to Question 7 are, on average, 1.3 units lower in value relative to the values of answers given by sample members in response to other questions.

Based on the values of answers provided by sample members to Question 7, private sector stratum members hold unfavourable views of the USAL Program's success. The values of answers provided by two of three private sector stratum members (representatives of ISPA and Telkom) are located at the lowest extreme of the interval scale while the value of the answer provided by Vodacom's representative is positioned well below the middle point of the scale. A modest but material distance (2 units) separates the values of answers provided by these members. Given these values and the distribution of such values on the interval scale, it is reasonable to conclude that private sector stratum members view the USAL Program as a 'highly unsuccessful' public sector initiative.

Public sector stratum members appear to have materially higher opinions of the USAL Program's success relative to opinions of such success held by their private sector stratum counterparts. The values of answers provided by two of three private sector stratum members (representatives of ICASA and the Department of Communications) are located on the middle point of the interval scale. The value of the answer provided by the USAASA's representative is found well below the middle point of the scale. A modest but material distance (2 units) separates the values of answers provided by these members. Given the values and distribution of such answers on the interval scale, it is reasonable to conclude that public sector stratum members view the USAL Program as a marginally unsuccessful to successful public sector initiative.

---

[267] Infra, section 7.3.9.

Such conclusions are supported by analysis of the distribution pattern of the values of answers provided by sample members to Question 7 by quartile. Table 7.23 illustrates this distribution pattern:

**Table 7.23**
**Distribution of the values of answers to Question 7 by quartile**

| Question | First quartile | Second quartile | Third quartile | Fourth quartile |
|---|---|---|---|---|
| **7.1 (actual)** | ISPA (1)<br>Telkom (1) | Vodacom (3)<br>USAASA (3)<br>ICASA (5)<br>DOC (5) | | |

Source: Analysis of data found in Table 7.21.

As this distribution pattern shows, the values of answers provided by four of six sample members are located in the second quartile of the interval scale with the values of answers provided by two sample members found in the first quartile of the scale. The values of answers provided by all public sector stratum members are found in the second quartile while the values of answers provided by two of three public sector stratum members are found in the first quartile of the scale. The values of four of six answers provided by sample members to Question 7 are located below the middle point of the interval scale with two answers found on the middle point of the scale. The mean (3 units) of such values is situated well below the middle point of the scale. As a whole, the sample therefore appears to hold a materially negative view of the USAL Program's success.

Comparison of the values of answers provided by individual sample members suggests the presence of a continuum of negative to neutral views of the USAL Program's success extending from the private sector stratum into the public sector stratum. The range of the values of answers (1 to 3 units) provided by private sector stratum members suggests the presence of severely negative to negative views of the USAL Program's success among these members. The range of the values of answers (3 to 5 units) provided by public sector stratum members suggests the presence of moderately negative to neutral views of such success among these members. While no sample member holds a positive view of the USAL Program's success, the ranges of the values of answers provided by such members suggest that private sector stratum members generally hold less favourable views of the USAL Program's success relative to the views of such success held by their public sector stratum counterparts.

Analyses of answers collected from sample members to the open-ended questions generally validate conclusions reached through analyses of answers collected from sample members to the closed-ended questions. Furthermore, analyses of such data generally reinforce conclusions reached through consideration of qualitative and quantitative data collected during secondary research.[268] Many sample members highlight significant problems with the USAL Program's performance. At the same time, several members express support for the underlying policy objectives driving the USAL Program.

The Department of Communications' representative acknowledges challenges that diminished the USAL Program's success but prefers to focus on isolated achievements. They say that the USAL Program:

> *. . .* [was] *an incredibly difficult thing to do. They* [the USAASA] *are expected to run a business in a place that has no market, according to companies, and that is why we have them and, again, not too many experiences to look at in terms of following the development to South Africa. You do have places that have that but economies there are much bigger and so on. So I think that it has been managed well to mobilise it. They are passionate but some of them are doing quite well and some are not doing so well. I think here, much more than the USAASA, it's much more the individuals concerned* (Bate, 2014c, 10).

ICASA's representative feels that the breakdown in the implementation of the USAL Program is attributable to poor program design:

> *. . . the implementation is where we failed. From our side the policy was not implemented effectively. We could have done more in order to gain some benefit but it was the only model we could deploy* (Bate, 2014d, 10).

Vodacom's representative highlights the inability of public sector policy making structures to adapt and respond to fluid market dynamics, noting that '*a major problem to date is the inability to advise policy in a timely manner and redirect sociological succession models. Operators are doing a good job, on the other hand, in responding to market needs'* (Bate, 2014f, 7). Yet Vodacom's representative rejects ICASA's excuse that it 'played the hand it was dealt' and suggests that the regulatory authority should share some of the blame with the USAASA for the USAL Program's deficiencies:

---

[268] Supra, section 5.3.4.

> *What was not taken into consideration was the mobile coverage in most areas. This was not effective, as number 1. But number 2, they were advertising the whole programme to say "if these people cannot roll out infrastructure, what then should be approved?" The regulator* [ICASA] *must know better than to have the USALs build infrastructure and compete against the mobile operators and, especially, community service telephones that were charging R 6c interconnection. How do you compete with that? Who wants to have the same interconnect rate and have a different number?* (Bate, 2014f, 7).

Telkom's representative raises similar concerns over the viability of USAL territories:

> *Let's say Telkom is 50% proficient with lack of constraints and the network. If they had said "these areas are just non-starters", why would you give a license to Mama Martha from Mabulaka, who is a business woman selling tomatoes at the corner of the street, in an area where Telkom says "I won't go, there's no money, there's no need. Nobody needs my services here and, even if there may be a few people that need my services, they cannot afford it"? So you take Mama Martha who is selling tomatoes and you say you are promoting BEE or SME, that cannot be true* (Bate, 2014e, 9).

Telkom's representative indicates that the use of a pilot program should have been considered by the USAASA prior to the roll out of the USAL Program on a national basis:

> [I]*t could have been done better, I mean licensing people. You could have found three medium to big businesses and said "we will fund you to come and show us a thing or two". Find astute business people, at least get this model to a 10 before you can franchise it to Mama Martha and anybody else, that guy with the big tummy that used to run taxis. . . . Before you go and embarrass and ridicule those poor people. The thing could have worked. Or just give it a decent try. You can't just take Joe Soap* (Bate, 2014e, 10-11).

ISPA's representative highlights the USAASA's lack of institutional capacity to implement the USAL Program, indicating that '*there is not good enough control to ensure the roll out occurs in terms of what is expected'* (Bate, 2014b, 11). Despite such concerns, they note that '[s]*tructurally, the way that it has been bulked – grabbing specific areas and then assigning an area to universal service – is nice to see* (Bate, 2014b, 11). Indeed, the concept of bulking under serviced areas into viable territories is a well-worn practice in many universal service and access

programs internationally[269] and may warrant further consideration as part of any new policies or programs designed by the Government of South Africa to facilitate the delivery of communications services to under serviced and unserviced areas.

Overall, comments provided by sample members during the interviews generally suggest that most members appreciate the objectives underlying the USAL Program but retain significant concerns with the design and implementation of the USAL Program. As with their reservations about the design and implementation of the USAASA's four principal programs,[270] sample members generally fault key public sector actors (the USAASA and ICASA) for their failure to properly design and facilitate the implementation of the USAL Program in an efficient and effective manner. These comments are consistent with the values of answers provided by sample members to the closed-ended questions and correlate well with analyses of qualitative and quantitative data collected during secondary research.[271]

### 7.3.8 The success of the Minister of Communications and the Independent Communications Authority of South Africa in discharging their universal service and access responsibilities

As the values of answers provided by sample members to closed-ended questions and feedback obtained from sample members to open-ended questions raised during interviews show, many of the concerns raised by such members with the performance of the Government of South Africa's universal service and access policies and programs focus on the failure of key public sector actors to effectively design and implement such programs despite their best intentions. In addition to consideration of the USAASA's performance of its mandate, functions and programs,[272] the interviews therefore consider the perceptions of sample members regarding two other key public sector stakeholders, namely the Minister of Communications and ICASA.

---

269 Supra, section 2.4.
270 Supra, section 7.3.6
271 Supra, section 5.3.4.
272 Supra, sections 7.3.5, 7.3.6 and 7.3.7.

Table 7.24 extrapolates Questions 8.1 and 8.2 from the questionnaire. It further extrapolates the values of answers provided by sample members to these questions from the two-way array of answers to closed-ended questions.[273] It includes a cross-sectional analysis of the medians, means and modes of the values of such answers by rows and columns:

**Table 7.24**

**Views of sample members of the success of the Minister of Communications and the Independent Communications Authority of South Africa in discharging their universal service and access responsibilities**

| **Questions** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **8.1** | Rate the success of the Minister of Communications in crafting universal service policy? | | | | | | | |
| **8.2** | Rate the success of ICASA in implementing its mandate? | | | | | | | |
| **Answers (raw scores)** | | | | | | | | |
| **8** | **ISPA** | **Vodacom** | **Telkom** | **ICASA** | **USAASA** | **DOC** | **Mean** | **Mode** |
| **8.1** | 3.5 | 4 | 4 | 7 | 4 | 6 | **4.75** | **4** |
| **8.2** | 2.5 | 4 | 4 | 7 | 4 | 6 | **4.58** | **4** |
| **Median** | **3** | **4** | **4** | **7** | **4** | **6** | **4.7** | **4** |
| **Mean** | **3** | **4** | **4** | **7** | **4** | **6** | **4.7** | **4** |
| **Mode** | **na** | **4** | **4** | **7** | **4** | **6** | **4** | **4** |

Source: Extracted from Appendices 1 and 2.

Table 7.24 shows that remarkable homogeneity exists in the values of answers provided to both parts of Question 8 by individual sample members but significant heterogeneity generally exists in the values of answers between members of the private and public sector strata. Five of six sample members provide the identical answers to each question. Although ISPA's representative provides a different answer to each part of Question 8, a minimal distance (1 unit) exists between the values of their answers.

Analyses of the medians, means and modes of the values of answers provided by sample members to Question 8 support several *a posteriori* conclusions. With respect to individual members, the distance (nil) between the medians and means of the values of answers provided by each member and the distance (nil) between the medians, means and modes of the values of answers provided by five of six sample members to Questions 8.1 and 8.2 suggest the absence of outliers in the distribution of the values of such answers. With respect to the sample, the negligible

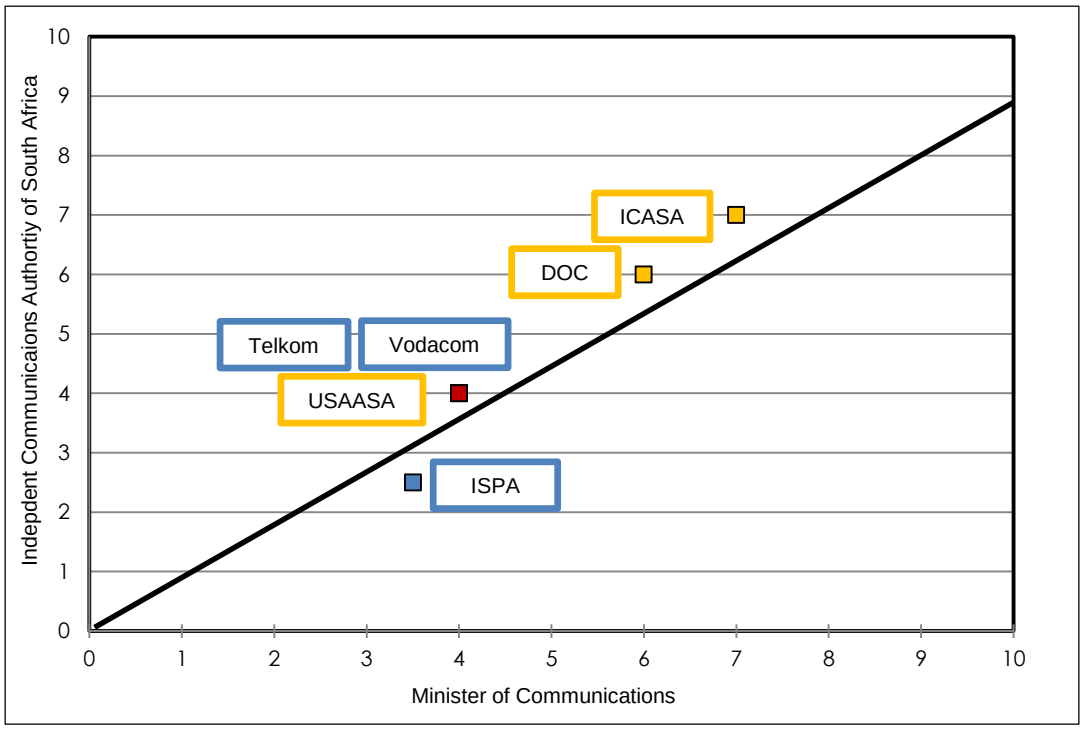
[273] Supra, note 247.

distance between the means (4.58 and 4.75 units) and the identical modes (4 units) of the values of answers to each question suggest that a strong relationship exists between such answers. The identical median (4.7 units) of the medians and mean (4.7 units) of the means of the values of such answers support such conclusions. The identical modes (4 units) of the values of answers to each question as well as the alignment of the mode (4 units) of the modes of the values of all answers provided by all sample members to both questions support such conclusions.

Private sector stratum members provide the lowest scores among the sample in their evaluation of the success of the Minister of Communications and ICASA in discharging their respective responsibilities. The USAASA's representative also provides a low score comparable to the values of scores provided by private sector stratum members. Representatives of the Department of Communications and ICASA provide the second highest and highest scores among sample members, respectively, which are within the third quartile of the interval scale.

The spread of opinions held by sample members regarding the performance of the Minister of Communications and ICASA in the implementation of their respective responsibilities is illustrated through a multivariate graphical display (Figure 7.3) which includes a line of equality:

**Figure 7.3**
**Distribution of the values of answers to Questions 8.1 and 8.2**




Source: Analysis of data found in Table 7.24.

The distribution patterns of the values of all answers provided by all sample members to Question 8 by quartile are summarised in Table 7.25:

**Table 7.25**
**Distribution of the values of answers to Questions 8.1 and 8.2 by quartile**

| Question | First quartile | Second quartile | Third quartile | Fourth quartile |
|---|---|---|---|---|
| **8.1 (actual)** | | ISPA (3.5)<br>Vodacom (4)<br>Telkom (4)<br>USAASA (4) | DOC (6)<br>ICASA (7) | |
| **8.2 (actual)** | ISPA (2.5) | Vodacom (4)<br>Telkom (4)<br>USAASA (4) | DOC (6)<br>ICASA (7) | |

Source: Analysis of data found in Table 7.24.

As these distribution patterns show, the values of answers provided by four of six sample members to Question 8.1 (the Minister of Communications' success in crafting universal service policy) are located in the second quartile of the interval scale. The values of answers provided by two sample members (public sector stratum) to this question are found in the third quartile of the scale. The values of answers provided by three of six sample members to Question 8.2 (ICASA's success in implementing its mandate) are located in the second quartile of the interval scale. The values of answers provided by two sample members (public sector stratum) to this question are located in the third quartile of the scale. The value of the answer to this question provided by one member (private sector stratum) is found in the first quartile of the interval scale.

The nature of the raw scores, multivariate graphical display analysis and interpretation of the values of answers provided by sample members to both parts of Question 8 by quartile show that private sector stratum members hold unfavourable views of the success of the Minister of Communications and ICASA in the discharge of their respective responsibilities. While one public sector stratum member (the USAASA representative) holds similar views, the other two public sector stratum members hold materially higher and consequently more favourable views of such performance. Perhaps historic conflicts between the USAASA, the Department of Communications and ICASA[274] contribute towards the USAASA representative's dim view of the performance of universal service and access responsibilities by these two other public sector actors.

[274] Supra section 5.4.

The homogeneity of the values of the answers provided by individual sample members to both parts of Question 8 invites consideration. Five of six sample members rank the Minister of Communications and ICASA equally in the discharge of their respective responsibilities. Given the sector knowledge of individual sample members and the nature of each question, it is highly unlikely that sample members regard the Minister of Communications and ICASA to discharge the same responsibilities in South Africa's communications market.[275] As such, it is more likely that sample members simply perceive the Minister of Communications and ICASA to have discharged their disparate responsibilities to a similar standard of success.

The means (4.58 and 4.75 units) and modes (4 units) of the values of answers provided by sample members to each part of Question 8 as well as the median (4.7 units) of medians, mean (4.7 units) of means and mode (4 units) of modes of the values of answers provided by individual members suggest that the sample, as a whole, retains a marginally negative view of the success of the Minister of Communications and ICASA in discharging their respective responsibilities. Such aggregated information overlooks differences of opinion between individual members and between public and private sector strata, such as the negative views of such success by ISPA's representative and the positive views of such success by ICASA's representative. Nevertheless, such data fairly reflects the average perceptions of members as a whole.

Consideration of the values of answers provided by sample members to Question 8 on a nuanced basis (by strata) suggests that private sector stratum members generally hold more negative views of the success of the Minister of Communications and ICASA in discharging their respective responsibilities relative to views of such success held by their public sector stratum counterparts (with the exception of the USAASA's representative). Along with analyses of other matters, the evaluation of qualitative data derived from answers to the open-ended questions explores the reasons for divergences of opinions between each stratum on such matters. Insights gained from such evaluation complement analyses of quantitative and qualitative data collected during secondary research. Collectively, such evaluation facilitates greater insights into the relationships (or lack of relationships) between such perceptions and the opinions of sample members in regards to other areas of interest explored during the interviews.

---

[275] Indeed, sample members demonstrate a sophisticated knowledge of the distinction between the roles and responsibilities of the Minister of Communications and ICASA during the interviews.

In discussions about the success of the Minister of Communications and ICASA in the discharge of their respective responsibilities during the interviews, private sector stratum members raise significant concerns with the regulatory structure of South Africa's communications market. Vodacom's representative indicates that both the Department of Communications and ICASA suffer from structural problems which impede their ability to fulfil their functions (Bate, 2014f, 7). Telkom's representative condemns the '*lack of* [a] *framework in the country'*, noting that:

> *If you look at the White Paper and what the* [Telecommunications] *Act actually became, the industry wanted to give power to the regulator, to the agency. But in the final thing, which is the Act, almost all those powers went back to the Minister. You can't have the Minister proofing regulatory decisions after you have made a policy. It just doesn't make sense.*
>
> *In India, there are six different bodies forming the regulatory structure: a different body does dispute management; a different body does spectrum; a different body does development agency; and then there is the policy maker. And the policy maker has no overriding authority. That's where the decision starts. He* [sic] *issues a policy then other people get involved after it becomes law and they use their own mandate with all due restriction and own powers to affect those regulations.*
>
> *So, in terms of structure, South Africa's model is completely flawed and lacks the framework that we need. We really want to fix the past, but it can't be done with a piece of paper that is not even properly articulated. And we are here to make money. We have shareholders to answer to. We will look for a loophole. I'm not saying "we, as Telkom", but in general. We look to minimise our costs. And there is nothing anyone can do to charge you because you haven't broken any law.*
>
> *But then the situation becomes worse and worse. The people are mandated to do the job. Telkom can even say "I have given you R300 million. Before I make any further contribution, please account." Things like that can become very nasty. But, of course, it's the right thing to do from a goodwill perspective. But there just needs to be a proper audit in terms of the whole infrastructure.*
>
> *For instance, if you look at the EU* [European Union], *there is this document which says: "Policy maker: 1. Thou shall behave like this. 2. Thou shall do the following actions." Then the competition commission, this is what you do. The regulator, this is what you do. You can't have all of us criss-crossing and running into each other's lanes and no one running toward the finishing line. That's a disaster* (Bate, 2014e, 10).

ISPA's representative suggests that this flawed regulatory environment inhibits the performance of key public sector actors. With regards to the Minister of Communications, they note that:

> *The role should be more strategic, driving the thinking behind how one is going to get working . . . . I am not convinced that the methodology used is a very healthy and I think, at the end of the day, there needs to be a strategic rethink of the whole universal service concept* (Bate, 2014b, 11).

While they suggest that ICASA '*has not done well at all'* (Bate, 2014b, 11), ISPA's representative identifies ICASA's lack of institutional capacity as a critical contributor to its failure to effectively oversee the implementation of universal service and access policies and programs:

> *It's probably unfair to try and lay the blame at their door. I think there is a bigger reality around the regulator. It has been understaffed. It does not have the teeth it should have. It doesn't have the funding it should have. Therefore the regulator is facing an uneven playing field. The reality is that if the regulator is running around like crazy trying to make new regulations, etc. around the whole new playing field and it's not properly staffed or funded, I think the universal services will probably take a back seat because there is so much demand on the regulator and, unless it is properly staffed or funded, it will not be successful* (Bate, 2014b, 12).

ICASA's representative contends that '[w]*e have done what we could in terms of the policy mandate, and I think we are moving forward in the right direction. We have done a lot, but we could do more*" (Bate, 2014d, 11). The Department of Communications' representative affirms such sentiment, noting that: *'I think [ICASA] is doing a lot. I think it has a lot of challenges. A lot of unfinished business. It has come through a lot and has a long way to go in a very challenging environment'* (Bate, 2014c, 10). In terms of the performance of the Department of Communications, they note that:

> *I think the Government has done a very good job of defining universal service goals but we need to do a better job of implementing the strategy. A lot of that falls on the Department, and we can do a better job of what we are doing. We also depend on other agencies such as the USAASA and ICASA, and I have already talked about the challenges that they face. So part of our effectiveness relies on other parties as well. And, like other players in the space, I think we have done well in some areas and I think we can do more, much more, in other areas* (Bate, 2014c, 10).

Yet the perceived dysfunctionality within South Africa's communications regulatory environment is ultimately highlighted by Telkom's representative who concludes that: '*It's a play. It's a stage.'* and asks *'Who is the lead actress? Who is the lead actor? What are the roles? Who does what? What are the objectives?*' (Bate, 2014e, 9).

The feedback provided by sample members through answers to the open-ended questions generally validates the views of sample members provided through answers to the closed-ended questions. Private sector stratum members are quite critical of the performance of the Minister of Communications and ICASA in the discharge of their respective responsibilities. They draw attention to a structurally flawed regulatory environment and lack of sufficient institutional capacity among public sector actors as key causes for the dismal performance of these actors in the discharge of their duties. While public sector stratum members acknowledge that environmental circumstances have challenged the abilities of the Minister of Communications and ICASA to effectively discharge their respective responsibilities, such members allude generally to the achievements of such actors and anticipate much better performance in the years ahead.

The divergence of views among private and public sector strata members needs to be considered in the context of this study. Private sector stratum members cite historical failures by the Minister of Communications and ICASA in the discharge of their responsibilities as the basis for their perceptions. Public sector stratum members cite the few achievements of such public sector actors in a challenging environment, along with the promise of future improvements in the performance of the Minister of Communications and ICASA in the discharge of their responsibilities, as the basis for their perceptions. Given that Questions 8.1 and 8.2 examine the past performances of the Minister of Communications and ICASA in the discharge of their respective responsibilities, the retrospective basis of the perceptions of private sector stratum members should receive more weight than the prospective basis of the perceptions of public sector stratum members in the consideration of key challenges that need to be addressed in the design and implementation of future universal service and access policies and programs considered by the Government of South Africa.

### 7.3.9 The success of policies, programs and key public sector actors in respect of the realisation of universal service and access to communications services in South Africa based on cross-sectional analyses of answers to the questionnaire

As considered in this chapter, this study includes interviews that pose 25 closed-ended questions and 67 open-ended questions to sample members which examine eight key areas of the Government of South Africa's efforts to realise available, affordable and accessible communications services in the country. Beyond analyses of answers provided by sample members to questions *within* each area of interest, consideration of relationships between answers provided by sample members *between* each area may unlock further insights into perceptions held by such members about the effectiveness of the Government of South Africa's universal service and access policies and programs. Such efforts may add depth and complexity to consideration of these matters from a historical perspective and contemplation of further policies and programs that may be adopted by the Government to accelerate the realisation of universal service and access to communications services in the years ahead.

Table 7.26 extrapolates eight key questions from the questionnaire. It further extrapolates the values of answers provided by sample members to these questions from the two-way array of answers to the closed-ended questions.[276] It includes a cross-sectional analysis of the medians, means and modes of the values of such answers by rows and columns.

Aside from the USAL Program, each question included in the array found in Table 7.26 considers the performance of public sector actors in relation to the realisation of universal service and access to communications services in South Africa. The USAL Program (Question 7.1) is included in this array because it represents a broad-based policy that involves the Minister of Communications, the USAASA and ICASA. The four specific programs closely associated with the USAASA (Questions 6.1 through 6.4) are excluded from this analysis because evaluation of the USAF's performance (Question 4.1) and the USAASA's performance (Question 5.1) are included in the analysis to achieve macro-consideration of the USAASA's

---

[276] Supra, note 247.

performance without micro-consideration of individual programs. A subjective desire to avoid over-weighting the analysis with topics disproportionately linked to the USAASA and the USAF relative to topics linked to other public sector actors was a secondary consideration in the array construction.

**Table 7.26**

**Cross-section of answers from eight key areas of interest of the questionnaire**

| **Questions** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **1.1** | Rate the success of the South African Government in realising universal service? | | | | | | | |
| **2.1** | How well has the Government of South Africa defined the goals of universal service? | | | | | | | |
| **3.1** | Rate the success of the Government of South Africa's policy of requiring operators to implement universal service and/or community service obligations? | | | | | | | |
| **4.1** | Rate the success of the USF/USAF in implementing its mandate? | | | | | | | |
| **5.1** | Rate the success of the USA/USAASA in implementing its mandate? | | | | | | | |
| **7.1** | Rate the success of the under serviced area licenses program? | | | | | | | |
| **8.1** | Rate the success of the Minister of Communication in crafting universal service policy? | | | | | | | |
| **8.2** | Rate the success of ICASA in implementing its mandate? | | | | | | | |
| **Answers (raw scores)** | | | | | | | | |
| **Question** | **ISPA** | **Vodacom** | **Telkom** | **ICASA** | **USAASA** | **DOC** | **Mean** | **Mode** |
| **1.1** | 3.5 | 7.5 | 3 | 6 | 6 | 4 | **5** | **6** |
| **2.1** | 7 | 4 | 4 | 7 | 5 | 9.5 | **6.08** | **7** |
| **3.1** | 3 | 8 | 1 | 9 | 3 | 9 | **5.5** | **3 and 9** |
| **4.1** | 1 | 2 | 1 | 4 | 2 | 6 | **2.57** | **1** |
| **5.1** | 1 | 4 | 2 | 5 | 4 | 4 | **3.33** | **4** |
| **7.1** | 1 | 3 | 1 | 5 | 3 | 5 | **3** | **1 and 3** |
| **8.1** | 3.5 | 4 | 4 | 7 | 4 | 6 | **4.75** | **4** |
| **8.2** | 2.5 | 4 | 4 | 7 | 4 | 6 | **4.58** | **4** |
| **Median** | **2.8** | **4** | **2.5** | **6.5** | **4** | **6** | **4** | **4** |
| **Mean** | **2.8** | **4.6** | **2.5** | **6.3** | **3.9** | **6.2** | **4.4** | **na** |
| **Mode** | **1** | **4** | **1 and 4** | **7** | **4** | **6** | **4** | **4** |

Source: Extracted from Appendices 1 and 2.

As Table 7.26 shows, a significant degree of heterogeneity exists in the range of the values of answers provided by individual sample members but a remarkable degree of homogeneity exists in the values of answers provided by the sample on an aggregated basis. The range (1 to 9.5 units) of the values of answers provided by individual sample members spans most of the interval scale (and recall that

Telkom awarded itself a perfect score of 10 units in reply to Question 3.2.1).[277] The range of the modes (1 to 9 units) spans most of the interval scale. Interestingly, the lowest mean (2.57 units) and the highest mean (6.08 units) of the values of answers provided by sample members to each question span a much smaller distance (3.51 units) on the interval scale. This phenomenon suggests that, despite the diversity of values among individual answers in the data set, a remarkable consistency exists in the values of answers provided by sample members, as a whole, to each question forming part of this data set.

On an individual basis, the medians and means of the values of answers provided by four of six sample members are below the middle point of the interval scale. The modes of the values of answers provided by four of six sample members are below the middle point of the scale. The medians, means and modes of the values of answers provided by all private sector stratum members are below the middle point of the scale. The medians, means and modes of the values of answers provided by two of three public sector stratum members are above the middle point of the scale. On a sample basis, the means of the values of answers provided by sample members to six of the eight questions do not rise above the middle point of the interval scale. Seven of ten modes of the values of answers provided by sample members to the eight questions[278] do not rise above the middle point of the scale.

These distribution patterns confirm that the sample, as a whole, does not hold a favourable view of the Government of South Africa's efforts to promote universal service and access to communications services. A majority of sample members do not have a favourable opinion of at least five of eight key aspects of the Government of South Africa's efforts to promote universal service and access to communications services. These patterns also confirm that private sector stratum members generally hold more negative views of such efforts relative to the views of such efforts held by their public sector stratum counterparts. At the same time, such patterns suggest that two of three public sector stratum members hold moderately favourable views of the Government of South Africa's efforts to promote universal service and access to communications services.

---

[277] Supra, Table 7.7.

[278] More than one mode exists for several answers.

The data found in Table 7.26 is organised into a stem and leaf display to illustrate the distribution of the values of answers provided by all sample members to each question in the data set. As shown in Figure 7.4, this display is further divided into private and public sector strata to facilitate comparative analysis of the distribution of such values between these strata:

**Figure 7.4**
**Stem and leaf display of data found in Table 7.26**

| Private sector strata | | | Public sector strata | | |
|---|---|---|---|---|---|
| **Stem** | **Leaves** | **Frequency** | **Stem** | **Leaves** | **Frequency** |
| 1 | 00000 0 | 6 | 1 | | 0 |
| 2 | 005 | 3 | 2 | 0 | 1 |
| 3 | 00055 | 5 | 3 | 00 | 2 |
| 4 | 00000 00 | 7 | 4 | 00000 0 | 6 |
| 5 | 05 | 2 | 5 | 0000 | 4 |
| 6 | | 0 | 6 | 00000 | 5 |
| 7 | | 0 | 7 | 000 | 3 |
| 8 | 0 | 1 | 8 | | 0 |
| 9 | | | 9 | 005 | 3 |
| 10 | | | 10 | | |
| | | 24 | | | 24 |

Source: Analysis of data found in Table 7.26.

As Figure 7.4 illustrates, private sector stratum members generally provide a lower ranking of the performance of public sector actors and the USAL Program than public sector stratum members. Interestingly, the distribution of the values of answers provided by public sector stratum members is unimodal and symmetric compared to the values of answers provided by their private sector counterparts.

The values of answers found in Table 7.26 are analysed using the median polish technique. Table 7.27 shows the additive model of residual values, with a main effect, column and row effects, for the values of answers provided by sample members to each of the eight questions forming part of the data set:

**Table 7.27**

**Analysis of the residual values of answers provided by sample members to questions contemplated by Table 7.26 using the median polish technique**

| Area of interest | Residual values | | | Residual values | | | Row effects |
|---|---|---|---|---|---|---|---|
| | **ISPA** | **Vodacom** | **Telkom** | **ICASA** | **USAASA** | **DOC** | |
| **Results** | 0.1875 | 2.7813 | -0.4375 | -0.5938 | 1.4375 | -2.7188 | 0.438 |
| **Goals** | 3.1250 | -1.2813 | 0.0 | -0.1563 | -0.1250 | 2.2188 | 1.000 |
| **USAOs** | -1.3125 | 2.2813 | -3.4375 | 1.4063 | -2.5625 | 1.2813 | 1.438 |
| **USAF** | 0.1250 | -0.2813 | 0.0 | -0.1563 | -0.1250 | 1.7188 | -2 |
| **USAASA** | -0.8750 | 0.7188 | 0.0 | -0.1563 | 0.8750 | -1.2813 | -1.000 |
| **USALs** | -0.5625 | 0.0313 | -0.6875 | 0.1563 | 0.1875 | 0.0313 | -1.313 |
| **Minister** | 0.3750 | -0.5313 | 0.7500 | 0.5938 | -0.3750 | -0.5313 | 0.250 |
| **ICASA** | -0.1250 | -0.0313 | 1.2500 | 1.0938 | 0.1250 | -0.0313 | -0.250 |
| Column effects | -1.375 | 0.031 | -1.250 | 1.906 | -0.1250 | 2.031 | 4.250 |
| | | | | | | | Main effect |

Source: Analysis of data found in Table 7.26.

This phenomenon is confirmed through analysis of the tail values of the residual values shown in Table 7.27. Table 7.28 summarises this data:

**Table 7.28**

**Tails of the residual values derived from Table 7.27**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| -3.4375 | -2.7188 | -2.5625 | . . . | 2.2188 | 2.2813 | 2.7813 | 3.1250 |

Source: Analysis of data found in Table 7.27.

As Table 7.28 shows, the tails of the residual values do not contain any extreme values. However, such residual values are diverse with large absolute values situated in the first three rows of the distribution of residual values. Column effects derived from the values of answers provided by representatives of ICASA and the Department of Communications indicate that the residual values found in these two columns are (generally) about 2 units more than the model with main effect and row effects. The model reveals that the values of answers to the question about the success of the USAL Program (Question 7.1) are generally 1.3 units less than the values of answers provided by sample members to other questions. The same conclusion cannot be drawn about the values of answers to the question about the success of the Government of South Africa's USAO policy (Question 3.1) due to the magnitude of residual row values.

Analyses of the medians, means and modes of the values of answers found in Table 7.26, the distribution of data found in the stem and leaf display in Figure 7.4 and results of the median polish technique applied to interpret the values of such answers found in Tables 7.27 and 7.28 facilitate a holistic review of the perceptions of sample members of the Government of South Africa's overall efforts to improve the availability, accessibility and affordability of communications services. Among key indicators found within this data set, the low medians and means of the values of answers provided by representatives of Telkom and ISPA suggests that these two members hold the most negative views of the Government's efforts to accelerate the delivery of universal service and access to communications services in absolute and relative terms. Interestingly, the medians and means of the values of answers provided by the USAASA's representative are the third lowest values among the data set which suggest that they hold similar but less negative views of the effectivity of such efforts. The medians and means of the values of answers provided by Vodacom's representative suggest that they hold moderately negative views of such efforts.

ICASA's representative holds the most favourable views of the Government South Africa's efforts to promote universal service and access to communications services. The Department of Communications' representative holds marginally less favourable views on such matters. Beyond identifying differences of opinions between individual sample members, such patterns are consistent with earlier observations that suggest that private sector stratum members generally hold more negative views regarding the success of the Government of South Africa's universal service and access initiatives relative to the views of such success held by public sector stratum members.

On a macro-analytical level, interpretation of the values of answers collected to each closed-ended question across each of the eight areas of interest considered during the interviews on an aggregated basis supports several significant observations. Comparison of the values of answers provided by sample members across each area of interest reveals that sample members hold a broad range of different views of the success of different components of the Government of Africa's efforts to realise universal service and access to communications services. Some sample members hold highly critical views of the performance of specific efforts while other sample members hold highly favourable views of the performance of some efforts. Private sector stratum members generally hold more unfavourable views of such efforts relative to the views of such efforts held by their public sector stratum counterparts.

As a whole, the sample holds moderately unfavourable views of most efforts. The Government of South Africa's efforts to define universal service goals and compel operators to discharge specific obligations under its USAO policy are perceived by the sample as modest areas of accomplishment. Notwithstanding significant concerns with the design and implementation of individual policies and programs by key public sector actors, the sample further perceives the Government of South Africa to have realised a modest degree of success in its overall efforts to realise universal service to communications services. While such perceptions do not deliver a strong endorsement of the Government's efforts or the performance of individual policies, programs or public sector actors, they collectively convey a general sense among sample members that, despite the limited impact of its policies and programs, the Government of South Africa has exercised a good faith effort to deliver on its commitment to accelerate the availability, accessibility and affordability of communications services in the country.

## 7.4 CONCLUSION

This chapter focuses on analyses of primary data collected through semi-structured interviews with key informants drawn from a representative sample of the population of public and private sector actors involved in the design and implementation of universal service and access policies and programs in South Africa's communications market. It describes the statistical techniques used to evaluate such data. It applies these techniques to interpret such data and generate a multi-faceted understanding of the opinions and perceptions of sample members about the performance of those policies, programs and public sector actors mandated to deliver universal service and access to communications services by the Government of South Africa.

Two key trends consistently emerge from analyses of the values of answers derived from the closed-ended questions. First, the preponderance of answers with values below the middle point of the interval scale and the predominant presence of the medians, means and modes of such answers with values below the middle point of the interval scale suggest that the sample, as a whole, generally retains a negative perception of the success of most policies, programs and public sector actors tasked by the Government of South Africa with the delivery of universal service and access to communications services. Second, public sector stratum members generally perceive the success of such policies, programs and actors more favourably than their private sector stratum members.

Such conclusions are reflected in sentiments expressed by sample members as answers to the open-ended questions raised during the interviews. As a whole, the sample generally concedes that the Government of South Africa needs to do a better job of focusing on the effective design of policies and programs that deliver available, accessible and affordable communications services. The sample also generally acknowledges that key public sector actors have often failed to implement such policies and programs in a competent manner (for a variety of divergent reasons).

Analyses of primary data collected during the interviews demonstrate a remarkable homogeneity of views between public and private sector sample members regarding the evolution of universal service and access to communications services. A significant degree of validity permeates each data set. A similar degree of validity exists between data sets. Indeed, the results of the median polish technique confirm a perfect fit (without residual terms) in the values of a high number of answers. This outcome generally validates the answers of sample members. Indeed, the generally more favourable views of the performances of the Government of South Africa's universal service and access policies, programs and public sector actors held by public sector stratum members relative to the views of such performances held by their private sector stratum counterparts represent the key differentiation point between sample members.

Analyses of the values of answers to closed-ended questions derived from the interviews support the validity of their measurements. In terms of construct validity, the views of expressed by individual members of each stratum generally conform to opinions expressed by other members of such stratum in previous circumstances.[279] In terms of concurrent validity, the views expressed by individual sample members on a particular subject discussed in one question generally conform to views provided by such member on the same subject discussed in a subsequent question.[280] In terms of predictive validity, views on the performance of specific programs, policies and public sector actors generally confirm independent data related to the same.[281]

---

[279] Supra, section 5.3.

[280] Supra, sections 7.3.1 to 7.3.9.

[281] Supra, section 5.3.

Bias demonstrated by each stratum was in line with expectations. Private sector stratum members retain some bias against public sector actors perceived to adversely affect their commercial interests. They tend to highlight the contributions of private sector actors to the delivery of available, accessible and affordable communications services. Conversely, public sector stratum members retain some bias against private sector actors perceived to act without regard for any public good. They tend to highlight the contributions of public sector actors to the realisation of universal service and access to communications services.

Overall, the collection of key informants drawn from the representative sample of the population of public and private sector actors involved in the design or implementation of universal service and access policies and programs in South Africa's communications market deliver a mixed report card on the Government of South Africa's success in realising available, accessible and affordable communications services. As with any instructive commentary, sample members generally applaud the Government for its intentions to achieve universal service and access to communications services. In marking the performance of the Government's efforts to realise such intentions, however, sample members generally agree that public sector policies and programs failed to achieve stated objectives or under-performed against such objectives.

Sample members generally acknowledge the presence of a dysfunctional regulatory environment and lack of sufficient institutional capacity among public sector actors to implement, monitor, evaluate and correct deficiencies with universal service and access policies and programs in South Africa's communications market. Sample members also acknowledge the material role played by private sector actors in the proliferation of available and accessible communications services in South Africa, particularly in the mobile market segment. Such insights should form an important part of any forward-looking considerations of new policies and programs to realise universal service and access to communications services in the country. Moreover, the achievement of a consensus on the appropriate (and effective) distribution of roles and responsibilities between public and private sector actors within South Africa's communications market appears to represent an essential prerequisite to the success of any such policies and programs. Chapter 8 considers such matters.

# CHAPTER 8

# TRENDS, GAPS AND RECOMMENDATIONS RELATED TO THE ACCELERATION OF UNIVERSAL SERVICE AND ACCESS TO COMMUNICATIONS SERVICES IN SOUTH AFRICA

## 8.1 INTRODUCTION

Chapter 7 used a suite of analytical techniques to examine primary data derived from the semi-structured interviews conducted with key informants drawn from a representative sample of the population of public and private sector actors involved in the design or implementation of universal service and access policies or programs in South Africa's communications market. Evaluation and interpretation of such data suggested that many of the views held by sample members validated observations found in earlier chapters of this study regarding the performance of key policies, programs and actors associated with the Government of South Africa's efforts to realise available, accessible and affordable communications services in the country. Analyses of the rationales for the views of sample members regarding the performance of such policies, programs and actors facilitated a deep and complex understanding of such matters. As such, the union of primary data with secondary data and the combination of analyses of quantitative data with qualitative data created a complex universe of information and analytics that not only facilitates informed consideration of past policies and programs but may also guide substantive consideration of future policies and programs in key areas of interest.

This chapter builds upon the cumulative understanding of universal service and access in international communications markets and the history of universal service and access to communications services in South Africa found in earlier chapters of this study to propose new policies, programs and reforms that may accelerate the realisation of available, accessible and affordable communications services in the country in the years ahead. The chapter:

- Identifies key trends that have affected and may affect the realisation of universal service and access to communications services in South Africa.

- Identifies key gaps and deficiencies related to the realisation of universal service and access to communications services in South Africa.

- Proposes three new programs to accelerate the realisation of universal service and access to communications services in South Africa.

- Proposes numerous reforms to the existing regulatory environment and regulatory agencies to optimise implementation of universal service and access policies and programs in South Africa's communications market.

- Considers the viability of reforms to the role of state owned enterprises (SOE) and state controlled enterprises (SCE) in the existing commercial environment of South Africa's communications market that may enhance the availability, accessibility and affordability of communications services in the country.

As outlined in earlier chapters, the availability, accessibility and affordability of communications services are generally recognised as prerequisites to '*functional membership in the information society*' (Schement, 1998, 198). In today's interconnected world, access to even the most rudimentary forms of communications services can deliver immense improvements to the health and economic well-being of people served by such services. As with many other human rights, however, the opportunity to exercise the right to communicate is not shared equally by people around the world, particularly in developing countries such as South Africa.

As further outlined in earlier chapters, the need to address such inequality is acknowledged by many governments around the world through policies, programs and projects to deliver universal service and access in domestic communications markets. The advent of mobile communications services and other rapid technological advances in global communications markets have underpinned the transformation of public policy ambitions from the historic universal service objective of providing voice services to every citizen through a fixed line telephone in every household to the contemporary universal service objective of providing voice, low speed data and high speed broadband communications services to every citizen through a combination of convergent technologies.

The ongoing debate about the availability, accessibility and affordability of communications services in South Africa (and elsewhere) does not dispute the need for universal service and access in domestic communications markets but quarrels over the means to achieve such ambitions. What are the best policies and programs

to implement universal service and access to communications services in South Africa? Who will implement them? How will such they be implemented? Where will the money come from to pay for them? This chapter attempts to answer these questions by identifying trends, isolating gaps and making recommendations to advance the realisation of universal service and access to communications services in South Africa's increasingly complex yet compelling communications market.

## 8.2 KEY TRENDS

The domestic communications market has changed dramatically since the end of apartheid and the dawn of democracy in South Africa. Among other milestones:

- The communications market was transformed from a monopoly environment into a reasonably competitive commercial environment.[282]

- The Government passed at least seven pieces of landmark legislation which has fundamentally transformed the commercial and regulatory environments of South Africa's communications market. It also passed a handful of policy determinations that have, in some cases, had a similarly dramatic effect.[283]

- The national operator (Telkom) was corporatised, privatised and effectively un-privatised by the Government of South Africa. The separation of its wholesale and retail divisions appears inevitable. It sold its Vodacom shares. Its post-Vodacom mobile offering may be sold in the near term, perhaps to MTN. In any event, the Government of South Africa appears poised to radically rewrite Telkom`s mandate and scope of operations in the near future.[284]

- A second national operator (Neotel) was licensed and, after years of mixed results, may be sold in the near future, perhaps to Vodacom.[285]

- A third mobile operator (Cell C) was licensed and, after years of mixed results, may be sold in the near future.[286]

---

[282] Supra, sections 3.2 and 3.3.
[283] Supra, section 3.3.
[284] Supra, section 4.3.1.2.1.
[285] Supra, section 4.3.1.2.2.
[286] Supra, section 4.3.2.2.3.

- The High Court of South Africa mandated ICASA to convert Value Added Network Services (VANS) licenses to Electronic Communications Network Services (ECNS) licenses and permit VANS operators to develop and operate their own communications networks.[287]

- The Universal Service Agency was renamed the Universal Service and Access Agency. Its mandate has been fundamentally reshaped from an implementation role to a facilitation role. It has been plagued by mismanagement, maladministration, a revolving door to the boardroom and executive suite and, most recently, serious allegations of corrupt activities.[288]

- The Universal Service Fund was renamed the Universal Service and Access Fund. It has accumulated billions of Rands in notional contributions from operators but only spent a fraction of this amount, mostly through expenditures on unsuccessful USAASA projects that have failed to materially improve the availability, accessibility or affordability of communications services.[289]

- The independent regulatory authority changed from the South African Telecommunications Regulatory Authority (SATRA) to the Independent Communications Authority of South Africa (ICASA). The Agency has experienced significant challenges in the implementation of its mandate.[290]

- The stewardship of South Africa's communications market passed through the hands of six Ministers of Communications in five years[291] with another change expected after the 2014 elections (Barron, 2013, 7). Some individuals have performed well and some individuals have been placed under investigation.[292]

For these reasons and others, South Africa's communications market has failed to realise the transformative potential so ambitiously set for the sector by the African National Congress when it assumed the throne of Government in 1994. Reflecting on this lost potential, one commentator has noted that '[t]*he story of the communications industry in SA since 1994 is a litany of farce'* (Gleason, 2013, 12).

---

287 Supra, section 4.3.4.

288 Supra, sections 5.2.2 and 5.3.2.

289 Supra, sections 5.2.3 and 5.3.3.

290 Supra, sections 3.3.4, 3.4.4, 3.4.5, 3.4.9, 3.4.10 and 3.5.

291 Since 2009, the following individuals have served as Minister of Communications: Ivy Matsepe-Casaburri; Manto Tshabalala-Msimang; Sihiwe Nyanda; Roy Padachie; Dina Pule; and Yunus Carrim (Wikipedia, 2013, 1).

292 Supra, section 5.3.2.4.

Despite such failure and farce, more South Africans are spending more time communicating on phones than ever before. In 1994, about 439,000 black South Africans and 3.3 million white South Africans had access to a fixed line phone (Byrnes, 1996, 1; Hawkins, 1994, vi).[293] There were about 12,000 mobile phone users in the country (MTN, 1997, 6). By 2011, there were nearly 4 million fixed line phone subscriptions and nearly 64 million mobile phone subscriptions maintained in South Africa regardless of race.[294]

Overall, the availability of communications services in South Africa increased by 1,760% between 1994 and 2011 with an average 103% per annum growth. While the number of fixed telephone lines remained relatively static across this period (about 10% overall growth entirely attributable to increased broadband subscriptions with a net loss of voice subscriptions), the availability of mobile phones increased by 5,372% with an average 316% per annum growth in the number of mobile subscribers in the country in this period. One in every 30 South Africans owned a mobile phone in 1994. On average, every South African owned at least 1.26 SIM cards in 2011.[295] Along the way, South Africans acquired an insatiable thirst for high speed data connectivity that supports applications and content which are transforming the way South African's conduct commerce and social interactions.

As this study has shown, these accomplishments have been achieved largely due to the efforts of private sector market participants. The Government of South Africa's managed liberalisation policy introduced competition into the domestic communications market and the Government's convergence policy accelerated competition within this market. However, the realisation of universal service and access to communications services in the country may be attributed entirely to the growth of mobile communications services which has been driven by commercial concerns (rather than public policy concerns) and underpinned by technological advances that have enabled all segments of South Africa's society to enjoy available, accessible and affordable communications services previously reserved for white South Africans.

---

293 Extrapolated through the multiplication of teledensity figures with population estimates applicable for 1994.

294 Supra, Table 4.1.

295 Ibid.

These trends are likely to continue in the future. The acceleration of competition and the proliferation of new technologies are expected to play pivotal roles in the realisation of universal service and access to communications services in South Africa in the years ahead. As such, the ways in which public sector policies and programs may leverage these two influential trends to improve the availability, accessibility and affordability of communications services in South Africa warrant further consideration.

### 8.2.1 Role of technology

As highlighted in earlier chapters, the choice of communications technologies in South Africa has dramatically changed over the past two decades. In 1993, white South Africans relied upon fixed line telephones as their predominant channel of communication. By 2013, all South Africans had the opportunity (if not the means) to use fixed line telephones, mobile phones, smart phones, tablets, laptops, desktops and numerous other devices as their channels of communication. The infrastructure required to deliver communications services through such devices has also grown dramatically over the past two decades, most notably through the proliferation of ubiquitous communications towers and fibre optic cable networks.

As further highlighted in earlier chapters, such technological advances had a profound impact on universal service and access to communications services in South Africa. The original ambition of universal service to deliver a telephone 'in every household' was an appropriate benchmark in South Africa in 1996 but is no longer a relevant milestone as mobile communications technologies have untethered telephones and other communications devices from physical locations. The original focus of universal service on the delivery of basic voice services was an appropriate benchmark in South Africa in 1996 but is no longer a relevant milestone as mobile communications technologies have delivered voice services to most South Africans in most corners of the country. Indeed, technological advances that enable mobile communications devices to receive and transmit massive amounts of data and the thirst for data-driven mobile content and mobile applications by consumers have challenged the relevance of universal service's historically exclusive focus on the delivery of voice telephony services. Despite the ongoing debate over the affordability of communications services in South Africa, moreover, the adoption of new technologies has brought down the absolute cost of communications services in South Africa between 1996 and 2013.[296]

---

[296] Supra, sections 2.5.1, 3.5.2.2, 4.2.3 and 4.4.1.3.

Prudent use of technology likely represents a critical success factor for the acceleration of universal service and access to communications services in South Africa in the years ahead. While many strides have been made towards realising available and accessible communications services, some people and some parts of South Africa remain without communications services or suffer from inadequate access to communications services. Technological advances are continuing to create innovative solutions to deliver communications services to such constituencies. While similar strides have been made towards realising affordable communications services in South Africa, some people remain unable to purchase or pay for communications services. While not a panacea, technological advances and manufacturing improvements are continuing to create affordable devices and delivery platforms that should, in combination with other efforts, lower the absolute and relative costs of communications services in South Africa.

The successful acceleration of universal service and access to communications services in South Africa therefore depends upon creating programs that embrace the potentially transformative role of technology in increasing the availability, accessibility and affordability of communications services. Such programs need to encourage the private sector to create or import new technologies that can deliver communications services to more people in more places at more affordable prices. Such programs need to enable private sector operators to unleash these technologies without any undue regulatory burden and they need to enforce a technology neutral regulatory platform that empowers private sector operators to deliver communications services without any technological restraint. In such an environment, technology is likely to serve as one of the most productive catalysts to the acceleration of universal service and access to communications services in South Africa in the years ahead.

### 8.2.2 Competition

As described in earlier chapters, the regulatory and commercial environments in South Africa's communications market have dramatically changed over the past two decades. In 1993, the domestic communications market was dominated by Telkom SA Limited as the exclusive provider of communications services to white South Africans through fixed line telephones connected to a single communications network. By 2013, the domestic communications market was divided among two

fixed line operators, four mobile operators (with several MVNOs), dozens of communications network infrastructure providers and hundreds of VANS operators that provide a disparate range of communications services to all South Africans through a myriad of devices connected to a wide spectrum of communications infrastructure platforms. This metamorphosis of South Africa's communications market from a monopoly into a moderately competitive marketplace was achieved through a series of legislative and regulatory reforms undertaken by the Government of South Africa which culminated in a legal framework that enabled private sector parties to compete to provide network services and communications services on a technology neutral basis. Albeit an imperfect framework that perpetuates various barriers to competition (including access to infrastructure), the South African communications market is a competitive environment due to the sweeping policy reforms introduced by the Government over the past two decades.

The introduction of competition into South Africa's communications market has had a profound impact on the realisation of universal service and access to communications services over the past two decades. As discussed in earlier chapters, the availability and accessibility of communications services has dramatically increased across this period, almost entirely through the proliferation of mobile communications services delivered by multiple new market entrants. Mobile operators cover most of South Africa's geography and service most of South Africa's population.[297] Mobile operators far exceeded community service obligations to deliver communications services to many under serviced areas and populations.[298] Along with legal precedents, reforms which unlocked market opportunities for VANS operators accelerated the delivery of communications services to many South Africans.[299] While the affordability of communications services remains an issue, prices are continuing a downward trend.[300] Overall, competition between operators spurred investment in infrastructure and innovation in product offerings which substantially increased the availability, accessibility and affordability of communications services in South Africa since 1996.

---

297 Supra, section 4.2.

298 Supra, section 5.2.1.2.

299 Supra, section 4.3.4.

300 Supra, sections 2.5.1, 4.2.3, 4.4.1.3 and 3.5.2.2.

Prudent use of competition likely represents a critical success factor for the acceleration of universal service and access to communications services in South Africa in the years ahead. Having matured away from a monopoly, South Africa's communications market now supports hundreds of licensed operators hungry for business in an increasingly saturated market. Given access to appropriate incentives, these operators are likely to compete to deliver communications services to those people and those parts of the country that remain without communications services or suffer from inadequate communications services. Given the flexibility to conduct commerce freely and without delivery barriers (such as access to backhaul infrastructure), these operators are likely to engage in price wars that may materially reduce communications costs in South Africa.[301] In each instance, however, the presence of competition is a key ingredient to realising gains in the availability, accessibility and affordability of communications services.

The successful acceleration of universal service and access to communications services in South Africa also depends upon creating programs that align the policy interests of the Government of South Africa with the profit-seeking interests of operators. The Government needs to establish specific policies and programs for the delivery of communications services to remaining populations and geographies not currently addressed by operators under customary commercial conditions. It needs to introduce incentives to spur competition between operators to implement such policies and programs on the most efficient and cost effective basis. For example, reverse auctions that reward operators who request the lowest subsidies to provide communications services to target constituencies represent one of several market-oriented mechanisms that impose fiscal discipline on private sector actors and assure public sector actors of the lowest burden on the fiscus in the implementation of public policy objectives.

Such mechanisms also enforce a transparent subsidy allocation process. They reduce the likelihood of collusion or closed deals between public and private sector actors. The efficient alignment of program objectives developed by public sector policy makers with program implementation efforts executed by private sector

---

[301] In the mobile market, for example, Cell C dramatically reduced its pre-paid prices in 2012, sparking a price war among certain mobile operators (City Press, 2012, 1). In the fixed line market, for example, Neotel dropped its international consumer call rates in 2012 (Business Day, 2012, 14). Operators have undertaken additional rate cuts since that time. For example, MTN dramatically reduced its voice call rate in April 2014 to celebrate 20 years of democracy in South Africa (Mkize, 2014, 2).

market participants therefore represents one of the most significant opportunities to accelerate the realisation of universal service and access to communications services in South Africa in the years ahead.

## 8.3 KEY GAPS

Changes to South Africa's communications market in the past two decades have fundamentally challenged the concepts of universal service and universal access. In 1995, the Government of South Africa proclaimed that the goal of universal service was to put a telephone in every household.[302] Universal access was also identified as a public policy priority.[303] Yet statutory definitions of universal service and universal access were not achieved until promulgation of the *Electronic Communications Act* in 2006. Moreover, such statutory definitions remained vague and ambiguous and left the USAASA to recommend parameters for such definitions.[304]

In 2010, the Minister of Communications accepted the USAASA's recommendations regarding key benchmarks for 'universal service' and 'universal access' in South Africa's communications market. As such, it took over 15 years to establish meaningful statutory definitions for the concepts of universal service and universal access to communications services in South Africa. In the intervening period, fundamental changes to South Africa's communications market challenged the relevancy of the original goals of universal service and universal access and affected the means and methods likely available to realise universal service and universal access to communications services in South Africa in the years ahead.

The original universal service goal of providing a telephone in every household articulated in 1995 is obsolete in today's wireless world. The proliferation and popularity of mobile communications services render any reference to households inappropriate in any consideration of universal service to communications services. Mobile phones are increasingly serving as substitutes for fixed line phones in Sub-Saharan Africa, including South Africa (Gillwald et al, 2012, i; Esselaar & Stork, 2005, 64-73). The availability and accessibility of mobile communications services to the vast majority of South Africa's population in the vast majority of South Africa's

---

302 See, for example, the *Green Paper on Telecommunications Policy* (South Africa, 1995, 7).

303 See, for example, the *Reconstruction and Development Programme* (ANC, 1994, 18).

304 Supra, section 5.3.2.2.2.

geography has led some scholars to suggest that South Africa has achieved universal service, at least in terms of mobile communications services (Lewis, 2010, 16). The increasing abilities of communications technologies, particularly mobile communications services, to transmit large packets of information and consumers' increasing reliance on such information for commercial, social and communications purposes suggest that the benchmark for universal service has transcended consideration of the availability, accessibility and affordability of voice communications services to include the availability, accessibility and affordability of data communications services, particularly broadband services.

South Africa's current definitions of universal service and universal access to communications services account for these realities. Such definitions distinguish between voice services and data services and set quantitative targets for the availability, accessibility and affordability of such services by the end of 2012.[305] These definitions and targets appear appropriate and well-conceived as would be expected after a 15 year policy making process. As such, future universal service and access programs should focus on those parts of South Africa's communications market that fall short of satisfying these targets and identify new public policy interventions that encourage private sector actors to remedy these deficiencies.

### 8.3.1 Availability and accessibility of communications services

The availability and accessibility of communications services are readily measured by the breadth of network coverage and depth of teledensity. Largely through the proliferation of mobile communications services, most South Africans enjoy access to some form of communications services. As highlighted in Chapter 4, mobile communications networks reached at least 99% of South Africa's population and broadband services served at least 75% of the population in 2012.

Based on this information, South Africa's communications market has realised the Government's targets for universal service for voice services because over 95% of South African households have access to at least one of the communications networks operated by major operators and, setting aside affordability considerations, can communicate with each other through such networks. South

---

[305] Supra, section 5.3.2.2.2.

Africa may realise universal service for data services in the near term due to the availability and accessibility of mobile broadband services. MTN, for example, expects to cover 80% to 85% of South Africa's population with 3G network services by the end of 2013, including most rural areas (TeleGeography, 2011a, 1). The connectivity speeds afforded by 3G services as well as 4G (LTE) services now available in South Africa exceed the threshold prescribed for data services required to satisfy universal service targets established for broadband connectivity by the Government of South Africa.[306] Based on applicable public policy targets, therefore, major operators are doing an effective job of realising universal service to communications services without any pronounced public policy interventions.

Universal access presumes the absence of universal service. Setting aside affordability issues, targets adopted by the Government of South Africa for the realisation of universal access to communications services in South Africa promote the existence of a certain number of public telephones per population located within a certain distance from any home within each population. As such, the objective of universal access is to promote the delivery of additional communications services to areas not adequately served by existing communications networks. If nearly 100% of the population has access to at least one (and often more)[307] of the networks operated by major market participants, however, the need for universal access is limited to those few parts of South Africa not served by such networks.

People may decline to access communications services on an individual basis in areas served by existing communications networks (for cost considerations or otherwise). However, ubiquitous community kiosks operated by local vendors supported by major mobile operators likely provide a sufficient number of public access points within sufficient distances of homes in relevant communities to satisfy the requirements of the Government of South Africa's universal access targets. As such, the utility of policies that promote the realisation of universal access to voice telephony and slow speed data communications services in South Africa are likely limited to those few areas of the country which have not already realised universal service to communications services through existing communications networks.

---

306 Supra, section 5.3.2.2.2.

307 The country's 126% mobile teledensity suggests that South Africans own more than one SIM card (supra, Table 4.1).

Yet realisation of Government targets for the availability and accessibility of communications services in South Africa does not necessarily mean that the country has achieved universal service. Based on mobile network coverage information, 1% of South Africa's population remain without access to any communications services in 2013. Does it matter that these people, likely living in small, sparsely populated places in South Africa, do not have access to basic communications services in 2013?[308] It should, because the principal policy rationale behind universal service is to ensure the delivery of basic communications services to people that would not receive communications services under customary commercial conditions.

Since communications networks that span most of South Africa's territory deliver access to basic communications services to most of South Africa's population, the extent of under serviced areas should be relatively low. The definition of 'under serviced area' adopted by the South African Government sets three criteria for the establishment of an under serviced area. The wholesale absence of a communications network or the presence of a communications network with limited coverage are two of three criteria. The third criterion refers to the absence of 'adequate' communications services but does not define any threshold for any determination of adequacy. As a guide, any area that does not satisfy the minimum requirements for universal service is proposed as an under serviced area. Given that 99% of South Africa's population have access to communications services which satisfy the Government's universal service criteria, the number of under serviced areas contemplated by the Government should be low.

ICASA has a radically different view. The regulatory authority identified 252 under serviced areas in September 2012, based on the average penetration rate of Internet, computer, telephone and cellphone services within these areas (ICASA, 2012). ICASA's methodology is grossly simplistic and overlooks the complexity of South Africa's communications market, particularly the availability of broadband services (Internet) through mobile telephones. ICASA's 252 under serviced area includes major metropolitan areas such as eThekwini (Durban), Tshwane (Pretoria), Johannesburg and Cape Town which were ranked 237, 244, 246 and 250 on

[308] These populations have access to (expensive) satellite communications services through the Intelsat, Eutelsat and YahSat footprints that cover Southern Africa, but they do not have access to any (more affordable) terrestrial-based communications services.

ICASA's list, respectively. These areas support substantial mobile teledensity (greater than 77%) and fixed line teledensity (ranging between 25% and 50%) underpinned by advanced mobile communications networks (3G and 4G (LTE) capabilities) and fibre optic networks (in some cases provided by municipalities) that deliver widespread access to communications services.

Along with many of the other territories on ICASA's list, it is difficult to consider major metropolitan municipalities such as Durban, Pretoria, Johannesburg and Cape Town as under serviced areas. Even if some people in the 252 territories identified by ICASA as under serviced areas do not to use any communications services, the presence of sophisticated communications networks in such areas capable of delivering communications services on a widespread basis (individually and through community kiosks) at significant connectivity speeds (for data services) satisfies the availability and accessibility requirements for the realisation of universal service and access to communications services established by the Government of South Africa. While a nuanced investigation may examine the reasons why some people may not use communications services in any particular area, the existence of network coverage in such territories challenges their classification as under serviced areas.

Setting aside affordability issues, ICASA appears to have used a rudimentary methodology to determine the extent of 'under serviced areas' that ignores network communications network coverage capabilities and the scope of commercial communications services offered in many of these areas. One of the unfortunate side effects of such a broad classification of under serviced areas is the potential neglect of those truly under serviced areas (home to the overlooked 1% of South Africa's population) that do not benefit from access to any communications services other than satellite links. Beyond affordability issues, future policies and programs need to focus on the delivery of such services to these unserved areas as much as increasing the availability and accessibility of services in heavily saturated communications markets such as Durban, Pretoria, Johannesburg and Cape Town.

Regardless of the merits of the metrics used to identify under serviced areas in South Africa, one of the key challenges for future universal service and access programs is to correlate the relationship between the availability and accessibility of voice and data services. The accessibility and availability of data services is a relatively recent but increasingly important component of universal service around the world (ITU, 2011b, 3), including South Africa (ANC, 2012a, 4; 2012b, 18).

Although the availability and accessibility of broadband communications services (75% population coverage) lags the availability and accessibility of voice communications services (99% population coverage) due to the more recent evolution of the data services market, an increasing number of technologies carry both voice and data services, particularly in the mobile market segment. Future policies and programs should identify the optimal means to accelerate the delivery of data services in tandem with the delivery of voice services to enable those communities that have access to voice services to access data services over the same communications platforms.

Overall, South Africa has achieved universal service in terms of the availability and accessibility of voice communications services. It is on pace to achieve universal service in terms of the availability and accessibility of data communications services in the near term. The expansion of communications services to those areas of South Africa not presently addressed by the existing footprints of communications networks should represent a focus of future public policy interventions into the country's communications market. The 1% of South Africa's population currently without access to any form of terrestrial communications services should no longer be left behind. The convergence of technology platforms that deliver voice and data services suggests that future policies and programs should ensure that expansion and improvements to communications networks increase the availability and accessibility of broadband services to areas not presently served by such data capabilities. Taken together, the delivery of communications services to unserved areas and expansion of broadband communications networks into areas not served by such capabilities should significantly advance the realisation of universal service and access to communications services in South Africa.

### 8.3.2 Affordability of communications services

The affordability of communications services in South Africa has been the subject of much debate. Many public sector interest groups have condemned the high price of communications services in South Africa (Buthelezi, 2013a, 18; Gillwald, 2012, 1-62; InfoDev, 2012, 12, 14-15; Research ICT Africa, 2012, 1-4). Many private sector market participants and market observers have cited a sustained trend towards lower cost communications services in South Africa (City Press, 2012, 1; Vermeulen, 2012a, 1; GSMA, 2011b, 1-2; Jones, 2010c, 1; 2010d, 1). Private sector actors have also challenged the accuracy of the methodologies used by research groups to support their comparisons of communications tariffs between South Africa and other countries (Dodds, 2013. 7).

The absence of comparable price data and a standard methodology for evaluating such data means that various studies often rely on different data sets interpreted under different methodologies to produce different findings and results about the affordability of communications services in South Africa. The Department of Communications admits that '*there is no transparent pricing regime'* and that '*prices for both voice and data were presented in such a complex manner that even the most sophisticated consumers could not always fully understand them'* (Buthelezi, 2013, 18). As a starting point, the Government of South Africa, particularly ICASA and the USAASA, may wish to consider the regular publication of a database and analysis of industry prices that uses a standard methodology[309] to enable transparent and reliable evaluation of the affordability of communications services in the country.[310] Indeed, the USAASA may wish to undertake a specific study on the affordability of communications services relative to the realisation of universal service and access in South Africa.[311]

Based on empirical market evidence, however, most South Africans can pay for communications services, particularly mobile communications services. High domestic mobile teledensity suggests that most South Africans have the economic means to purchase mobile communications services. Available data also suggests that most South African households have the economic means to purchase mobile communications services: 85.7% of all South African households owned or had access to a mobile phone by 2009 (South Africa, Statistics South Africa, 2009, 150). By geography, 87.5% of urban households and 82% of rural households owned or had access to a mobile phone by 2009 (South Africa, Statistics South Africa, 2009, 146). By income, 69% of households in the lowest quintile and 82.1% of households in the second lowest quintile of households owned or had access to a mobile phone by 2009 (South Africa, Statistics South Africa, 2009, 46). By ethnic group, the ownership or availability of mobile phones ranged between 81.1% for coloured households and 94.7% for white households (South Africa, Statistics South Africa, 2009, 148). By region, the ownership or availability of mobile phones ranged between 83.1% in the Free State and 89% in Gauteng (South Africa, Statistics South Africa, 2009, 150).

---

309 Most studies rely on a pricing basket methodology adopted by the Organisation for Economic Development and Cooperation (OECD) to overcome the absence of complete data on prices and achieve reliable comparisons of prices between countries (OECD, 2012, 4).

310 As practiced in countries such as the United Kingdom (Research ICT, 2012, 1-4) and Brasil (supra, section 2.4).

311 Similar studies have been conducted for the European Union (Lewin & Milne, 2010, 1-42).

More recent data confirms that lower income households in South Africa appear to have the economic means to purchase mobile phones and buy at least some air time on a major mobile network. InfoDev published a report in December 2012 which concludes that:

> *. . . more than 75% among those in low-income groups who are 15 years or older own a mobile phone. Mobile ownership at the base of pyramid (BoP) – households with an income of less than R432 per month per household member – is relatively high compared to other African countries* (Peyper, 2013, 1).

Among such low income users, 98.5% use pre-paid mobile services with only 1.5% of such users relying on pre-paid contracts (Peyper, 2013, 1). Interestingly, 17.5% of low income users who did not possess a mobile phone cited a lack of affordability as the principal reason for their phoneless status, although 11.5% of such users indicated that they intended to purchase a mobile phone within the next year (Peyper, 2013, 1).

Yet the ability to pay for communications services does not necessarily confirm the affordability of such services. As highlighted in previous paragraphs, a significant portion of low income South Africans cannot afford to buy mobile phone services. Moreover, those low income South Africans who buy mobile phone services may choose to forego the purchase of other goods or services because they value the ability to communicate above benefits received from such other goods or services, even if this allocation is detrimental to their socio-economic well-being. Furthermore, South Africans may spend an inordinate amount of their income on communications services due to unduly high tariffs enforced by major market participants.

Presumably for this reason, the Government of South Africa has established specific targets for the affordability of communications services under its universal service and access policies. For voice services, the Government prescribes that not more than 5% of total individual or household expenditures should be spent to receive a minimum basket of voice services. For data services, the Government prescribes that 60% of households should not spend more than 5% of total expenditures to receive a minimum basket of data services.[312]

---

[312] Supra, section 5.3.2.2.2.

Based on these targets, South Africa's communications market has achieved universal service in terms of the affordability of communications services. South African households do not spend more than the prescribed 5% of expenditures on all communications services. The average South African household allocated approximately 3.4% of household expenditures to communications services in 2009 (South Africa, Statistics South Africa, 2009, 4, 5, 29, 58). By expenditure, lower income households spent the most (3.7%) on communications services. By geography, households in informal urban settlements allocated the highest (4.2%) portion of household expenditures towards communications services (South Africa, Statistics South Africa, 2009, 80). By region, households in Gauteng and Mpumalanga spent the most (3.7%) on communications services (South Africa, Statistics South Africa, 2009, 96). By ethnic group, white African households spent the most (3.5%) on communications services (South Africa, Statistics South Africa, 2009, 64). Under any metric, therefore, the highest allocation of expenditures on communications services falls well below the maximum 5% total household expenditure threshold prescribed as the benchmark for the affordability of communications services under the Government of South Africa's universal service and access policies.

Yet the realisation of Government targets does not necessarily mean that the country has achieved universal service in terms of the affordability of communications services. Given the relatively small number of people without access to communications services, the disparity between high teledensity rates and lower numbers of households reporting ownership or access to a mobile phone suggests that some people cannot afford a phone or choose not to own or access a phone on an individual basis. Offered a cost effective solution to obtain the many benefits derived from access to communications services, the number of people expected to voluntarily decline the opportunity to own or access a mobile phone is likely to be low. As such, the majority of people that do not own or have access to a mobile phone probably find themselves in this situation due to affordability issues rather than any desire not to communicate with other people.

Who are the people who cannot afford communications services in South Africa by 2013? Less affluent parts of society, including impoverished individuals and subsistence wage earners without discretionary income to purchase communications services, are most likely to be affected by the price of communications services. Even moderately affluent parts of society are likely to be

affected by the price of communications services because the money that they spend on such services leaves less income available to spend on the education of their children, purchases of consumer goods and discretionary purchases that fuel economic growth and socio-economic development.

The South African Government has been sensitive to the importance of access to communications services by 'needy persons'. Its definition of this term accounts for a variety of factors such as financial means, disability, age and other vulnerabilities to be determined by the USAASA or such other organisation appointed by the Government to make such determination.[313] While the Government has been slow to implement specific policies or programs and slower to release USAF monies that benefit such parties, the acknowledgement that vulnerable constituencies exist in South Africa which require assistance to access communications services on an affordable basis is recognised as part of the Government's policies to deliver universal service and access to communications services in the country.

Overall, South Africa has achieved universal service in terms of the affordability of voice communications services. It is likely to achieve universal service in terms of the affordability of data communications services in the near term. Given the relatively small segment of South Africa's population that does not enjoy available or accessible communications services, the relatively higher number of households that do not use communications services suggests that the affordability of communications services likely represents the most substantial barrier to the realisation of universal service and access to communications services in the country. Communications services may be available, accessible and within the purchasing power of most South Africans but of limited value to those South Africans who cannot afford to use such services. Reducing the costs of communications services to those people who cannot pay for such services under customary commercial conditions should represent a primary focus of future programs undertaken by the Government of South Africa to advance the realisation of universal service and access to communications services.

---

313 Supra, section 5.3.2.2.2.

## 8.4 PROGRAM REFORMS

As demonstrated in previous chapters, the Government of South Africa does not have much to show from its investment between 1996 and 2013 in the four key programs designed to deliver universal service and access to communications services in the country. Two programs no longer exist. The USAO Program and the USAL Program effectively expired as failures and the Government appears to have little appetite to re-introduce such programs, a prudent decision since conditions in South Africa's communications market have long bypassed the utility of such programs. The USAASA represents a viable public sector actor in some form but proposed reforms of this Agency may be more correctly considered regulatory reforms rather than program reforms, as with reforms to the USAF.[314] Specific programs undertaken by the USAASA as part of its enabling function (such as telecentres and cyberlabs) have been terminated or transferred to other public sector agencies under a 'handover project' commenced in 2010 (USAASA, 2012c, 1). The PIT Program operated by the Post Office does not promote the realisation of universal service and access to communications services as its central purpose.[315]

At the end of 2013, therefore, the Government of South Africa does not have any program which has the specific objective of accelerating the delivery of universal service or universal access to communications services in South Africa. In late 2012, the USAASA issued a tender for the development of a National Strategy on Universal Service and Universal Access (USAASA, 2012d, 1-3). Combined with the Government's larger ICT policy review and *National Development Plan 2030* (South Africa, 2011c), it seems timely to consider the merits of three specific programs that may accelerate the realisation of universal service and access to communications services in the country.

Any consideration of new programs to accelerate the realisation of universal service and access to communications services in South Africa may benefit from a review of the original policy rationale for universal service which was well expressed by the USA in the context of South Africa's communications market in 1999:

---

[314] Infra, section 8.5.

[315] Supra, section 5.3.2.1.3.

> *The purpose of Universal Service is to ensure that the part of the population which would not receive essential telecommunications services under normal market conditions, has access to those services. Universal Service provision is required primarily to cover those citizens who can not* [sic] *afford essential service* (USA, 1999, 15).

Restated to account for the current realities of South Africa's communications market, universal service and access programs should seek to intervene in the country's communications market to ensure the availability, accessibility and affordability of communications services to those parts of the population not served by market participants under customary commercial conditions.

Given the breadth of available and accessible communications services in South Africa, the affordability of communications services has become the increasingly central focus of universal service concerns in the country. The ability to deliver affordable communications services is a more problematic and complex concern for public sector policy makers and private sector market participants alike. Unlike the ability to design programs that target specific geographies that do not have available or accessible communications services, it is difficult to define specific geographies affected by the price of communications services. Barriers to the affordability of communications services recognise no race, residence or position in life, only the lack of sufficient discretionary income to purchase services.

Price-sensitive populations live across South Africa.[316] They abound in rural and urban communities alike. They are often intransigent and difficult to identify through customary information-gathering efforts. Even within communities that comprise of predominantly poor, low income or lower middle class citizens, pockets of affluence within such communities suggest that programs that use geographic targeting may face significant challenges in isolating appropriate beneficiaries. Moreover, the transportability of mobile phones and motility of mobile phone users heighten prospects that entitlements conferred upon intended beneficiaries in price-constrained communities may be misdirected to enrich unintended beneficiaries in other communities. Moral hazard is a legitimate concern as South Africa supports an entrepreneurial culture and opportunities for the arbitrage of benefits available under subsidy programs from intended beneficiaries to non-intended beneficiaries

---

316 For a general discussion of the demographics of South Africa, see the *2009 Household Survey* (South Africa, Statistics South Africa, 2009) and the *National Census 2011* (South Africa, Statistics South Africa, 2011).

for financial gain may appeal to some citizens.[317] Criminals in South Africa may also attempt to exploit poorly designed subsidy programs for financial gain.[318]

Other methodologies are available to define specific populations affected by the price of communications services, such as means test targeting and community-based targeting. Programs based on these other methodologies, however, engender challenges as problematic as programs based on geographic targeting. In addition to the high costs and administrative complexity associated with programs that use means test targeting or community-based targeting to distribute benefits, the implementation of such programs is often problematic due to registration, verification and renewal requirements that are difficult to satisfy by intended beneficiaries (Calfucoy, Cibulka, Davison, Hinds & Park, 2009, 9-10; Tissington, Detterman, Langford, Dugard & Conteh, 2008, 4). In South Africa's water sector, for example, programs that use poverty as the principal eligibility criterion have suffered from suboptimal performance because many poor people do not have the proof of lack of income to satisfy the means test required to access benefits (Calfucoy et al, 2009, 9). Other people do not participate in the program due to the stigma attached to the use of poverty as the principal eligibility criterion (Calfucoy et al, 2009, 10). Collectively, the definition of target populations and methodology used to engage such populations require significant consideration to ensure the optimal delivery of benefits to intended beneficiaries and the exclusion of unintended beneficiaries.

To avoid pitfalls associated with isolating specific target populations as beneficiaries for subsidy programs linked to the affordability of communications services, policy makers may consider programs that decrease the overall cost of communications services for all South Africans, including price-sensitive consumers. Yet cost savings from lower priced communications services are distributed according to the consumption of such services. As such, the benefits of lower across-the-board costs are likely to be disproportionately distributed to consumers who currently pay for communications services and do not have any essential need for lower communications costs relative to consumers who cannot currently afford to purchase any communications services.

---

317 For example, opportunities for corruption of the national housing scheme were discussed in the *Evaluation of the National Housing Scheme* (Public Service Commission, 2003, 12).

318 For example, 20,554 people were prosecuted for fraud and corruption related to grants involving the South Africa Social Security Agency between 2006 and March 2012 (Timm, 2012, 1).

Existing users may consume more communications services at lower prices and generate additional economic benefits from their increased use of such services. At the same time, it is unlikely that South Africans who cannot currently afford any communications services would be able to purchase a minimum amount of air time without a dramatic cut in tariff levels that would disproportionately benefit existing consumers who can afford to pay for such services under existing tariff levels. Any marginal decrease in the overall cost of communications services in South Africa, while a worthwhile public policy pursuit, is not a panacea that resolves the affordability gap that confronts consumers who cannot currently purchase such services due to their price.

Furthermore, many existing consumers of communications services in South Africa already benefit from preferential pricing structures. Businesses which use a significant amount of communications services generally receive preferential rates from service providers relative to individual users (Telkom, 2012b, 1). Post-paid mobile phone users (contract users) generally receive preferential rates from service providers relative to prepaid users (InfoDev, 2012, 14, 24-25). As such, the price of communications services in South Africa is already skewed in favour of many existing consumers who require no additional incentives to purchase air time.

The Government of South Africa has attempted to lower the overall cost of communications services with moderate success.[319] ICASA issued regulations effective March 2011 which introduced a tariff 'glide path' that gradually reduced the Mobile Termination Rate (MTR) over a three year period to reach ZAR 0.40 by March 2013 (ICASA, 2013g, 1, 3). It undertook analysis of local loop unbundling and launched an inquiry into wholesale transmission services (ICASA, 2013g, 4). In June 2013, ICASA launched a 'cost to communicate programme' that comprises five components (a license holder value chain study; an inquiry into the Digital Terrestrial Television (DTT) rate card; local loop unbundling regulations; the collection of ICT indicators; and a call termination market review) expected to be completed by June 2015 (ICASA, 2013g, 8). ICASA simultaneously issued a notice to review call termination regulations (ICASA, 2013g, 10).

---

[319] The CST component of the USAO policy is a notable success story (supra, sections 5.3.1.2, 7.3.2 and 7.3.3).

In October 2013, ICASA published draft call termination rates for fixed line and mobile operators (ICASA, 2013h). It proposed a further glide path that gradually reduces the MTR over a further three year period to reach ZAR 0.10 by March 2016 (ICASA, 2013h, 5). It proposes fixed termination rates that gradually reduce from ZAR 0.20 to ZAR 0.10 for fixed locations within any area code and ZAR 0.12 to ZAR 0.19 for fixed locations between any area codes by March 2016 (ICASA, 2013h, 5-6). The Agency also proposed asymmetrical interconnection rates for smaller market players (holding less than 20% market share) which will principally benefit Cell C and Telkom Mobile (ICASA, 2013h, 7-8).

MTN and Vodacom subsequently launched legal action to challenge ICASA's prescription of this glide path (Rabkin, 2014a, 3). During court proceedings, ICASA admitted that it was '*no longer satisfied as to the robustness of its conclusions on the appropriateness of the rates'* for future years (Rabkin, 2014b, 2). It sought only to enforce the proposed interconnection rates for 2014. Vodacom's counsel argued that ICASA's '*indefensible thumb-suck'* breached the *Electronic Communications Act* because ICASA was permitted to intervene only in instances of '*market failure'* which, in this case, relied on the assumption of inefficient pricing that needed to be based on an accurate calculation of the cost of interconnection (Rabkin, 2014a, 3). On 31 March 2014, the South Gauteng High Court ruled that ICASA's new call termination regulations were '*unlawful and invalid'* but suspended its declaration for six months to enable ICASA to revise its regulations (BusinessTech, 2014, 1).

In December 2013, ICASA issued an explanatory note on local loop unbundling as a prelude to hearings in February 2014 (Mochiko, 2013c, 16). ICASA materially expanded the scope of communications services captured by proposed local loop regulations to include '*all physical media, including electrical, optical and radio frequency, used as the electronic communications facilities for the connection of an end-user or end-site to an access network aggregation point on the electronic communications network'* (Mochiko, 2013c, 16). While welcomed by small operators, Telkom noted that the unbundling of such a broad range of services will result in companies seeking to '*cherry-pick the most profitable areas and fixed-line customers. Those who stand to benefit are businesses and high-income households, while the underserved areas, particularly in rural and peri-urban areas will be left behind'* (Mochiko, 2013c, 16). As such, ICASA is walking a fine line which needs to balance its determination to reduce communications costs in South Africa against the potential for unintended consequences arising from its intervention into private market matters.

Improving the affordability of communications services represents an appropriate public policy concern. However, any public sector intervention in South Africa's communications market that seeks to distort prices favourably for consumers needs to focus specifically on helping the cadre of South Africans that currently do not enjoy the benefit of any communications services due to their inability to buy such services under customary commercial conditions. No program adopted by the Government of South Africa to date has specifically addressed the plight of this constituency.[320] Future programs related to the realisation of universal service and access to communications services should remedy this oversight.

Acknowledging the absence of any national strategy for the realisation of universal service and access to communications services in South Africa, the lack of communications services for some segments of South Africa's population and barriers to affordable communications services for some South Africans, this study recommends that the Government of South Africa adopt three specific programs to accelerate the availability, accessibility and affordability of communications services in the country. A Universal Coverage Program would motivate market participants to deliver communications services to those parts of South Africa not addressed by the overall footprint of current communications networks. A Free Air Program would require Electronic Communications Services (ECS) license holders to offer a subscription-based package which includes a phone, SIM card and 60 minutes of air time (for voice or data services) to any South African at nil cost.[321] A Free Broadband Program would require Electronic Communications Network Services (ECNS) license holders to deliver up to 10 Tb of monthly broadband bandwidth to eligible connectivity centres at nil cost. These three programs may integrate with other reforms, including changes to the regulatory environment recommended in this chapter, to increase the availability, accessibility and affordability of communications services in South Africa.

### 8.4.1 Universal coverage program

The South African Government should adopt a 'Universal Coverage Program' which mandates that all of South Africa's continental territory should be served by some form of a communications network. This Program would effectively require the

---

320 Supra, section 5.2.

321 Subject to certain terms and conditions as outlined in section 8.4.2.

expansion of current communications networks to cover the balance of South Africa's territory not addressed by current network coverage. Acknowledging the sparsely populated nature of such territory, this Program should mandate the creation of public access points to deliver communications services at key geographic or population points within this territory until the entire area is saturated by coverage from additional communications network capabilities. Such public access points likely represent a cost effective means to deliver basic communications services within such territory. Depending on usage levels, a greater number of public access points could be clustered in relatively dense population centres that may ultimately justify the presence of network coverage capabilities that satisfy universal service requirements. This Program should be implemented by 2016.

The Universal Coverage Program ensures the accessibility of communications services to 100% of South Africa's population. It achieves universal access and promotes universal service as anyone could go anywhere in South Africa and enjoy available and accessible communications services. Beyond the convenience of communications services afforded to travellers, few people would dispute that citizens living or travelling in rural or remotely populated parts of South Africa are less entitled to accessible communications services than citizens living or travelling in urban or peri-urban parts of the country. Indeed, access to communications services is often disproportionately important to the economic and social well-being of people living in remote communities relative to their counterparts in urban communities.[322] The Universal Coverage Program therefore fulfils one of the fundamental purposes of universal access policies in South Africa's communications market, namely the delivery of communications services to those people left behind by the commercial operations of private sector actors.

The cost to build public access points in South Africa's unserved areas may not represent a significant investment relative to the overall infrastructure investment requirements of South Africa's communications market.[323] The total area affected by the Universal Coverage Program is relatively small in the context of South Africa's overall mass. The USAASA estimates that:

---

[322] Supra, sections 1.1, 1.2, 2.2.1, 2.4, 5.3.2.2.2, 5.2.4, 5.3.4 and 7.3.7.

[323] South Africa's existing operators are forecast to spend at least USD 11 billion on infrastructure investment between 2012 and 2017 (BMI TechKnowledge, 2012c, 1).

> *. . . the existing gaps are quite small, and the areas that appear to be outside the market frontier are limited to areas in just a few provinces. . . . commercial operators should be able to expand their coverage further to reach a large majority of those locations and population centres where 2G service is not yet fully available* (USAASA, 2013a, 13).

The USAASA identifies the Northern Cape and Limpopo provinces of South Africa as key geographies most affected by the absence of basic communications services (USAASA, 2013a, 14). It suggests that low income levels endemic to these areas have discouraged mobile operators from investing in the network infrastructure required to deliver communications services to these '*unviable*' territories (USAASA, 2013, 14).

Yet the cost of building communications networks has fallen in recent years. Assuming use of communications towers as a cost effective means to provide the bulk of such network coverage, the investment required to erect and operate a portfolio of public access points may not 'break the bank' of South Africa's communications network operators. Indeed, any investment in such infrastructure may generate viable commercial returns if a suitable public-private funding formula can be crafted to offset the likely loss-making nature of such facilities.[324]

The Government of South Africa likely has sufficient funds in the USAF to pay for construction costs associated with the roll out of additional communications network capabilities to unserved areas as required by the Universal Coverage Program (particularly if such funds are not allocated to subsidise the roll out of Set Top Boxes). The simplest way to realise the Universal Coverage Program would be for the Government to tender for the construction of public access points in unserved areas and pay for such construction costs from the USAF.[325] Ongoing operational requirements and costs could be allocated to a SOE or SCE such as Broadband Infraco Proprietary Limited or Telkom SA Limited and complement the existing suite of services offered by such companies.

---

[324] The USAASA appears to be gathering such metrics and conducting such analysis as part of its evolving market gap analysis (USAASA, 2013a, 14).

[325] Universal service funds have been used in many other markets to pay for the roll out of communications services in rural, remote and insular areas (supra, section 2.4).

Building on lessons learned from its previous program failures, however, the Government should avoid this option. It should not play any role in the implementation of the Universal Coverage Program. While it has a legitimate role in the design, administration, monitoring, evaluation and regulation of the Universal Coverage Program, full responsibility for the implementation of the Universal Coverage Program (construction and operation of the communications network infrastructure required to deliver communications services to unserved areas) should fall to private sector market participants.

The Government of South Africa should conduct a well-crafted competitive reverse auction that motivates private sector interest in building and operating the public access points required to realise the Universal Coverage Program. Every Electronic Communications Network Services (ECNS) license holder should be eligible to participate in the auction. They should be able to bid for specific areas within the unserved territory and specify the maximum once-off subsidy required from the Government, if any, to build and operate the proposed communications network infrastructure within the specific area.[326] This allows every ECNS license holder to consider synergies that may exist between existing network capabilities and the extension of such capabilities into adjacent areas. Given the competitive landscape and lack of access to communications network infrastructure by the myriad of VANS operators, many ECNS license holders are likely to participate in a well-crafted tender that motivates private sector enterprises to build public access points required to deliver communications services to areas currently without such services. Based on the substantial pool of ECNS license holders and the desire of many license holders to expand their infrastructure footprints, the likely opportunity for market collusion or rent seeking practices on subsidy levels is remote and, in any such instance, may be addressed through the tender process, existing regulatory frameworks and customary legal remedies.

The Universal Coverage Program is designed to rely on a once-off subsidy that reduces the burden on private sector operators to pay for significant once-off capital expenditures associated with the construction of communications network infrastructure in previously unserved territories of South Africa. Consistent with international best practices (ITU, 2012c, 1; 2012d, 1; 2011b, 83), this Program does

---

[326] This means that there may be at least 448 eligible tender participants based on the total number of ECNS license holders (ICASA, 2013a, 1).

not envisage any need for ongoing subsidies to support the provision of communications services in previously unserved areas. The Total Cost of Ownership (TCO) of public access points in such areas is likely low and addressed by revenues from the use of communications services within such areas, ability to lower costs by aggregating various marginal areas into commercially viable concessions and opportunities to reduce costs by using operational capabilities that serve existing nearby infrastructure nodes to serve new infrastructure nodes in unserved areas. Without such circumstances, the Program retains sufficient flexibility to enable the Government to pay ongoing subsidies to private sector actors for the provision of communications services within specific unserved areas if the auction process confirms the unwillingness of such actors to provide these services without ongoing financial support.

The Government of South Africa can design the auction with several incentives that enhance the attractiveness of the opportunity for private sector actors and reduce the subsidy imperative. From a market perspective, the auction should encourage bidders to form consortia to share network infrastructure to reduce construction and maintenance costs on a per participant basis. Such cooperation is an established practice[327] and may enable many VANS operators to gain a foothold in the communications network infrastructure space on a cost effective basis. From a technology perspective, the auction should represent a technologically neutral process that encourages bidders to use of a wide range of technologies (such as solar power, wind power, long-life batteries and ambient cooling systems) that may lower subsidy requirements and achieve competitive advantages in the auction. From a commercial perspective, the Government should avoid non-commercial prescriptions on auction participants, such as the need to satisfy specific shareholding requirements. Bidders should also be allowed to propose the provision of additional services as part of their submissions, although the merits of such services should not inform the evaluation process even if included in subsequent concession terms.

---

[327] Such cooperation can be in the form of the sharing of network infrastructure on a contra basis (site sharing) or through the leasing of space on sites, either on a proprietary basis or through a leasing company. It is a '*powerful mechanism for cost reduction*' (South Africa, 2010a, 14).

Winning bidders (concession holders) should be required to satisfy strict concession terms in exchange for the subsidy and opportunity to provide communications services within their concession area. Concessions should be awarded on a non-exclusive basis. Concession holders enjoy the advantage of a once-off subsidy that reduces the costs of providing communications services within specified territories. Other operators that wish to compete against concession holders in such territories without the benefit of any subsidy should be allowed to exercise such commercial freedom. Stringent performance requirements should be imposed on every concession holder as part of every concession, with penalties for non-compliance with such requirements.

The service area, network coverage requirements, key milestones for the construction of communications network infrastructure, date for commencement of communications services and minimum service standards should form an integral part of tender documents and concession terms. Concession holders should only receive their subsidy after they have satisfied prescribed milestones within prescribed periods. Alternatively, the subsidy can be paid in tranches against transparent, objectively verifiable milestones such as the completion and activation of a certain portion of the network within the concession area. Concession holders should be required to offer market-related packages and prohibited from imposing any additional tariffs, fees or other costs on consumers in any previously unserved area that are not levied on a national basis to all consumers in other geographies.

Many people may reasonably assume that any territory affected by the Universal Coverage Program is unserved by private sector actors for sound commercial reasons. Indeed, low average revenue per user (ARPU) and high building and operating costs often yield subpar returns on infrastructure investments in remote or sparsely populated areas. The auction process addresses these deficiencies by using competitive market dynamics to identify the minimum amount of subsidy to be paid by the Government to private sector actors to build such infrastructure, thereby making it commercially feasible for them to undertake such activities.

Due to the flexibility of the proposed auction process, it is possible that some unserved areas may not be identified for service by any auction participants. This outcome is a remote possibility because the market is likely to identify the most challenging parts of unserved areas and request the highest subsidies for such areas. In any such event, however, the Government may re-auction any residual

areas to afford market participants the opportunity to submit higher subsidy requirements and offer the opportunity to propose ongoing subsidies for the provision of public access points in such areas as part of new bids.

The Universal Coverage Program is different from the USAL Program. There are no new licenses to be issued to special purpose consortia formed without the requisite financial standing or operational track record. There are no limits to the scope of services or territory which may be covered by communications network infrastructure located in under serviced areas. The Universal Coverage Program relies on existing operators already licensed to operate in South Africa. It provides the flexibility for them to design their own footprints to deliver communications services to unserved areas. It relies on market-driven auctions to establish subsidy levels rather than offering fixed subsidies. It encourages market innovation to reduce costs to gain competitive advantages (by lowering subsidy requirements and improving opportunities to secure concessions). Unlike the USAL Program, therefore, the Universal Coverage Program not only facilitates the delivery of public access points to all parts of South Africa without adequate communications services but ensures the realisation of such services on the most cost effective basis with the least burden on the fiscus.

Crucially, the auction of subsidies to make it commercially viable for licensed operators to provide communications services to unserved areas does not rely on any asymmetrical interconnection tariffs to support the delivery of communications services by operators in any area within South Africa. The availability of asymmetrical tariffs was often seen as a panacea (that never arrived) for the multitude of problems that doomed USATN operators.[328] The introduction of asymmetrical tariffs distorts market behaviour (by operators and consumers alike), gives rise to a myriad of opportunities for fraud by manipulating geographical calling patterns and requires significant monitoring, evaluation and regulation well beyond the benefits derived by operators or consumes from the availability of such tariffs. As ISPA's representative notes, the implementation of universal service '*must apply to everyone equally'* (Bate, 2014b, 3) because:

---

[328] Supra, sections 5.2.4 and 5.3.4.

> *The minute it becomes asymmetrical it is very difficult to motivate how come one person is paying less than another person. And it has to be a global thing. If you are going to decrease it* [the price of services] *from a universal service perspective, you have to decrease it from a normal service perspective otherwise you are going to have to try and figure out where the line is drawn between universal and non-universal service* (Bate, 2014b, 3).

The Government should support the Universal Coverage Program. It is an improvement on the Government's previous programs because it ensures that no South African is left without the opportunity to connect to communications services anywhere in the country. It is consistent with the 'smart subsidy'[329] principles advocated as part of international best practices (ITU, 2012c, 1; 2012d, 1; 2011b, 83). It delivers truly universal access in terms of communications services. Unlike previous programs, it recognises the Government's right to design, monitor, evaluate and regulate the Universal Coverage Program but reserves responsibility for implementation of this Program to private sector actors. Through efficient design, it ensures the allocation of scarce resources among such actors to implement the Program on the most efficient and cost effective basis.

The Universal Coverage Program is consistent with the guiding principles of the USAASA's proposed National UAS Strategy. It relies on a public-private partnership platform to create and sustain a technology neutral, inclusive program that delivers basic communications services (or more) to 'needy persons' through a competitive, market-driven approach. It facilitates evidence-based decision-making and qualitative and quantitative monitoring and evaluation protocols. Indeed, the Universal Coverage Program ensures that all South Africans in all parts of South Africa likely benefit from at least 2G mobile communications services, an explicit goal (Objective 1) of the proposed National UAS Strategy (USAASA, 2013a. 17). It also dovetails with the Universal Basic Mobile Telephone Service Programme unveiled by the USAASA as part of the proposed Strategy, including the Agency's proposed use of competitive, market-driven allocations of subsidies for network roll out programs (USAASA, 2013a, 22-23).

---

[329] A smart subsidy is a once-off, results-oriented subsidy that does not distort market conditions or impose burdens on market actors in the long term (GSMA, 2006, 32, 37).

Notwithstanding the opportunity to connect to communications services anywhere in South Africa, however, the benefits of the Universal Coverage Program may ring hollow for many South Africans if they cannot afford to pay for such services. Therefore, the litmus test for the Government of South Africa is the genesis of universal service and access programs that not only assure the availability and accessibility of communications services but also the affordability of such services for all South Africans. The Free Air Program addresses this imperative.

### 8.4.2 Free air program

To improve the affordability of communications services for impoverished South Africans but avoid the pitfalls of benefit programs that use means test targeting, community-based targeting or geographic targeting, the Government of South Africa should adopt a 'Free Air Program'. This Program requires all vendors of retail communications services in South Africa to offer consumers an opportunity to acquire a subscription-based suite of bundled services[330] that comprises a free basic telephone, free SIM card and 60 minutes of free monthly access on their network[331] which may be used for voice communications services or up to 100 Mb of data communications services (the Free Air Package). The cost to consume additional minutes or data services thereafter would attract market-related tariffs. This Program should be implemented by 2016.

The idea of providing poor people with subsidised access to basic public services is not a new concept. The subsidisation of services in the water supply, sanitation and electricity sectors is a widespread global practice (including South Africa) and has been subject to extensive debate (Galvin, 2012, 5; Komives, Foster, Halpern & Wodon, 2005, 167). The idea of providing poor people with subsidised access to communications services is also not a new concept. In the United States of America, for example, the LifeLine Program administered by the Universal Service Administrative Company enables operators to provide income-eligible Americans with a wide range of subsidised communications services, including a free phone, free SIM card, free minutes, free text messages and limited long distance calls (FCC, 2012, 1; Tuttle, 2012, 1; USAC, 2012b, 1; Shawgo, 2010, 1).

---

330 Typically called a 'package' in market parlance.

331 Typically called 'air time' and often described in units of 'minutes' or 'seconds' in market parlance.

The idea of providing every consumer of communications services in a given market with the opportunity to acquire a free phone, free SIM card and a specific number of free minutes of monthly access on their communications services provider's network is a new idea. It is an idea adapted from precedents found in other utility markets (recalling that the delivery of communications services was historically considered a utility market) where all consumers are provided with a minimum amount of free services. In South Africa, for example, the Government has provided a certain amount of free basic water to qualifying households since 2001 (Szabo, 2012, 4; Calfucoy et al, 2009, 7) and a certain amount of free basic electricity to qualifying households since 2003 (Adam, 2010, 5). In the 21st century, the right to a certain amount of available, accessible and affordable communications services is almost universally recognised as an essential service akin to the right to a certain amount of available, accessible and affordable water and electricity. As such, the principles of targeted benefits programs that currently exist in the water and electricity sectors of South Africa's economy should apply to the utility-like communications sector of South Africa's economy.

As a targeted benefits program, the Free Air Program avoids the pitfalls of means testing and community-based and geographic targeting by using self-selection targeting as the basis for the distribution of benefits. Programs that rely on self-selection to identify beneficiaries generally operate at a low cost with minimal administrative complexity and moderate effectiveness (ITU, 2011b, 57-59). Consistent with such characteristics, the Free Air Program is an uncomplicated policy that requires no public sector administration other that the discharge of monitoring, compliance, evaluation and regulation responsibilities which may be absorbed within existing public sector capacities.

In the United States of America, for example, the LifeLine Program which uses means testing to target beneficiaries has been subject to significant criticism for maladministration and abuse by beneficiaries. The FCC has admitted poor oversight and inefficient management that enabled 270,000 individuals to receive more than one free phone under the program, with some individuals hoarding as many as 30 free phones because no central database existed to track beneficiaries (Lybio, 2012, 1; Tuttle, 2012, 1). Dead people have received free mobile phones through unsolicited deliveries in the mail (Griffin, 2012, 1). Beneficiaries are selling free mobile phones to drug dealers (Lybio, 2012, 1) with some commentators claiming that the program is '*completely out of control'* (Lybio, 2012, 1) and objecting to the supply of free 'Obama phones' to poor people (Fox, 2012, 1).

The challenges and criticisms of the LifeLine Program highlight the imperfections of benefits programs based on the subsidy of services to defined population groups. They further betray the particular challenges of implementing benefits programs by public sector agencies in private sector markets, particularly the communications sector. Much of the blame rests with public sector policy makers who design, administer and monitor imperfect programs. Much of the blame rests with mobile phone operators who take advantage of opportunities to attract new customers at the expense of the national fiscus without rigorous adherence to program requirements. Much of the blame rests with citizens who exploit the ineptitude of public sector actors and the greed of private sector actors to unlawfully gain free mobile phones and free air time under such programs. By relying entirely on private sector actors to offer the Free Air Program within existing market mechanisms, the Free Air Program avoids these pitfalls.

Although the Free Air Program will offer every South African the opportunity to subscribe for a Free Air Package, the Free Air Program relies on self-selection (rather than eligibility rules) to limit the likely acceptance of this opportunity to a small portion of price-dispossessed consumers who currently cannot afford communications services in South Africa. As such, the Free Air Program effectively delivers its benefits to its target population without using any artificial targeting methodologies. The pool of eligible beneficiaries is dictated by consumer behaviour which suggests that the benefits available under the Free Air Package are not attractive to most South Africans who already pay for communications services because they obtain a higher quality phone, SIM card and free minutes as part of existing subscription contracts or pre-paid packages.

For example, Vodacom offers free phones, free SIM cards and between 75 and 1,000 ‘free minutes’ as part of 13 of 17 post-paid (contract) plans and 13 of 14 ‘smart’ plans (Vodacom, 2012b, 1; 2012c, 1). Vodacom also offers customers a free phone, free SIM card and up to 60 free minutes of voice and data services during evenings on another package (Vodacom, 2012d, 1). Other operators also include free mobile phones, minutes, memory sticks or data packets in various packages (MTN, 2012b, 1; Cell C, 2012, 1). As such, consumers who can afford to pay for communications services under existing market conditions are unlikely to migrate to a Free Air Package that limits the quality of the phone or offers a minimum number of free minutes equal to or less than the number of promotional minutes offered to them by operators as part of customary commercial packages.

Operators are likely to welcome the Free Air Program once they appreciate the new commercial opportunities created by the Program. South Africa is a saturated market and private sector actors are competing aggressively to grow business within less saturated low income segments. Operators seeking to increase market share within these segments are likely to offer a series of bonus packages that supplement the basic requirements of the Free Air Package. These supplemental packages would feature a range of optional enhancements that allow targeted Free Air Package consumers to grow into paying customers who purchase more sophisticated phones and consume more air time as their socio-economic circumstances change over time. In the United States of America, for example, the LifeLine Program has been enthusiastically embraced by mobile operators who are competing for the few Americans not served by current packages, particularly '*the poor* [who] *represent a last untapped market*' (Richtel, 2009, 1). According to a leading communications industry analyst:

> *The low hanging fruit is gone, and the wireless companies are going after the nooks and crannies. . . . "Oh the poor: how can we sign them up?"* (Richtel, 2009, 1).

American carriers are proactively marketing the opportunity for consumers to obtain free cell phones and minutes through direct mail marketing, television advertisements, electronic kiosks and other means which often target non-eligible individuals (Griffin, 2012, 1; Tuttle, 2012, 1; Richtel, 2009, 1-2). Indeed, the LifeLine Program is regarded by many US mobile operators as an opportunity to '*eventually convert subsidised customers into paying ones if their fortunes turn around and they no longer quality for a free phone*' (Richtel, 2009, 2).

South Africa's mobile communications market is more saturated than America's market.[332] Domestic mobile operators should view the Free Air Program as an opportunity to capture the last few pockets of uncommitted consumers and grow them into paying customers that consume air time beyond their allocation of free minutes. Moreover, it should create consumption habits among young consumers at an earlier age by encouraging parents to provide basic mobile phones to their children who can consume a minimum amount of free air time but who consequently adopt the kind of long term consumption behaviour and brand affinity sought by service providers from their customers.

---

[332] Based on mobile teledensity.

Any Free Air Program would require careful consideration of key design parameters. Opportunities for arbitrage would exist if some consumers obtain a basic phone and sell their phone or use of air time within their free minutes threshold. The widespread availability of free minutes would likely depress the market value of such minutes. The regulatory requirements and administrative burden of compliance with the *Regulation of Interception of Communications and Provision of Communications-Related Information Act, Number 70 of 2002* (South Africa, 2002b) reduce the transferability of SIM cards and opportunity to transfer the use of minutes. Any sale of minimum minutes would reduce the opportunity for the mobile phone account holder to use their phone without reaching the free minutes threshold and paying for minutes thereafter. Such circumstances would likely conspire to discourage arbitrage in most instances.

The most likely opportunities for abuse arise among members of the most marginalised and deeply impoverished segments of South African society. Such citizens may choose to extract some value from the sale of their free minutes and forego access to communications services to generate cash to make other essential purchases – such as food, clothing and shelter. Arbitrage in these circumstances may represent a welcome unintended consequence as it enables the most vulnerable segments of South Africa's society to more readily meet their basic sustenance requirements.

In the context of utility markets, the Free Air Program adopts a 'zero first block' tariff policy which provides a specific amount of service (such as water or electricity) to every consumer at no cost and thereafter charges incrementally higher tariffs for consumption beyond the first block threshold (Calfucoy et al, 2009, 8; UNEP, 2008, 1; Boland & Whittington, 1998, 1-15). This tariff policy does not rely on isolating specific target populations (as everyone benefits from an initial block of services at nil cost), is administratively easy to design, implement, manage and monitor and avoids any stigma associated with receipt of any subsidy based on poverty or other adverse socio-economic conditions. The principal drawback is that every consumer benefits from a free allocation of the services, including consumers who can otherwise afford such services. Foregone revenues must be raised in another manner such as higher tariffs beyond the complementary consumption threshold.

There is significant debate about whether zero first block or low cost first block tariffs skew consumption patterns and achieve optimal use of resources among users, particularly low income consumers (Szabo, 2012, 30; Calfucoy et al, 2009, 7-8; Tissington et al, 2008, 21-24, 30-33; Earle, Goldin & Kgomotso, 2005, 13-14). Unlike utility services that often deal in scarce resources (such as water and electricity) and need to consider demand management in any public policy intervention, however, there is no downside from additional consumption of communications services (in fact, it would be a positive benefit to private sector service providers). As such, the principal drawback of the Free Air Program is the potential cost to operators from the prospective provision of Free Air Packages to every South African consumer.

This potential cost is likely to be insignificant. Unlike other utility markets, the communications market is not constrained by any scarcity of supply. Indeed, communications market participants actively nurture demand. To bolster demand, South Africa's communications market participants have effectively adopted a zero first block or low first block tariff policy on a voluntary basis. As shown earlier, most operators already offer a free phone, free SIM card and free minutes as part of customary commercial offerings. Operators have also given away SIM cards as part of their CSO efforts and voluntarily increased the number of free SIM cards distributed to low income South Africans due to the spin-off business arising from such practices (Bate, 2014b, 2). Combined with the likelihood that most paying consumers will not migrate from comparatively attractive commercial packages to a restrictive Free Air Package, the pool of South African consumers expected to take up the Free Air Package is likely limited to a small segment of price-dispossessed South Africans who currently cannot afford to purchase any communications services at customary commercial tariffs.

The allocation of 60 free minutes on communications networks under the Free Air Program balances the need to provide price-dispossessed South Africans with a minimum amount of access to communications services with the burden to provide such access imposed on operators. In the context of South Africa's communications market and South Africa's socio-economic development, the urgent need to provide price-dispossessed South Africans with minimum access to communications services is an acceptable and proportionate burden to place on operators for the privilege of earning very healthy profits from the wealth of South Africans who can afford to pay for such services.

Moreover, price-dispossessed South Africans are less likely to engage in sophisticated commercial enterprises, require significant data connectivity or frivolously use communications services for social interactions relative to other segments of South Africa's population. They are more likely to use their newfound connectivity to communications services on a frugal basis to improve their access to essential services or economic opportunities which are likely to improve their socio-economic standing. As such, the burden placed on operators by the Free Air Program represents an even more appropriate public policy intervention given the significant socio-economic benefits that may be derived from the nascent use of communications services by beneficiaries of the Program.

On average, South Africans consumed 137.9 minutes of mobile communications services per month in 2012 (Bloomberg, 2013, 18). To minimise market distortions, the number of free minutes offered under any Free Air Package should represent only a portion of the average monthly minutes used by South Africa's population to ensure that these minutes do not cannibalise income to operators generated from exiting low minute users. The number of free minutes prospectively available to South Africa's entire population under any Free Air Package should be lower than the number of free minutes that may be made available to any smaller group of targeted beneficiaries. The amount of free minutes accessible under any Free Air Package should not compete with the number of free minutes offered in commercial packages (which generally range from 75 minutes to 1,000 free minutes). Given these considerations, the allocation of 60 minutes of free monthly air time in the proposed Free Air Package represents an equitable threshold which is 57% less than the average monthly minutes typically used by South Africans and 20% less than the minimum number of promotional minutes typically offered by operators as part of commercial packages.

There is wide latitude within the economics of South Africa's communications market to absorb the cost of free minutes made available under the Free Air Program. The marginal cost to communications services providers of delivering free minutes may not be high. As a proportion of expenditures, mobile operators have high fixed costs and low variable operating costs. Capital costs to roll out and maintain mobile networks are high but largely impervious to the number of users or amount of traffic carried over such networks after reaching a minimum breakeven level. The 'free minutes' allocated to customers under current packages are already

counted within existing traffic volumes. The marginal increase in traffic arising from the inclusion of additional free minutes allocated under the Free Air Program to price-dispossessed consumers is not likely to stress the infrastructure capabilities or capacities of existing communications networks. Administrative costs arising from implementation of the Free Air Program are likely to be low. The intake of price-dispossessed South Africans as new consumers should not strain existing administrative capabilities or the back office capacities of most communications services providers.

Lost notional revenues to communications services providers from delivering free minutes to consumers under the Free Air Program may not be high. The cost of free minutes cannot be extrapolated based on published tariffs. As noted above, operators generally provide a generous number of free minutes (typically well in excess of 60 minutes) to customers as part of most commercial packages. Operators generally provide discounts to customers against published tariffs. Vodacom, for example, indicates that 17 million South African customers (approximately 50% its South African customer base) enjoy up to a 100% discount on tariffs through the Vodacom 4 Less package (Vodacom, 2012a, 27). Cell C offers customers a 100% discount on tariffs on weekend air time equal to their weekly spend (IT News Africa, 2012, 1).

The effective tariffs paid by most customers on a per minute (or per second) basis are therefore substantially less than published tariffs. As a Vodacom spokesman confirmed, '*we have an awful lot of promotional pricing'* (Dodds, 2013, 7). This means that the quantum of lost revenue to operators, if any, is substantially less than advertised rates and capable of being absorbed by operators through a tweaking of existing tariff structures. As shown in the United States of America, moreover, access to a significant pool of new, initially subsidised subscribers is likely to generate substantial incremental and downstream revenue opportunities that may offset any marginal cost increases or notional lost revenues arising from the provision of free minutes to customers under the Free Air Program.

To the extent that operators offer a Free Air Package that provides subscribers with a free phone, SIM card and 60 minutes of air time without any opportunity to purchase any additional minutes, upgrade the quality of the telephone or purchase any other services at additional cost, the marginal cost of the basic package may be booked as an expense by operators against revenues. Although such an expense may diminish

revenues, it may also diminish the amount of tax paid by such operators. Under current International Financial Reporting Standards (IFRS, 2012), operators may be able to claim the commercial cost (rather than the marginal cost) of such an offering as an expense which would create corresponding tax savings.

The Government of South Africa should allow operators to set tariffs for additional minutes consumed under the Free Air Package at their discretion. Beyond establishing applicable termination rates, there is no need to regulate such tariffs as market dynamics should dictate prices. Operators that attempt to exploit Free Air Package subscribers with substantially higher tariffs for air time consumed beyond the 60 free minutes are likely to lose customers (and revenues) to other operators that offer more affordable tariffs for such services. South Africa's communications market is sufficiently competitive to enforce such discipline without any public sector intervention.

The South African Government should avoid the use of any monies from the USAF to pay for the cost of the Free Air Program. The marginal cost of providing free phones, free SIM cards and free minutes under the Free Air Program, the flexible economics of existing packages and the likelihood that many subsidised subscribers may ultimately become paying subscribers suggest that operators have sufficient capacity to absorb any costs associated with implementation of the Free Air Program. In the event that operators are unable to wholly account for such costs, they have the flexibility to increase tariffs to all consumers and effectively cross-subsidise the costs of the free phones, SIM cards and minutes allocated under the Free Air Package. Cross-subsidisation of communications costs is a recognised means to support the realisation of universal service policies in many markets.[333] In such circumstances, market competition is sufficient to limit any efforts by individual operators to increase tariffs beyond any minimal amount required to recoup the costs of the Free Air Program as predatory pricing practices would erode the attractiveness of their commercial offerings relative to substitute offerings available from other market actors.

---

[333] Supra, sections 2.3 and 2.4.

While the Universal Coverage Program assures all South Africans of the accessibility of communications services in all parts of the country, the Free Air Program assures all South Africans of the affordability of such services. As with the Universal Coverage Program (and unlike previous Government programs), it recognises the Government of South Africa's right to design, monitor, evaluate and regulate the Free Air Program but reserves responsibility for implementation of this Program to private sector actors. Through efficient design, it ensures the allocation of scarce resources among such actors to implement the Program on the most efficient and cost effective basis. Indeed, a hallmark of the Free Air Program is the flexibility of operators to innovatively deliver the Free Air Package and bonus packages to price-sensitive South African consumers and turn the obligation to fulfil the requirements of the Free Air Program into an opportunity to groom previously price-dispossessed South Africans into potentially profitable clients in the medium term.

The Free Air Program is consistent with the guiding principles of the USAASA's proposed National UAS Strategy. It relies on a public-private partnership platform to create and sustain a technology neutral, inclusive program that delivers basic communications services (or more) to 'needy persons' through a competitive, market-driven approach. It facilitates evidence-based decision-making and qualitative and quantitative monitoring and evaluation protocols. The Free Air Program promotes access to communications services by South Africans who currently cannot afford such services, an explicit goal (Objective 1) of the proposed National UAS Strategy (USAASA, 2013a, 17).

The concept of the Free Air Program was generally well received by industry stakeholders when raised as an idea during the semi-structured interviews. Telkom's representative remains open to the concept of the Free Air Program provided that it is a market-driven initiative with appropriate incentives and a regulatory framework that empowers operators to achieve underlying policy objectives that likely include access to USAF money to help offset Program costs (Bate, 2014e, 13). ICASA's representative says that the Free Air Program is '*a good idea as long as the cost of providing* [it] *would not come back to the regulator'* and strongly favours a market-driven initiative (Bate, 2014d, 11). Vodacom's representative confirms that mobile operators already give away a lot of minutes but would need to study the economics of the proposition to determine its viability (Bate, 2014f, 4).

ISPA's representative equates the market costs of the Free Air Program to an indirect tax. They appear ambivalent about the merits of the Free Air Program relative to other means to subsidise the delivery of communications services to less affluent segments of South African society:

> *Is it a good thing to have something which is totally free to use to a limit? I don't know. I suppose what you are presenting is halfway between a socialistic and capitalistic model which, quite simply, says that you are a socialist until you reach a certain level* [of using air time] *and, once you reach that level, you are now a capitalist* (Bate, 2014b, 15).

The USAASA's representative is receptive to the concept of the Free Air Program but expects significant obstacles to implement the Program without extensive collaboration between public and private sector stakeholders (Bate, 2014a, 12). The Department of Communications' representative indicates that a similar concept was considered by Cabinet (Bate, 2014c, 14) but no initiative has been publicly disclosed since that time nor has any Government agency been publicly requested to investigate the opportunity. Taken together, the range of responses from public and private market participants generally suggest that the Free Air Program may warrant further consideration which includes a public consultation process to earn industry support and identify optimal means to implement the Program.

If properly implemented, the Free Air Program combines with the Universal Coverage Program to ensure that all South Africans have the opportunity to realise a minimum amount of accessible and affordable communications services anywhere in the country. This achievement effectively creates a 'communications safety net' that ensures that all South Africans have access to a minimum amount of communications services at nil cost. However, it fails to account for the reality of today's interconnected world where much of the transformative capabilities of communications services arise from their ability to link consumers to a wealth of content, applications and other online resources that can be used by such consumers to improve their socio-economic standing.

On a monthly basis, 60 minutes of free air time likely provides insufficient connectivity to communications services for previously dispossessed consumers to harness the uplifting potential of online resources. At the same time, increasing the amount of free air time to such consumers likely represents an untenable option from the commercial perspective of operators and the public finance perspective of

policy makers. The solution to this dilemma is the Free Broadband Program: an initiative that provides a minimum amount of free broadband services to qualifying connectivity centres to allow broad segments of South African society to access the high speed bandwidth required to use the types of online resources needed to improve their socio-economic well-being.

### 8.4.3 Free broadband program

Beyond the Free Air Program, the Government of South Africa should adopt a 'Free Broadband Program'. The Program should provide up to 10 TB of free broadband bandwidth per month to connectivity centres to enable many segments of South Africa's society to access Internet-based communications services and the content, applications and online resources found on the Internet. These connectivity centres may represent the 'community access centres' contemplated by the *Electronic Communications Amendment Bill of 2012* or the Access Centres contemplated by the USAASA. They may represent community-based institutions such as schools, universities, libraries, hospitals, health clinics and community centres as well as Government-administered hubs (such as post offices). They may represent privately-owned businesses such as Internet cafes and public Internet terminal providers.

Regardless of the delivery platform, the provision of a substantial amount of free bandwidth to these connectivity centres may significantly expand the accessibility and affordability of communications services to people who cannot otherwise access or afford to purchase the quantity of broadband communications services required to exploit education, telemedicine, e-commerce and other bandwidth-intensive online resources conducive to their socio-economic development. As the Department of Communications notes:

> *For many South Africans . . . bandwidth has been too expensive, with insufficient infrastructure and not enough being done in terms of education to make tech apart of their lives; the implication of which is that a significant part of the South African population has not been able to enjoy the benefits that information and communication technologies (ICT) brings* [sic].
>
> *Lack of bandwidth connectivity has also affected user behavior which, because people haven't been able to participate in e-commerce, has not been conducive to economic growth* (South Africa, Department of Communications, 2013, 21).

Indeed, the disparity of opportunities in South Africa arising between information-enabled population groups enfranchised by access to broadband services and information-disabled population groups disenfranchised by lack of access to broadband services threatens to create disequilibrium in the distribution of the benefits of communications services as pronounced as the skewed conditions prevalent under apartheid, with socio-economic prejudice replacing racial prejudice as the differentiating factor. Universal service and access programs fail if they simply ensure that everyone has the ability to call a neighbour. In today's interconnected, information-driven world, they must also ensure that everyone has the opportunity to access broadband services that convey the content, applications and online resources that may meaningfully improve the quality of life and range of socio-economic opportunities available to all citizens. The Free Broadband Program addresses these concerns.

The Free Broadband Program should allow market participants to identify optimal technologies to deliver broadband solutions to qualified connectivity centres, including mobile broadband, fixed line broadband and Wi-Fi broadband services. Notwithstanding such technology neutrality, the Program should establish the minimum data transfer speed as part of program design parameters. The original *National Broadband Policy* defined broadband as '*an always available, multimedia capable connection with a download speed of at least 256 kbps*' (South Africa, 2010a, 10), a threshold supported by universal service targets (USAASA, 2009b, 70). This threshold is too low: the average download speed for South Africa broadband services was 4.03 Mbps by March 2013 (Phakathi, 2013, 1)[334] and the lowest form of broadband technology (EDGE) available through South African mobile communications networks achieves 384 kbps data transfer speeds (Goldstuck, 2012a, 1).

The revised *National Broadband Policy* (South Africa, 2013b) gazetted in December 2013 establishes graduated targets for improving broadband speeds in South Africa. A target average download speed of 5 Mbps for 50% of the population has been set by the Government of South Africa for 2016 with 90% of the population

[334] The global average download speed as of March 2013 was 13.64 Mbps (Phakathi, 2013, 1). South Africa ranked 80th in the world for the quarter ending March 2013 in terms of average connectivity speeds and not a single suburb in the country boasted of an average broadband speed higher than the global average (Phakathi, 2013, 1).

benefitting from this average download speed by 2020 (South Africa, 2013b, 18). The revised *Policy* further targets an average download speed of 10 Mbps for 100% of the population and 100 Mbps for 80% of the population by 2030 (South Africa, 2013b, 18).[335] Consistent with these targets, a minimum actual throughput speed of 5 Mbps likely represents an appropriate near term benchmark to assure delivery of the connectivity required to meaningfully access online resources through the Free Broadband Program.

Various levels of government in South Africa subsidise the provision of broadband bandwidth and enabling resources to institutions that would qualify as connectivity centres.[336] The private sector also donates broadband bandwidth and enabling resources to institutions that would qualify as connectivity centres.[337] The establishment of a national program that provides significant broadband bandwidth to such connectivity centres at nil cost represents a logical and unifying extension of such practices. Any such program requires careful consideration of the implementation, evaluation, monitoring and enforcement methodologies to ensure that such bandwidth is consumed wisely with minimum abuse. Notwithstanding such challenges, the creation of a program to provide qualified connectivity centres with substantial amounts of free broadband bandwidth, rather than subsidised or donated bandwidth, deserves significant consideration.

Under the Free Broadband Program, electronic Communications Network Services (ECNS) license holders would deliver up to 10 TB per month of free broadband bandwidth to connectivity centres. These centres would receive such bandwidth in accordance with the following six criteria:

- They do not charge for the delivery of connectivity to any person, directly or indirectly, except in the case of tuition for connectivity centres that are accredited education institutions.

- They limit the amount of bandwidth used by any party to 500 MB per month, which enables any individual to download approximately 17 MB of content per day if desired or download large programs or applications in a single session within the month.[338]

---

335 The revised *National Broadband* Policy also sets various targets for schools, health facilities and Government facilities (South Africa, 2013b, 18-19).

336 Supra, section 5.3.2.1.2.

337 Ibid.

338 Such an individual allocation is 2.5 times larger than the size (200 MB) of the monthly allocation prescribed by the Government of South Africa to satisfy universal service requirements to data services (supra, section 5.3.2.2.2).

- They implement and maintain filters that prevent the download or viewing of socially undesirable content or applications, such as material related to pornography or violence.

- They maintain an age restriction which limits access to individuals of at least 12 years old except in the case of connectivity centres located in accredited education institutions.

- They maintain a database that tracks individual users by access times and consumption patterns and allows for the breakdown of such data by individual and aggregated use on a monthly and yearly basis.

- They require all users to register using recognised forms of identification and issue a user name and password to every such individual required to gain access to connectivity services.

Essentially, these connectivity centres would operate like online 'public libraries' that issue virtual versions of the traditional library card (for free) that entitles the card holder to 'take out' a certain amount of bandwidth per month. As with any library, a connectivity centre would have the ability to track the kind of material 'checked out' from its 'library' by registered users. Unlike many public libraries, however, connectivity centres would have the opportunity to profit from the presence of users within their facilities. Beyond the delivery of free bandwidth services, they could sell other products and services to consumers. They could earn revenues from the placement of advertising on computer terminals or banners on programs.

Provided that they post appropriate notices at their facilities, connectivity centres should be able to collect, aggregate, analyse and otherwise mine user data that could be used for proprietary purposes or sold to other companies. This loss of privacy is consistent with the type of information and deprivation of privacy routinely sacrificed by consumers when they access individual web sites, respond to promotions or free draws, use credit cards or otherwise transact in a modern society

(Wall Street Journal, 2011, 1).[339] It seems an acceptable trade-off for the benefit of access to a substantial amount of free bandwidth by consumers who may not otherwise be able to access the applications, content and online resources delivered through such bandwidth. Consumers who object to this loss of privacy may avoid use of free bandwidth terminals and purchase access to the Internet, ether at connectivity centres or otherwise, which is not subject to such conditions (but may nevertheless result in a similar loss of privacy).

The Free Broadband Program would be limited to the delivery of free bandwidth to eligible connectivity centres. The provision of other elements of the supply chain required to unlock the benefits of such bandwidth, such as computers, cables, desks and other support infrastructure, remains the responsibility of connectivity centres. The delivery of support services such as computer literacy training and technical services remains the responsibility of connectivity centres. The Free Broadband Program simply makes broadband access available to such centres at nil cost which should, by itself, attract interest from a wide range of potential parties in the provision of onsite infrastructure and support services to connectivity centres that may not already enjoy such enabling capabilities.

Some commentators may suggest that a lack of concern for onsite infrastructure and support services diminishes the utility of the free bandwidth (and effectiveness of the Free Broadband Program). In the context of historic universal service and access programs, ISPA's representative notes that:

> *Universal service from the perspective of the telephone is very different to universal service from the perspective of digital inclusion. Digital inclusion assumes that anyone you are going to be dealing with either is literate or you are going to teach them to become literate as part of that program. That's the challenge. It does not help if you have ADSL connections to every household in the country when every household can't afford a PC, can't use a PC. So digital inclusion is another step in the ladder* (Bate, 2014b, 6).

These comments echo true as a potential harness to unlocking the full potential of the Free Broadband Program. As shown in earlier chapters of this study, however, one of the most significant reasons for the failure of previous universal service and access policies and programs in South Africa's communications market was the

---

[339] For a broader discussion of such matters, see Abelson, Ledeen & Lewis, 2008.

overly ambitious reach of such policies and programs and the poor execution of such policies and programs by inexperienced, ill-prepared and ill-equipped public sector actors.

The Free Broadband Program should not suffer from such ailments. A sufficient number of existing programs and projects exist to provide such infrastructure and services[340] to address any deficiencies at individual connectivity centres without unduly saddling the Free Broadband Program with responsibility for these other elements of the broadband supply chain. Indeed, the USAASA's failure to effectively manage all aspects of its Telecentre Program's supply chain strongly suggests that the Free Broadband Program should singularly focus on the delivery of bandwidth capacity and leave responsibility for the delivery of enabling resources to public and private sector actors through existing or new initiatives.

It is difficult to estimate the number of connectivity centres that may benefit from the Free Broadband Program. Most centres are likely to comprise schools, universities, libraries, hospitals, health clinics and community centres as well as post offices and other Government-administered communication hubs. As part of a broadband mapping study, the Department of Communications confirmed that South Africa boasted 25,754 schools, 3,973 health facilities (clinics and hospitals) and 1,121 police stations in 2012 (South Africa, Department of Communications, 2012a, 5). Except for the police stations, these public facilities likely represent core constituencies of connectivity centres. Yet private sector facilities may also seek to leverage the opportunity to provide free bandwidth under the Free Broadband Program to their customers to generate spin-off commercial benefits. Such private sector facilities may include Internet cafes and commercial enterprises such as PostNet (PostNet, 2013, 1). Moreover, the availability of free bandwidth under the Free Broadband Program may spur some public and private sector actors to invest in new connectivity centres.

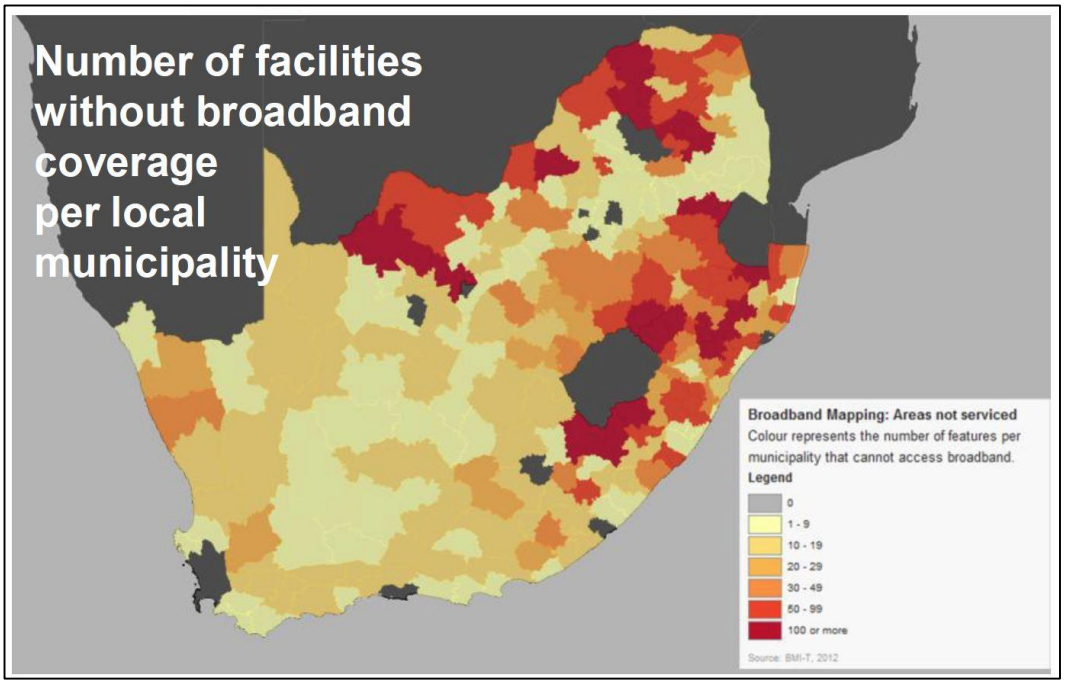
One of the principal challenges for the Free Broadband Program is the ability to deliver high speed bandwidth to geographically dispersed connectivity centres. Map 8.1 shows that a substantial number of facilities (schools, health facilities and police stations) spread across every Local Municipal District in South Africa could not access broadband communications connectivity by the middle of 2012:

---

[340] Supra, section 5.3.2.1.2.

**Map 8.1**

**Number of public facilities without broadband coverage per local municipality, 2012**

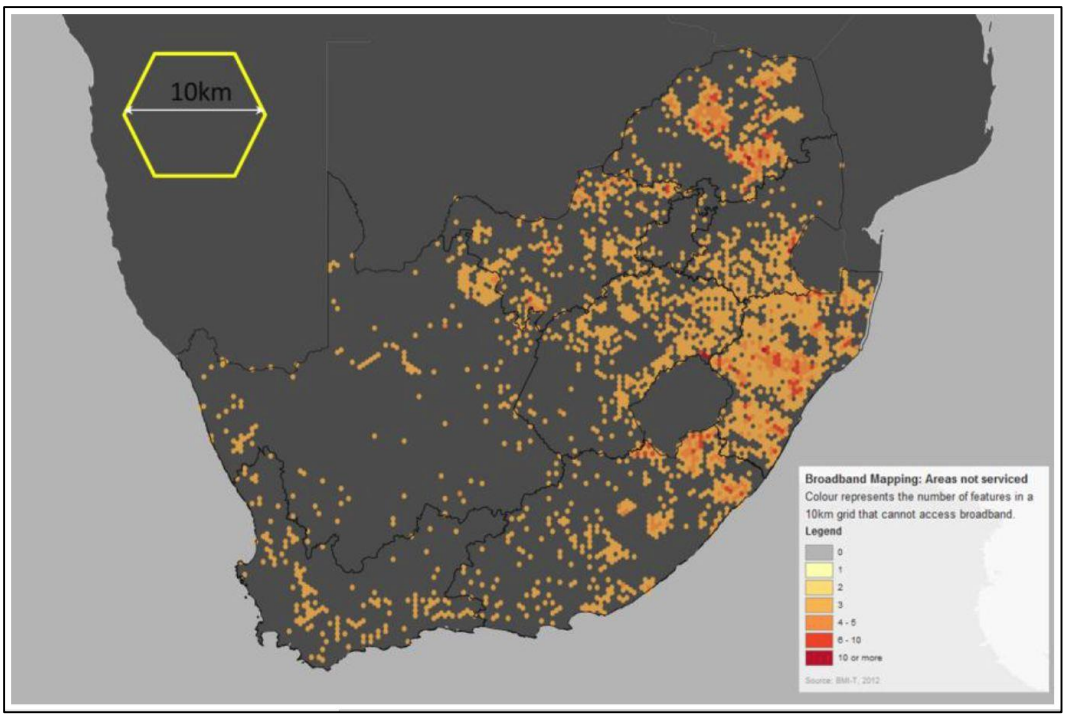



Source: South Africa, Department of Communications, 2012a, 5.

Given the significant spatial spread of such broadband-lacking facilities, the Department of Communications accounted for the impact of facilities in large, uninhabited areas of the country by identifying facilities located within a 10 km radius of each other. Map 8.2 illustrates this phenomenon:

**Map 8.2**

**Spatial mapping of public facilities without broadband connectivity, 2012**




Source: South Africa, Department of Communications, 2012a, 5.

Based on this sensitivity analysis, the Department of Communications confirmed a pronounced lack of broadband connectivity to public facilities in KwaZulu Natal and the Eastern Free State (South Africa, Department of Communications, 2012a, 5).

Yet the Department of Communications estimates that 86% of South Africa's population was situated within 10 km of a fibre optic broadband network (South Africa, 2013b, 27). It further estimates that 74% of schools, 81% of health facilities and 83% of police stations enjoyed some form of broadband communications connectivity (South Africa, 2012a, 5). South Africa's urban and peri-urban areas are already serviced by fibre optic communications networks capable of providing high speed broadband bandwidth to centres within major population areas. Based on a goal to bridge a baseline 78% market frontier to achieve 100% public broadband coverage, the USAASA estimates that *'the net subsidy costs required to bring public broadband into unserved, and economically non-viable, locations across South Africa would be quite high, but not necessarily overwhelming'* (USAASA, 2013a, 16). Collectively, such metrics suggest that the Free Broadband Program will not have to bridge that much cable to deliver access to 100% of South Africa's population.

Other forms of broadband connectivity also exist beyond fibre optic networks. Operators are rolling out high speed mobile broadband services in rural and semi-rural areas at a rapid pace.[341] Advances in Wi-Fi technologies may dramatically improve opportunities to deliver broadband services to areas not economically feasible for large communications operators and fixed line service providers (The Star, 2013, 22). Indeed, a consortium of public and private sector actors (including Google) completed a Television White Space (TVWS) trial at ten schools in the Western Cape of South Africa in 2013 which demonstrated that TVWS can be used as an effective means to deliver affordable broadband and Internet services through mobile base stations (TENET, 2013a, 1).[342]

---

[341] Supra, section 8.3.1.

[342] TVWS refers to '*portions of radio spectrum allocated for licensed use but not assigned to a particular licensee or allocated and assigned for licensed use but are not utilised by the licensees at all times or across all geographical locations'* (TENET, 2013b, 8). It is commonly referred to as TVWS because of the prevalence of white space in bandwidth traditionally allocated to television broadcasting (TENET, 2013b, 8).

Since TVWS relies on low frequency signals that travel long distances, the bandwidth is particularly *'well-suited to provide low-cost connectivity to rural communities with poor communications infrastructure'* (Mochiko, 2013d, 46). ICASA has given the project permission to continue to provide bandwidth to these schools despite completion of the trial in August 2013 (TENET, 2013a, 1). Another TVWS trial is set to commence in the Limpopo Province of South Africa in 2014 (TENET, 2013b, 6).

The Universal Coverage Program encourages the development of public access points in currently unserved areas of South Africa that may support broadband connectivity. As such, it may be logistically feasible to deliver free broadband bandwidth to connectivity centres in most parts of South Africa using the capacity of existing or newly completed communications network infrastructure. The use of existing infrastructure to deliver bandwidth under the Free Broadband Program almost certainly reduces the cost and improves the feasibility of delivering such bandwidth to disparate areas of South Africa, particularly schools and hospitals in rural and remote areas of the country.

It is difficult to estimate the amount of bandwidth potentially consumed under the Free Broadband Program. The Program caps the maximum amount of bandwidth consumed by individual connectivity centres at 10 TB per month after which such centres may purchase bandwidth from communications network operators, either at commercially available tariffs or through subsidised tariffs available to eligible connectivity centres under various Government programs. South Africa's broadband communications capacity is estimated to reach 35 Tbps by the end of 2013 (Goldstuck, 2012a, 1). Such capacity reflects the maximum speed of data that may be transmitted on a broadband basis at any one time.

Yet one of the unique features about bandwidth is that is it a renewable resource. It cannot be consumed and extinguished; the only limiting factor is the maximum amount of data that communications networks can carry at a particular moment in time. As such, the broadband transmission capacities of South Africa's broadband communications networks essentially '*spell out unlimited capacity relative to current needs*' (Goldstuck, 2012a, 1):

> *They offer enough capacity to deliver high-speed definition TV to every HD TV set in South Africa, and to enable every South African to read digital versions of every magazine or newspaper they buy, in high resolution, on computers, tablets or smartphones* (Goldstuck, 2012a, 1).

Given the extent of such capacity, the Free Broadband Program is unlikely to meaningfully compromise any distribution of commercially purchased broadband services in the foreseeable future.

Unlike the Free Air Program which compels every operator to offer free minutes of air time to every potential consumer in South Africa through national networks largely impervious to geographical variances, the Free Broadband Program offers free broadband services to qualified connectivity centres anchored at specific locations which may or may not be within the footprint of broadband communications networks. The ability to efficiently allocate free broadband services to such centres is constrained by the presence or absence of broadband networks in applicable areas and, in territories served by existing networks, by the individual capacity of networks operating in those territories. To overcome these constraints and avoid any disproportionate burden to disperse free broadband services falling upon specific license holders in any concentrated pockets of connectivity centres, the Free Broadband Program should allocate bandwidth on an industry basis rather than an individual basis. There are a number of market groups that could discharge this function[343] or license holders could form a new industry association for such purposes.

There are numerous advantages to using an industry association to manage implementation of the Free Broadband Program. From an administrative perspective, the industry association can act as a 'one-stop shop' for all applications from potential connectivity centres and ensure uniformity of standards, treatment, processing, evaluation, monitoring, award and regulation of free broadband bandwidth delivered to connectivity centres. A single administrative agency realises economies of scale efficiencies that likely lead to lower administrative costs, justifies investment in uniform institutional capacity and builds best practices institutional capabilities in the administration and execution of the Free Broadband Program.

---

[343] Such as the GSM Association (www.gsma.com) or South African Communications Forum (www.sacomforum.org.za), among others.

From a regulatory perspective, the industry association can act as the centralised point of contact for Government to plan, evaluate, monitor and enforce industry compliance with the Free Broadband Program. A well-crafted Free Broadband Program enables the Government to supervise implementation of the Program and hold private sector actors accountable for non-compliance without any need to roll out a national monitoring program. The industry association could inspect individual connectivity centres and the Government could limit its role to spot checks of centres that follow standard statistical sampling methodologies to test and validate data aggregated and analysed by the industry association as part of its administrative responsibilities.

Beyond administrative and regulatory matters, one of the principal advantages of using an industry association to implement the Free Broadband Program is the flexibility to achieve significant commercial efficiencies that maximise the benefits and minimise the costs of bandwidth allocated under the Program. Through member inputs, the industry association has the ability to identify networks in specific areas with surplus capacity. Without divulging any competitive information to any public sector body, it can direct such capacity to supply free bandwidth to connectivity centres within the territorial reach of such networks.

The industry association can also cross-subsidise bandwidth allocated to connectivity centres between license holders. If any individual license holder is required to allocate a significant portion of its capacity to supply free bandwidth due to a concentration of connectivity centres within its territorial reach that cannot be shared with other license holders with overlapping territorial capabilities, the industry association may offset part of such contribution by ‘swopping’ such bandwidth for additional capacity on other networks that are not required to allocate as much free bandwidth to connectivity centres. The opportunity to balance allocations of free bandwidth among license holders through a ‘bandwidth bank’ limits the burden imposed on any individual license holder by the Free Broadband Program. In every instance, the ability of the market to most efficiently source and allocate free bandwidth under the supervision of Government represents a key component of the Free Broadband Program.

The costs incurred by operators to implement their obligations under the Free Broadband Program are likely to be low. The retail price of broadband products range from less than ZAR 100 to more than ZAR 20,000 per month (South Africa, Department of Communications, 2012a, 4). The retail cost to consumers per Gigabyte of broadband bandwidth varies from less than ZAR 10 to over ZAR 2,600 per month (South Africa, Department of Communications, 2012a, 4). These tariffs reflect retail rates that do not accurately capture the actual cost to provide broadband connectivity incurred by operators. Indeed, wholesale broadband costs (unlike retail costs) are quite low in South Africa (Goldstuck, 2012a, 1).

There is also a surplus of broadband capacity in South Africa. Operators are well positioned to allocate surplus capacity to connectivity centres without compromising their ability to serve commercial customers into the medium term. The provision of free bandwidth to connectivity centres (additional traffic) does not materially increase the fixed costs of broadband networks which remain largely the same regardless of the amount of traffic carried over such networks. As with the Free Air Program, the marginal cost to operators of handling additional traffic is quite low and consists principally of administrative costs related to the management of additional clients (connectivity centres) and tracking the use of additional traffic (bandwidth) through existing billing systems. As such, out-of-pocket costs to operators to provide free broadband bandwidth to connectivity centres should be low.

There are several mechanisms available to any industry association to minimise commercial costs to market participants arising from obligations incurred under the Free Broadband Program. As mentioned above, the industry association can compensate operators that provide significant amounts of free bandwidth with comparable amounts of traffic on other networks that do not provide as much free bandwidth, thereby distributing the costs of free bandwidth among operators. The availability of surplus capacity on most broadband networks means that other operators incur only the smallest marginal cost to provide such bandwidth to the contributing operator. In the event that operators eventually cease to have surplus capacity or the amount of free bandwidth required under the Free Broadband Program grows significantly to represent capacity not capable of being addressed through such swops, the industry association may levy a bandwidth contribution, either in cash or kind, on every license holder and distribute such contributions between operators to effect an equality of obligation across the industry. This contribution effectively serves the same function as the universal service levy paid by operators to the Government of South Africa with three important distinctions:

its purpose is narrowly defined to support the delivery of free broadband bandwidth to qualified connectivity centres; it is not collected by the Government nor appropriated into the National Revenue Fund; and its administration is managed by private rather than public sector actors.

If the Government of South Africa does not want operators to manage the cost of the Free Broadband Program through market-oriented mechanisms, it has the ability to provide free broadband bandwidth to qualified connectivity centres using the communications networks of SOEs such as Broadband Infraco Limited or SCEs such as Telkom SA Limited as well as municipally-controlled networks in various parts of the country. The Government may also mandate bandwidth swops between such enterprises and private sector market participants as another means of delivering free broadband services to qualified connectivity centres. In each circumstance, taxpayers are funding these enterprises (directly or indirectly). The contribution or swop of broadband bandwidth between such enterprises and private sector operators represents a legitimate allocation of public resources to fulfil a specific public policy objective. The contributions of such enterprises can be allocated to the 'bandwidth bank' managed by the industry association for redistribution to connectivity centres or other operators without the need for any new bureaucracy to manage such contributions. As with many private sector actors, moreover, some of these enterprises have surplus transmission capacity and the allocation of such capacity to underpin the Free Broadband Program represents an efficient and cost effective use of unexploited Government-controlled resources to realise a material public benefit.

Without the use of public sector resources, the Government of South Africa's regulation of radio frequency spectrum licenses may also be used to advance the objectives of the Free Broadband Program. The Government could prescribe the allocation of a specific minimum per centum of broadband transmission capacity to be set aside as free bandwidth to be allocated to qualifying connectivity centres as part of the requirements imposed on every radio frequency license holder. Learning from the failures of previous policies, it is important that any such requirement be based on a proportionate allocation of capacity rather than a fixed amount of capacity. Either an industry association or individual license holders would facilitate the use of such bandwidth by qualified connectivity centres and the Government would monitor such allocations in a regulatory capacity. To some extent, such a prescription mirrors the philosophy behind some of the USOs imposed on operators as part of their initial licensing conditions.

License holders would factor the cost of such bandwidth into the cost of their frequency licenses and either reduce the amount paid to the Government for such licenses or pass along the cost of the Free Broadband Program to consumers. While such a funding scheme has not been specifically adopted in respect of the distribution of broadband communications services in any other market, the principles of this scheme are broadly analogous to the operator-pay principles behind the USOs included in the licensing requirements of communications network operators in other countries.[344]

Alternatively, the Government of South Africa could break from previous methodologies used by it to allocate radio frequency spectrum and host an auction of available radio frequency spectrum. It could earmark a substantial portion of funds raised from such auction to underwrite the costs of the Free Broadband Program. Auctions of radio frequency spectrum licenses have been used to raise funds to pay for universal service policies in other communications markets[345] but the concept remains untested in South Africa. Such an auction is likely to maximise revenues and minimise costs for the fiscus.

Yet it also places responsibility for funding the Free Broadband Program in the hands of public sector agencies which have failed to demonstrate any capacity to effectively discharge any similar funding function or implementation role. As with the USAF, moreover, the National Treasury may appropriate such funds and subsequently require the USAASA or any other implementing agency to justify disbursements to support the Free Broadband Program, a process which has failed to unlock any material value from the USAF to date. As such, the inclusion of a minimum free bandwidth allocation as part of radio spectrum license conditions appears to be a more optimal means than a reverse auction process to fund the ambitions of the Free Broadband Program.

Without reliance on revenues from any reverse auction of radio frequency spectrum licenses, the Government may decide to simply pay operators, in whole or part, for the allocation of free bandwidth to connectivity centres. The allocation of USAF monies to pay the cost of free bandwidth delivered by operators to qualified connectivity centres represents a legitimate use of such funds and essentially mirrors

---

344 Supra, section 2.4.3.1, particularly section 2.4.3.1.1.

345 Supra, section 2.4.3.1, particularly section 2.4.3.1.3.

the current provision of subsidised rates to qualified institutions. Beyond concerns with the administrative capacity and efficiency of public sector actors likely responsible for implementation of any such subsidy, the range of other funding solutions available to realise the Free Broadband Program suggests that a direct subsidy likely represents an inefficient policy implementation approach.

If the Government wanted to subsidise bandwidth under the Free Broadband Program, it may wish to consider paying all or part of any costs incurred by qualifying connectivity centres that consume more than the maximum 10 TB monthly allotment available under the Program. In this situation, the Program essentially delivers a free first block of broadband services to connectivity centres after which the Government subsidises consumption at reduced rates by compensating operators for the differential between prevailing commercial rates and the subsidised tariff. As with the Universal Coverage Program and Free Air Program, the Free Broadband Program is unlikely to affect those South Africans who already enjoy available, accessible and affordable broadband communications services. Such consumers are unlikely to use facilities at connectivity centres or sacrifice the loss of privacy attendant with use of such facilities. As such, any additional subsidy of interconnection costs under the Free Broadband Program is likely to help intended beneficiaries rather than current commercial or retail consumers.

The myriad of funding solutions available to implement the Free Broadband Program should not result in any increase in the retail price of broadband connectivity in South Africa. In the event that operators seek to adopt cost recovery practices, sufficient flexibility exists in retail and corporate pricing structures (particularly the nature of discounts available to corporate clients) to absorb such costs without any retail market price adjustments. Moreover, the equitable distribution of costs between all license holders and management of the Free Broadband Program by an industry association discourages market distortions between operators that provide free bandwidth and operators who attempt to shirk such responsibilities to focus exclusively on profit-generating activities.

For those South Africans who cannot afford broadband communications services or who cannot afford to pay for sufficient bandwidth to meaningfully access the Internet, the Free Broadband Program enables them to connect to the world and provides them with the opportunity to meaningfully improve the quality of their lives and socio-economic standing by accessing a wide range of content, applications and online

resources available through the Internet. The inconvenience of using communal facilities and some loss of privacy from the use of such facilities is more than offset by potential benefits received from the use of such facilities. As with the Universal Coverage Program and Free Air Program, therefore, the Free Broadband Program uses market dynamics to effectively improve the lives of the most vulnerable segments of South Africa's society – individuals who cannot obtain or afford meaningful access to broadband connectivity.

The Free Broadband Program reaches into South Africa's education institutions to enhance the range of learning opportunities for South Africa's students to hopefully improve their quality of education and subsequent contribution to the socio-economic development of their country. The Program also reaches into South Africa's hospitals and medical clinics to enhance the range of diagnostic and treatment options at the disposal of doctors, nurses and other medical practitioners. Likely improvements to the quality of medical services, particularly in rural clinics, may result in a higher quality of life and lower mortality rates in South Africa.

The Government of South Africa should welcome the Free Broadband Program. It uses market dynamics to realise many of the Government's ICT policy ambitions. It achieves the vision of the original *National Broadband Policy*:

> *. . . to ensure universal access to Broadband by 2019 by ensuring that South Africans are able to access Broadband either individually, or as a household, subscribe to a Broadband service, or are able to access a Broadband service directly or indirectly at a private or public access point* (South Africa, 2010a, 10).

It subscribes to the vision of the Government's revised *National Broadband Policy*. In particular, the Free Broadband Program satisfies the 10 guiding principles (South Africa, 2013b, 13-14) of this new policy by creating an innovative, transparent, technologically neutral, open access platform that efficiently uses market forces to deliver broadband services to underserved and under serviced communities.

The Free Broadband Program is consistent with guiding principles of the USAASA's proposed National UAS Strategy. It relies on a public-private partnership platform to create and sustain a technology neutral, inclusive program that delivers broadband connectivity to 'needy persons' through a competitive, market-driven approach. It also facilitates evidence-based decision-making and qualitative and

quantitative monitoring and evaluation protocols. Indeed, the Free Broadband Program achieves at least three of the objectives outlined by the proposed National UAS Strategy: the roll out of broadband backbone infrastructure to underserved and unserved areas (Objective 2); the creation of sustainable community and institutional broadband connectivity (Objective 3); and the development of community-based connectivity centres (Objective 6) (USAASA, 2013a. 17-19). It also dovetails with the Community and Institutional Broadband Access Programme proposed by such Strategy, including five project components:

- Backbone network extension;
- Institutional broadband connectivity;
- Broadband ICT for schools;
- Broadband ICT for health clinics; and
- Broadband ICT for local governments (USAASA, 2013a, 20-22).

The Free Broadband Program is consistent with the ANC's stated policy objective that all South Africans should enjoy access to high speed Internet services by 2030 (ANC 2012a, 6) and the *National Development Plan 2030* (South Africa, 2011c, 24) as well as the direction of the Government of South Africa's larger ICT policy review process. It is consistent with the *Strategic Integrated Project (SIP) 15: Expanding Access to Communications Technology* launched by the Presidential Infrastructure Coordinating Commission (PICC) to '*ensure universal service and access to reliable, affordable and secure broadband services by all South Africans, prioritising rural and under-serviced areas and stimulating economic growth'* (Ellipsis, 2013, 1).

It likely achieves these objectives without the need for any meaningful expansion of Government resources. Existing institutions should have sufficient capabilities and capacities to design, monitor, evaluate, enforce and regulate the Free Broadband Program which is otherwise administered, implemented, monitored and evaluated by private sector actors, ideally through an industry association. In this respect, the Free Broadband Program is materially different from the Government's previous efforts to create a network of Government-administered or Government-funded

connectivity centres, such as the telecentres. The Free Broadband Program leverages market dynamics to make private sector market participants accountable for the implementation of Government policy in a cost effective, administratively efficient, results-oriented and impact-driven manner.

Private sector actors are likely to react to the Free Broadband Program with mixed reviews. Profit-driven enterprises are inherently opposed to any public policy that imposes additional obligations upon them or undermines any profit-seeking activities. Many private sector actors may express concern at the cost of giving away bandwidth and the administrative burden of managing such a Program. These concerns are misplaced due to the marginal cost of bandwidth, the ability to balance the allocation of bandwidth across market participants and the flexibility to compensate market participants for the cost and loss of bandwidth within existing economic models that do not materially diminish revenues. Furthermore, any marginal costs associated with the delivery of bandwidth under the Free Broadband Program represent an expense that may help reduce any taxes paid by operators, thereby reducing any out-of-pocket costs, if any, incurred by operators as a result of their implementation of the Program.

As with the Free Air Program, savvy market participants may view the Free Broadband Program as an opportunity to make money. Many connectivity centres are likely to purchase additional bandwidth beyond the maximum amount of free bandwidth and thereby generate revenues for operators (whether through direct payments from connectivity centres or compensation from the Government based on subsidised rates). The opportunity to service connectivity centres as ‘anchor’ customers may encourage operators to expand existing broadband networks into adjacent areas or build entirely new broadband networks into previously unserved areas with the knowledge that they can get paid (in cash or kind) from the provision of free bandwidth to such connectivity centres beyond their contribution threshold. Indeed, the Free Broadband Program may stimulate or accelerate investment in the construction of broadband networks and expand the footprint of broadband communications networks in South Africa beyond major metropolitan areas, a key prerequisite for the establishment of truly national broadband communications capabilities in South Africa.

As with the likely consumption model underpinning the Free Air Program, consumers at connectivity centres are likely to grow accustomed to the benefits of connectivity. They may evolve into paying customers who purchase broadband services from operators other than through connectivity centres. Aspirational students, in particular, are likely candidates to subscribe for broadband packages on commercial terms as their education and employment opportunities afford them the upward economic mobility necessary to pay for services on an individual basis. Operators enjoy the opportunity to advertise to such prospective consumers through point-of-sale and tailored marketing programs (using data mining results) through connectivity centres. Either directly or indirectly by fueling demand for their broadband services through intermediaries, operators may create brand awareness, brand affinity and consumer habits highly conducive to expanding their base of fee-paying, profit-generating customers. In South Africa's competitive communications market, therefore, the provision of bandwidth under the Free Broadband Program may be viewed as a long term marketing campaign that likely delivers significant business growth opportunities to private sector players on a highly cost effective basis.

The Free Broadband Program combines with the Universal Coverage Program and Free Air Program to ensure that all South Africans have the opportunity to realise a minimum amount of accessible and affordable broadband connectivity anywhere in the country, albeit through communal facilities. Although available to all South Africans, the realities of commercial circumstances in South Africa's communications market mean that only South Africans who cannot afford to pay for individual access to broadband connectivity or students in education institutions and medical professionals in health care facilities are likely to make extensive use of the free access to broadband services provided to such connectivity centres. Through the recognition of such market conditions, the Free Broadband Program effectively uses self-selection targeting to operate as a *de facto* benefit program that delivers broadband connectivity to currently broadband-dispossessed South Africans and meaningfully improves broadband access to South African education institutions and medical facilities in a manner consistent with stated Government objectives.

Collectively, the Free Broadband Program, Free Air Program and Universal Coverage Program represent substantial public sector interventions in South Africa's communications market that are likely to empower private sector market participants to achieve significant public policy priorities on an efficient and cost effective basis in accordance with international best practices. Consistent with Government of South Africa ICT objectives, these new programs:

- Truly realise the ambitions of universal service and access to communications services in South Africa by resolving the lingering lack of accessible and affordable communications services for those South Africans in those parts of South Africa without such services.

- Meaningfully advance the ambitions of the Government of South Africa's revised *National Broadband Policy* (South Africa, 2013b) and other public policy prescriptions by expanding the accessibility and affordability of broadband communications services to many South Africans in many areas of South Africa.

- Meaningfully realise the objectives of the USAASA's National UAS Strategy, particularly the nine underlying principles, by delivering basic communications to all South Africans in all parts of South Africa, expanding broadband backbone infrastructure into underserved and unserved areas and facilitating public broadband access to connectivity centres, particularly schools, health clinics and local government offices.

- Materially improve the quality of life and range of socio-economic opportunities available to many South Africans in many parts of South Africa by providing them with access to a myriad of educational, medical, commercial and social services often only accessible through communications services.

Yet the success of such programs depends on the presence of regulatory and commercial environments conducive to the optimal implementation of such initiatives. As such, it is important to consider regulatory reforms (and potential commercial reforms) that may be necessary to ensure that such programs (and other public sector interventions in South Africa's communications market) are implemented on the most efficient and cost effective basis and maximise the availability, accessibility and affordability of communications services in South Africa.

## 8.5 REGULATORY REFORMS

The Government of South Africa is embarking upon the '*complete overhaul of government policies governing the country's broad information and communications (ICT) sector'* (McLeod, 2012c, 1). The National Integrated ICT Policy Colloquium held in April 2012 launched a process expected to include the publication of a green paper,

a white paper and new legislation in the near term (South Africa, Department of Communications, 2013, 21; Ellipsis, 2012, 1; McLeod, 2012a, 14; South Africa, 2012f, 39). As part of the most extensive review and prospectively significant realignment of the regulation of South Africa's communications market since promulgation of the *Telecommunications Act*, it is timely to consider potential changes to the roles and responsibilities of the USAASA, USAF and ICASA which may improve or accelerate the realisation of universal service and access to communications services in any transformed South African communications market.

### 8.5.1 Universal Service and Access Agency of South Africa

The history of the Universal Service and Access Agency of South Africa over the past two decades largely indicts the Agency as a failure. It has rarely discharged any of its four core functions with competency or efficacy. Although the USAASA's performance has improved in some areas in recent years, the evolution of South Africa's communications market suggests that the USAASA should be transformed in four key ways: it should become part of ICASA; it should focus more narrowly on identifying and facilitating the realisation of specific universal service and access objectives in South Africa's communications market; it should promote incentive-based rather than obligation-based policies and programs; and it should discharge a facilitative rather than implemental role in the realisation of such policies.

#### 8.5.1.1 Universal service and access division

The USAASA should be subsumed as a division within ICASA.[346] The creation of the USAASA as a separate agency was a unique response to a unique situation.[347] It was based on the perceived urgent need to have a dedicated champion to promote the delivery of communications services to historically disenfranchised communities denied such services by the policies of apartheid. A lot has changed since 1994. Based on Government-defined targets, South Africa has realised universal service to voice communications services and will likely realise universal service to data communications services in the near

---

[346] This recommendation is supported by several public interest groups, notably the Link Centre (Link Centre, 2012, section 4.2). The ANC proposes to merge the MDDA into the USAASA (ANC, 2012a, 7; Gedye, 2012, 1). Given likely duplication of efforts in a converged communications market between these organisations, it makes sense to merge the MDDA into the USAASA. However, it also makes sense to merge the USAASA into ICASA and absorbing the MDDA within the USA Division of ICASA simply amplifies the benefits of merging the USAASA into ICASA without the MDDA.

[347] Supra, sections 5.2.2, 5.3.2 and 7.3.5.

term. While a small part of South Africa continues to lack communications services and a minority of South Africans continue to lack affordable communications services, the urgent need to roll out available, accessible and affordable communications services across a large part of South Africa to serve large swathes of newly enfranchised South Africans has been satisfied over the past two decades. For better or worse, South Africa's communications market now resembles many other communications markets in other countries. The delivery of communications services to those areas of South Africa without such services and those South Africans who cannot afford such services remains a key public priority, but an imperative that can be discharged by a universal service and access division (USA Division) operating under the auspices of ICASA.

It is unusual to have a universal service agency operate as a stand-alone entity in most communications markets.[348] International best practices suggest that accountability for the administration of universal service and universal access policies generally rests with the Ministry of Communications (or equivalent) or the regulatory authority (ITU, 2011b, 3). Various policies and legislative frameworks proposed for the Southern African Development Community (SADC) follow this template (ITU, 2011b, 47-48). South Africa originally followed such precedent, with the *White Paper on Telecommunications Policy* proposing a universal service agency attached to the regulatory authority. This policy position was overtaken by the special circumstances that confronted South Africa in 1994.[349]

Yet the Government of South Africa always appeared to recognise that the USA enjoyed a limited period to remedy the special circumstances that justified its creation as a separate agency. The *Telecommunications Act* provided the President of South Africa with the power to disband the USA and USF after five years. Nearly two decades after promulgation of this legislation, it is time to acknowledge the passing of such special circumstances and bring South Africa's communications policy in line with international precedent by transforming the USAASA into a division within ICASA. The USAASA representative appears to support this position:

---

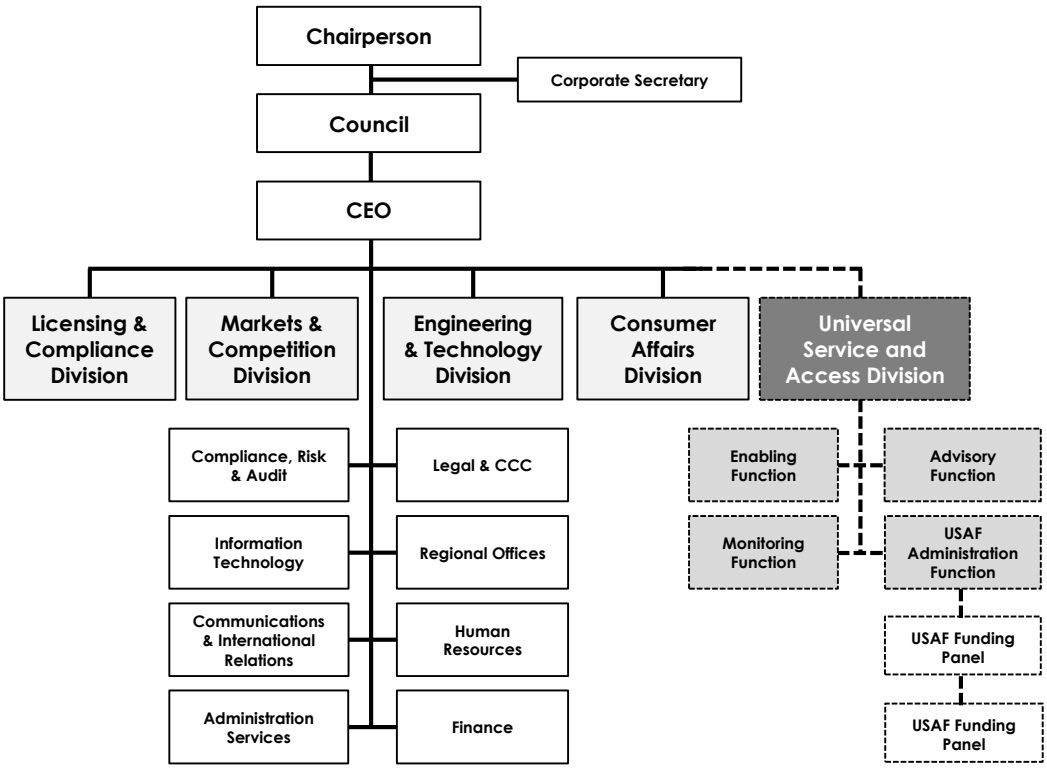
348 Supra, section 5.2.2.

349 Ibid.

> *What they should have, I think, is a very small structure focused on universal service, access, monitoring, advice, guidance. Almost an appendage of ICASA* (Bate, 2014a, 5).

Figure 8.1 outlines the proposed repositioning of the USAASA as the Universal Service and Access Division within ICASA:

**Figure 8.1**
**Proposed USA division within ICASA**




Source: Proposed ICASA structure adapted from ICASA organogram (ICASA, 2013c, 1).

From an administrative perspective, a USA Division within ICASA overcomes many of the organisational challenges that have frustrated the effectiveness of the USAASA as a stand-alone agency. Creation of a USA Division within ICASA resolves the impotence of the USAASA as an orphan agency stranded between competing powers exercised over its domain by the Minister of Communications and ICASA by putting it under ICASA's control. A USA Division within ICASA likely enjoys greater independence as part of a regulatory authority than the USAASA as a stand-alone agency. Transforming the USAASA into a USA Division within ICASA likely resolves many of the governance issues that have plagued the USAASA for decades.

The Government of South Africa proposes to give the Minister of Communications significant powers over the USAASA under the *Electronic Communications Amendment Bill of 2012*. As part of ICASA, a USA Division is subject to ICASA's governance and accountability framework and removes the need for such measures. Indeed, the Minister of Communication acquires significant influence over any USA Division (as part of ICASA) through proposed amendments to the *ICASA Amendment Bill of 2012.* Furthermore, incorporation of the USAASA's functions into ICASA likely achieves financial savings that lower the overall costs of realising universal service and access policies in South Africa's communications market. As such, the incorporation of the USAASA into ICASA represents prudent use of taxpayer funds that delivers value for money for the fiscus.

From a policy perspective, a USA Division within ICASA is likely in a better position to discharge the four key USAASA functions (enabling, advisory, monitoring and USAF administration) than the USAASA as a separate agency. A USA Division likely enjoys greater standing to politically champion programs from within the halls of an integrated regulatory authority than the corridors of the USAASA as an isolated body. As part of ICASA, a USA Division would also be well placed to collaborate, cooperate and consult with other market actors and harmonise and integrate program activities with other parts of ICASA and the Department of Communications.

A USA Division within ICASA would likely have access to a greater range of organisational resources and a greater ability to leverage such resources to advance its programs, particularly in respect of the development, evaluation and monitoring of such matters. A USA Division would have a greater ability enforce its programs by leveraging the compliance and enforcement powers of ICASA, including the authority to issue regulations that bind participants in South Africa's communications market. Under current arrangements, the USAASA can only offer a 'carrot' to market participants but a USA Division within ICASA would also carry a 'stick' to threaten market participants or use in the event of non-compliance with program requirements.

Undertaken through a well-organised change management process, the transformation of the USAASA from a stand-alone agency into a USA Division within ICASA should not materially prejudice the administration of universal

service and access policies and programs in South Africa. As part of ICASA, a USA Division may be susceptible to politics and bureaucracy that may slow its business activities. Yet such activities have been historically affected by politics and bureaucracy within the USAASA and between the USAASA and other agencies during the USAASA's time as a stand-alone agency.[350] The degree to which politics and bureaucracy affect the activities of the USA Division likely depends on the nature of the transition and calibre of people involved in the transition. USAASA personnel may find new ICASA colleagues receptive to and supportive of universal service and access programs once such responsibilities vest to ICASA rather than another agency.

As part of ICASA, a USA Division may also be drawn into the internecine political warfare between ICASA and the Department of Communications. The Minister of Communications may not want to expand ICASA's remit at a time when the Government is attempting to limit some of its functions.[351] Yet the Minister of Communications retains significant ability to control the administration of universal service and access programs, whether through governance of the USAASA as a stand-alone administrative agency or ICASA as a stand-alone regulatory agency.[352]

Overall, the transformation of the USAASA from a stand-alone agency into a division of ICASA would positively reflect the evolution of South Africa's communications market from an oppressive apartheid-era market that deprived the majority of citizens of the basic right to communications services into a liberalised, competition-oriented market where the majority of citizens now enjoy this right. Such a reform is consistent with international best practices, resolves the USAASA's organisational challenges, improves institutional capacity and expands the breadth and depth of resources available to advance universal service and access policy objectives in South Africa's communications market. It may also resolve some of the political tensions that have pervaded the regulation of South Africa's communication market over the past two decades. Indeed, the creation of a USA Division within ICASA may give key public sector actors an opportunity to break from the legacy of failure

---

350 Supra, sections 5.3.2 and 7.3.5.

351 For example, through creation of the Competition and Complaints Commission under the *Independent Communications Authority of South Africa Amendment Bill of 201*2.

352 Supra, section 3.5.1.2.

that has plagued the administration of universal service and access policies and programs in South Africa's communications market. It may create momentum and goodwill among public and private sector stakeholders to support new policies and programs arising from the Government of South Africa's realignment of the regulation of the country's ICT market in any 'post-convergence' period.

#### 8.5.1.2 Targeted policies and programs

Beyond finding a new home for the USAASA as a USA Division within ICASA, the nature of South Africa's universal service and access policies needs to change to reflect changes to the nature of the domestic communications market. In nascent markets, the realisation of universal service and access to communications services is a particularly prominent public policy concern when most of the population does not enjoy available, accessible or affordable communications services. It often demands sweeping systemic public sector interventions that attempt to remedy the fundamental failure of the market to deliver such services to significant areas or population groups in the country. Once most areas and most people in a country adopt communications services, however, the necessity for such sweeping public sector interventions subsides and a more nuanced, targeted approach may be adopted by public policy actors to rectify lingering market deficiencies.

Under the auspices of the USA Division of ICASA, the Government of South Africa should confirm those constituencies and areas of the country that do not enjoy available, accessible and affordable communications services. The USAASA recently tendered for a strategy which may deliver such information (USAASA, 2012d). In terms of the accessibility of communications services, the Universal Coverage Program represents an appropriate public sector intervention that delivers communications services to those areas of South Africa without such services. In terms of the affordability of communications services, the Free Air Program represents an appropriate public sector intervention that uses market forces to deliver communications services to those constituencies that cannot currently afford such services. The Free Broadband Program promotes both of these elements by increasing the accessibility and affordability of broadband communications services to key connectivity centres.

In each instance, these programs promote specific, targeted objectives to realise universal service or access to communications services in South Africa without burdening market actors with extraneous considerations. Consistent with international best practices (ITU, 2012c, 1; 2012d, 1; 2011b, 83), they use technology neutral prescriptions to promote the realisation of universal service and access to communications services. Beyond provisions found in licensing conditions, they do not prescribe ownership requirements or restrictions on program participants. Taken together, these programs enable the Government of South Africa to focus on improving the accessibility and affordability of communications services in South Africa but allow market actors to determine the optimal means to realise such improvements for the public good.

#### 8.5.1.3 Relationship between public and private sector actors

In realising its ambitions for universal service and access to communications services in the domestic communications market, the Government of South Africa should focus on using regulatory mechanisms that create opportunities for private sector market participants to implement programs that advance such ambitions. As part of any realignment of relationships within South Africa's communications market, public sector actors need to lead private sector actors to implement universal service and access programs through inducements and incentives rather than obligations or instructions.

Regulation by obligation is an antiquated and inefficient means of realising public policies through private sector actors, particularly in rapidly evolving communications markets. Obligations represent the exercise of negative control by public sector actors over private sector actors. They typically result in zero-sum arrangements that fail to deliver satisfactory implementation of desired public policy objectives. As ISPA's representative notes, obligations are often '*a grudge purchase'* by private sector actors:

> *The minute you put obligations on a party, even if it's in exchange for something, it's a grudge purchase; it's a 'I have to do this'. . . . the win at the end of the day is to turn that perception around and the only way to turn that around is to take away the whole principle of obligation and create a totally different universal service structure . . . and creating an incentive-based programme for deploying universal services.*

> *So you get a balance at the end of the day. It's not a grudge purchase. If the person is doing the universal service obligation because it's in his interest to do it and the Telkoms and Vodacoms of the world have the opportunity to bid for the business, maybe a universal agency that is handing out contracts and part of the contract is to build an area in such a way that if the infrastructure that is put out is not profitable on its own, then it's subsidised, then the profit of doing it is being subsidised to create a positive attitude* (Bate, 2014b, 5).

In South Africa, for example, the obligation-driven USO Program was largely a public policy failure. Telkom deliberately avoided completion of its USOs because it chanced the penalty for non-compliance as less damaging to its profits than compliance with its obligations. It satisfied other USOs without regard to the commercial viability of its implementation efforts, thereby eroding the sustainability and impact of the Government of South Africa's objectives. Moreover, USAO targets set for operators, whether fulfilled or not, did not materially contribute to the realisation of universal service or access to communications services in South Africa.

Regulation by incentives represents the exercise of positive control by public sector agencies over private sector actors. The use of incentives often results in win-win arrangements that lead to the successful implementation of public policy objectives by such actors. In terms of the USO Program, for example, operators identified many more cost effective and efficient ways to deliver communications services to rural areas and poor communities at their own initiative than through compliance with the Government's prescriptive requirements because they identified ways to make money from such efforts.

The GSM Association has acknowledged the sizeable opportunity for mobile operators to make money from the '*universal access and universal service market'* (GSMA, 2006, 19). As long as private sector actors can make money from their activities, they are likely to be compliant tools for the implementation of public policy priorities. As such, the Government of South Africa should identify those areas of South Africa and those South Africans without the benefit of available, accessible and affordable communications services. It should devise a range of incentives to motivate private sector actors to address

such lacuna that balances their ability to make profits against the Government's desire to achieve specific public benefits.[353]

To achieve this partnership, there must be trust and goodwill between all strata of the domestic communications market. There must be give and take. There must be mutual respect, cooperation and compassion for the well-being of others. Appropriately, there must be a genuine embrace of the 'ubuntu' principles that underpin democratic South Africa.[354] Only through the recognition of *'both the rights and the responsibilities of every citizen in promoting individual and societal well-being'* (South Africa, 1997d, 12) will universal service and access policies and programs realise their ambitions to provide available, accessible and affordable communications services to all South Africans regardless of residence or affluence. Indeed, such ambitions form an essential prerequisite for the peaceful progress and continued socio-economic stability of a democratic South Africa. Yet, as former President Mandela said, '[t]*he first step in change does not come on the grand stage of state affairs, but from committed people seeking to find new ways based on what is right'* (Mandela, 2005, i). In the course of the Government of South Africa's national ICT policy review, therefore, it is hoped that all stakeholders in South Africa's communications market seize the challenge and transform the availability, accessibility and affordability of communications services from a right into a reality in South Africa.

#### 8.5.1.4 Optimal program design

The use of incentives and inducements to motivate private sector actors to implement programs related to public policy priorities recognises that private sector actors are generally better placed to organise resources and implement activities than public sector actors. The USAASA's abject failure as an implementation agent[355] is testament to such realities and is not unique in the world's communications market (ITU, 2011b, 96). Public sector actors should limit their involvement to policy development, administration, monitoring,

---

353 The Universal Coverage Program, Free Air Program and Free Broadband Program are consistent with such objectives. They generally use a 'carrot' to motivate market involvement in the realisation of specific public policy objectives. A 'stick' remains firmly in Government hands for use in the event of non-compliance with the terms of such programs.

354 For further discussion of 'ubuntu' see the *White Paper for Social Welfare* (South Africa, 1997d, 12).

355 Supra, section 5.3.2.

evaluation and enforcement responsibilities. Private sector actors should be vested with responsibility and accountability for the implementation of programs that advance public sector policies. In South Africa, the USAASA seems to have learned this lesson and its recent efforts to exit its implementation efforts and focus on its facilitative function is consistent with international best practices (ITU, 2011b, 92).

Yet leveraging the strengths of private sector actors to implement public sector programs does not mean that private sector actors have a free hand in the implementation of such programs. The Government of South Africa, whether through the USAASA (as a stand-alone agency or USA Division within ICASA) or ICASA as the regulatory authority, has the heightened burden of ensuring that private sector actors discharge their implementation responsibilities in the most efficient and cost effective manner consistent with the public good. To discharge this burden, the Government needs to design programs with nine key elements that maximise opportunities for the successful implementation of such programs by private sector actors. These elements have been bundled into a Program Accountability Paradigm (PAP). Table 8.1 describes the key features of this Paradigm.

The Program Accountability Paradigm (PAP) is consistent with best practices, including the principles of the ITU's Model Subsidy Recipient Handbook (ITU, 2011b, 30) and the World Bank's Monitoring and Evaluation (M&E) model and handbook (Kusek & Rist, 2004). The PAP also overcomes many of the pitfalls, such as a lack of monitoring and evaluation components, which undermined previous USAASA programs.[356]

Yet optimisation of design parameters may not maximise the efficiency and effectiveness of new programs if disparate initiatives are not united into a cohesive, overarching strategy. In this regard, the USAASA has taken steps to create a national strategy which may remedy this concern (USAASA, 2013a; 2012d). The USAASA recognises the need to develop this strategy based on relevant data and has commissioned the collection of key indicators to illuminate the current state of universal service and universal access in South Africa's communications market (USAASA, 2012d, 2-3). To remain relevant in

[356] The USAASA readily acknowledges significant design defects in previous program efforts (USAASA, 2012d, 2-3).

South Africa's dynamic communications market, however, any national strategy needs to have the ability to respond to or anticipate new market developments on an ongoing basis. To build this capability into any national strategy, the USAASA needs the ability to track ongoing market developments that can inform ongoing policy and program management decisions. The USAASA does not currently have this institutional capability.

**Table 8.1**

**Program accountability paradigm**

| | |
|---|---|
| **Objectives** | Establish clear goals and supporting targets that are simple, realistic, transparent, objectively quantifiable and easily understood by public sector and private sector actors alike. |
| **Structure** | Structure programs that clearly demarcate the rights and responsibilities of implementation partners and minimise opportunities for misunderstandings or misinterpretations by all stakeholders. |
| **Incentives** | Identify and implement incentives that motivate private sector actors to undertake activities that realise key program objectives.<br>Use market mechanisms to ensure that such incentives represent the lowest cost to the fiscus required to induce appropriate private sector behaviour.<br>Use Output Based Aid principles in the design and implementation of financial incentives, including subsidies.<br>Establish performance-related milestones as conditions to the availability of incentives to ensure private sector compliance with the objectives underpinning such incentives. |
| **Implementation methodology** | Avoid prescriptions which handcuff the means used by private sector market actors to implement programs.<br>Empower private sector market actors with the flexibility to implement programs in accordance with available market options determined at their discretion. |
| **Monitoring** | Develop a methodology that enables public sector actors to monitor the progress and performance of private sector actors in the implementation of programs, including a transparent framework for the collection of data, records and other information required to measure Key Performance Indicators (KPIs). |
| **Evaluation** | Develop evaluation criteria that enable public sector and private sector actors alike to benchmark program performance against specific KPIs including milestones and performance-based results. |
| **Enforcement** | Specify the range of enforcement remedies available to public sector actors in the event that private sector actors do not comply with performance requirements and, similarly, any remedies available to private sector actors in the event that public sector actors fail to deliver on any program requirements. |
| **Program management** | Establish appropriate groups, working committees, consultative committees or other communication forums appropriate for specific programs that facilitate ongoing consultation, collaboration and proactive problem-solving and otherwise enable all program stakeholders to identify concerns and work through problems before they impair program performance.<br>Specify the performance milestones, monitoring methodology and evaluation criteria in the program design and communicate such matters to private sector actors to ensure understanding and acceptance of such matters at the outset of the program process. |
| **Dispute resolution** | Except in areas governed by statute or regulation, create a fast-track dispute resolution process capable of resolving issues on a transparent, cost effective and expedited basis. For disputes that cannot be resolved by consensus through such a process, use the *Arbitration Act, Number 42 of* 1965 (South Africa, 1965) as a market-familiar forum that gives private sector actors assurances of certainty, transparency and equitability in their treatment in the event of any material dispute with the Government of South Africa. |

Source: Author.

In addition to following the Program Accountability Paradigm, the USAASA (as a stand-alone agency or USA Division within ICASA) should create an ongoing national tracking database which aggregates information from a wide variety of third party sources (census information, household survey information and private sector information) to build a rolling quarterly consensus impression of the availability, accessibility and affordability of communications services in South Africa. Database information may be used to measure the macro-market and micro-market effects of existing programs and isolate existing and emerging trends that may affect universal service and access to communications services in South Africa. Given the currency of database information, policy makers may amend existing policies or programs or introduce new policies or programs that account for market developments and otherwise react to or proactively anticipate the effects of trends that may influence the availability, accessibility and affordability of communications services in South Africa. The USAASA may commission the design of a proprietary database or purchase and modify existing database platforms to acquire this capability on a cost effective basis.

There are some signs that the Government recognises the need for sophisticated analytics that track key ICT indicators. The revised National Broadband Policy identifies the need to '*address the shortcomings in analysis, information and indicators'* (South Africa, 2013b, 35-36). ICASA launched an online ICT portal in March 2013 (ICASA, 2013f, 14) and the Agency includes the collection of ICT indicators as a key component of its cost 'Cost to Communicate Programme' (ICASA, 2013f, 13-15).

Collectively, the Government of South Africa's universal service and access policies need to account for the evolution of South Africa's communications market over the past two decades. The position of the USAASA as a stand-alone agency is no longer warranted under current market conditions. Given the widespread proliferation of communications services over the past two decades, the Government needs to adopt more focused programs[357] that specifically benefit those parts of South Africa and those South Africans without available, accessible or affordable communications services under current market conditions. Existing characteristics of South Africa's communications market suggest that obligation-based programs are less likely to be effective than incentive-based programs that

[357] Such as the Universal Coverage Program, Free Air Program and Free Broadband Program.

may rely on a substantial number of sophisticated private sector actors to implement public policy priorities on an efficient and cost effective basis. Public sector actors need to design transparent programs and subsequently monitor, evaluate and regulate the implementation of such programs by private sector actors in accordance with best practices.

The realisation of such reforms will cost money. Funding is needed to build the capacity of public sector actors to design and guide programs. Money is needed to provide subsidies to motivate private sector actors to undertake program implementation opportunities. In addition to reforms of the USAASA, therefore, reforms to the USAF represent a critical undertaking essential to the acceleration of universal service and access to communications services in South Africa.

### 8.5.2 Universal Service and Access Fund

The Universal Service and Access Fund notionally attracts funds earmarked to support the realisation of universal service and access to communications services in South Africa. In international communications markets, significant concerns have been raised over the performance of many universal service and access funds, particularly in the SADC region, including specific worries over the governance, management and disbursement of monies from such funds (ITU, 2011b, 21). South Africa has not been exempt from such concerns.[358]

A complex institutional framework governing administration of the USAF has contributed to gross mismanagement of the Fund. It has nominally collected a significant amount of money but dispersed few funds. A lack of accountability in terms of the amount, source and residency of such funds plagues the USAASA. USAF monies have not materially contributed to the improvement of universal service or access to communications services and may now be used to improve universal service to broadcasting services.[359] To resolve these deficiencies, four structural changes need to be made to the way that the USAF is managed, held accountable for funds, allocates funds and uses funds to support the realisation of universal service and access to communications services in South Africa.

---

[358] Supra, section 5.3.3.

[359] Ibid.

#### 8.5.2.1 Administration procedures

The USAF is like the child of divorced parents shuttled between different households with different rules imposed by often neglectful and feuding parents. A much clearer management framework is required to change the USAF from an ineffectual agency into a catalyst for the funding of universal service and access to communications services in South Africa. Administration of this management framework in coordination with various other public sector stakeholders should fall on the shoulders of the USAASA (as a stand-alone agency or USA Division within ICASA).

The Minister of Communications remains appropriately placed to establish the maximum amount of USAF contributions required of market participants as part of the policy making function. ICASA remains appropriately placed to calculate and collect USAF contributions which are appropriately paid over to the National Revenue Fund.[360] The Treasury Department manages funds in the ordinary course of its business and retains the institutional capacity and safeguards to manage USAF contributions. The potential perils of creating a large bank account under the control of ICASA or the USAASA, particularly given governance and accountability challenges at both entities, far outweigh any demands of managing the role of the Treasury Department as custodian of USAF monies.

The USAASA needs to establish clear reporting protocols with operators, ICASA and the Treasury Department to track USAF contributions collected from operators. ICASA should be obliged to report the expected and collected contributions from each operator on a timely basis; each operator should be obliged to report the USAF contribution collected by ICASA on a timely basis; and the Treasury Department should be obliged to confirm receipt of each operator's USAF contribution from ICASA on a timely basis and the rolling balance of USAF monies on hand in the National Revenue Fund. These simple reporting procedures enable the Government of South Africa, through the USAASA, to track and account for the monies comprising the USAF.

---

[360] Notwithstanding ICASA's struggles with the collection of license fees (Magcawas, 2013, 1; Motote, 2013, 1; Mulligan, 2013, 1).

The USAASA should be required to publish a USAF Annual Report on a yearly basis apart from its own annual report. This USAF Annual Report should be published on an audited basis. Such audit implies that all expenditures and income related to the USAF are approved and expended in accordance with IFRS standards as well as applicable public finance management statutes and regulations. To save costs and respect the environment, such a Report may be published on the USAASA web site without need for paper printing or physical circulation of such Report. In addition to this Annual Report, the USAASA should publish an interim, unaudited quarterly report that summarises USAF expenditures for the previous quarter against the budget for the current fiscal year and highlights key achievements or challenges that occurred during the relevant period as well as targets for the forthcoming period. This quarterly report may ultimately form the basis of the Annual Report and ensure that key stakeholders are informed of current activities and not unduly surprised by unknown material matters in the Annual Report.

#### 8.5.2.2 Allocation protocols

There are many reasons why the USAF has only disbursed a small fraction of contributions collected from operators. A cumbersome approvals process for the expenditure of USAF monies is likely one of the primary reasons. The mechanics of this approvals process require change. Currently, the USAASA needs to consult with ICASA and obtain approval from the Minister of Communications for any USAF disbursements which are, subject to such consultation and approval, subsequently re-allocated from the National Revenue Fund to the USAF by the National Assembly in accordance with the amounts previously approved by the Minister of Communications. This process is bureaucratic and diminishes the ability of the USAASA to allocate funds to support programs in a timely manner. It also involves the National Assembly in the direct allocation of USAF monies which diminishes its ability to discharge its oversight function on an independent basis (since it approves the allocation of funds, it may be more reluctant to question the subsequent use of funds).

To overcome such challenges, a USAF Funding Panel (UFP) should be established within the USAASA (as a stand-alone agency or part of ICASA) comprised of seven members drawn from a cross-section of communications market participants: two members appointed by the Board of Directors of the

USAASA (or USA Division within ICASA); one member appointed by the ICASA Council (if the USAASA becomes part of ICASA, this member must be appointed from outside the USA Division); two members appointed by the Minister of Communications from the Department of Communications; and two members representing private sector interests appointed by the South African Communications Forum[361] or another public interest group identified for such purposes. Stakeholder involvement in the allocation of USAF monies represents an essential prerequisite to rehabilitation of the USAF's credibility.

The USAF Funding Panel would meet on a quarterly basis. The Panel would be supported by a UFP Working Committee comprised of individuals drawn from the USAASA, ICASA and the Department of Communications who should be accountable for managing the business of the USAF Funding Panel, tracking implementation of UFP decisions and otherwise facilitating the smooth performance of the Panel. The UFP would operate in accordance with an operations manual and a governance manual. UFP members may be remunerated in accordance with applicable relevant public sector regulations.

The UFP would be charged with the allocation of USAF subsidies to support specific programs that realise the Government's universal service and access policies in South Africa's communications market. No USAF monies would be expended without the prior approval of the USAF Funding Panel. The Panel would consider specific programs at the conceptual level to approve an indicative budget, including estimates of any required subsidies. As part of this process, the UFP would review the adequacy of program parameters underlining the funding request to ensure compliance with the Program Accountability Paradigm, including use of market mechanisms to establish and implement any subsidies.

Upon approval of such programs by the USAASA's Board of Directors (or, if the USAASA becomes part of ICASA, by the ICASA Council), the UFP would revisit the budget for such programs prior to release of any funds. The Panel would also receive quarterly reports on the performance of each program which track the quarterly and cumulative use of funds and benchmark expenditures

---

[361] The SACF is a not for profit company incorporated in South Africa which represents all stakeholders in South Africa's ICT sector, including private and public sector actors (SACF, 2012).

against PAP requirements for the duration of each program. The inputs into these quarterly reports would inform the USAASA's quarterly reports and the USAF Annual Report.

The unanimous consent of all members of the USAF Funding Panel would be required for all decisions. This unanimity threshold represents a deliberate effort to encourage cooperation, collaboration and consensus on the expenditure of USAF monies across industry stakeholders. The composition of the UFP ensures that specific constituencies act as a 'check and balance' against other constituencies and hopefully assures a greater degree of scrutiny of the financial merits of proposed programs.

Any business not approved by the unanimous consent of the UFP would be tabled without action (and effectively terminate consideration of the program by the USAASA). However, any UFP member or the USAASA, ICASA or the Department of Communications shall have the right to refer the matter for arbitration under the auspices of the *Arbitration Act, Number 42 of* 1965 (South Africa, 1965) for expedited resolution. The availability of this dispute resolution provision ensures that any individual UFP member cannot frustrate (only delay) the Panel's business but avoids vesting ultimate decision-making responsibility with the Minister of Communications, USAASA or ICASA which could undermine the perceived value of stakeholder representation on the Panel.

Ultimately, the Minister of Communications would retain control over the funding of USAF programs through the need for the USAASA (in whatever form) to submit yearly budgets to the Department of Communications for approval by the National Assembly as part of the Minister of Communication's budget vote. To partially offset the ability of the Minister of Communications to draw a hardline against any funding approved by the UFP, either through unanimous consent or application of the arbitration provisions, the USAASA should have the ability to request that the Portfolio Committee on Communications investigate the absence of any funds approved by the USAF Funding Panel from any budget submitted by the Minister of Communications for consideration by the National Assembly. Given that the ANC dominates the National Assembly, such a request is unlikely to achieve any change in any Ministerial position, but the opportunity for the USAASA to raise public interest in any such matter may persuade the Minister of Communications to avoid any such circumstance.

The proposed creation of the USAF Funding Panel broadly mirrors the policy rationale behind the proposed creation of the Spectrum Management Agency under the *Electronic Communications Amendment Bill of 2012* and the Complaints and Compliance Commission under the *ICASA Amendment Bill of 2012*. In different ways, each new organisation reflects the Government of South Africa's willingness to create a dedicated body to focus on a specific area of public interest in South Africa's communications market. The UFP achieves the same objectives in an effort to resolve inadequate management and insufficient oversight of an estimated ZAR 1 billion of USAF contributions. Moreover, the UFP and its relationship with the USAASA's Board of Directors (or ICASA Council) are consistent with best practices (ITU, 2011b, 26).

#### 8.5.2.3 Funding conditions

Beyond reforms to the administration and approvals process for the expenditure of USAF monies, the ways in which USAF contributions are spent requires significant reform. Consistent with the Program Accountability Paradigm, the USAF should only allocate funds in accordance with Output Based Aid (OBA) principles. In recent years, many universal service funds around the world, particularly in developing countries, have adopted OBA principles in the allocation of their funds (ITU, 2011b, 6-8). As the ITU explains:

> *OBA is an innovative approach to increasing access* [to communications services] *in a manner that seeks to ensure that money is well spent and that the benefits go to the identified beneficiaries by linking the payment of aid to the delivery of specific services or 'outputs'* (ITU, 2011b, 6).

OBA principles form an integral part of the Program Accountability Paradigm. Table 8.2 summarises the key principles and benefits of the OBA approach:

**Table 8.2**

**Overview of output based aid**

| | |
|---|---|
| • Payments linked to delivery | • Transparency increases efficiency and effectiveness of programs and projects |
| • Subsidies linked to measurable targets | • Performance risk carried by service providers (funding recipients) |
| • Services contracted to third parties which receive subsidies to meet defined objectives | • Subsidies (and possibly subsidy award mechanism) incentivises private sector participation |
| • USAF may pre-finance programs or projects (in tranches) until delivery | • Results can be tracked through outputs that increase accountability |
| • Use of performance-based subsidies with payments made only after services have been rendered and audited | |

Source: Adapted from ITU, 2011b, 18.

Yet OBA principles do not assist with the identification of the optimal (minimum) quantum of monies required to support programs that may be funded by the USAF. In this regard, USAF subsidies should only be allocated to support programs based on transparent, competitive tender processes that use market mechanisms to establish the amount of subsidies, if any, required to achieve specific public policy objectives.

As highlighted in earlier discussions of the three new programs proposed by this study, private sector participants are likely to undertake programs that deliver universal service and access to communications services in South Africa if they can make money through such enterprises. Private sector actors are also likely to seek ways to maximise the amount of money that they make in undertaking such enterprises. It is incumbent upon public sector actors to identify ways to minimise the amount of money that such private sector actors make when undertaking such enterprises. Whether in the form of once-off subsidies or ongoing subsidies, the Government is paying private sector market participants to deliver specific programs to required standards and has an obligation to minimise the cost of such subsidies on the fiscus.

Given the adequacy of competition within South Africa's communications sector, market-oriented mechanisms are the most transparent and efficient means to benchmark such subsidies. Reverse auctions that enable private sector actors to bid for the opportunity to be 'paid to play' but award concessions to the bidder accepting the lowest subsidy have a proven track record in South America and India[362] where many auctions reduced the amount of projected subsidies. In some cases, such reverse auctions have eliminated the need for any subsidy.[363] Reverse auctions should form a cornerstone of the suite of methods used by the Government of South Africa to ensure the most efficient use of taxpayer funds in the implementation of universal service and universal access programs in the domestic communications market.

---

362 For Chile, see supra, section 2.4.3.1.2. For India, see Economist, 2007, 75.

363 Ibid.

#### 8.5.2.4 Purpose of funds and hierarchy of funding priorities

Any reforms to the administration, allocation and funding conditions of USAF monies would be for naught if such funds are not efficiently earmarked for the realisation of universal service and access to communications services in South Africa. The *Electronic Communications Act* prescribes a range of permitted uses for USAF monies which generally benefit needy persons, under serviced areas and public institutions. Amendments proposed by the *Electronic Communications Amendment Bill of 2012* retain this focus but grant the Minister of Communications new authority to allocate USAF monies on a discretionary basis with the concurrence of the Minister of Finance. Some scholars are concerned with potential Ministerial abuse of such discretion (Link Centre, 2012, section 4.11) but sufficient safeguards exist within the funding protocol proposed by this study to mitigate such concerns.

USAF monies are currently derived from contributions by Electronic Communications Network Services (ECNS) and Electronic Communications Services (ECS) license holders in South Africa. At the present time, such monies should be earmarked to improve universal service and access to communications services and not broadcasting services. Once ICASA reconciles the relationship of payments by broadcasters to the MDDA to the Universal Service and Access Fund, the USAF's remit may expand to include the funding of programs that improve universal service and access to broadcasting services. For the moment, however, contributions by the major ECNS and ECS operators underpin the USAF.[364] As such, USAF monies should be directed exclusively towards improving the availability, accessibility and affordability of communications services in South Africa.

The USAF may come under pressure to fund a wide variety of programs that increase universal service and access to communications services in South Africa. Universal service and access funds typically support three types of activities that collectively comprise a USA 'value chain'. First, such funds support the roll out of additional ICT infrastructure, particularly to under serviced areas which may not justify the provision of such infrastructure on

---

[364] For example, MTN likely contributed approximately ZAR 50 million in USAF contributions in 2009 (Perry, 2010, 1) which would by itself represent approximately 5% of an estimated ZAR 1 billion of notional USAF reserves.

commercial terms without subsidy. Second, such funds facilitate the delivery of ICT services to specific constituencies, particularly needy persons who do not benefit (or sufficiently benefit) from available, accessible or affordable ICT services. Third, such funds underwrite the provision of enabling programs that advance the 'awareness' and 'ability' to use ICT services, such as computer literacy projects. Funding to support these three USA value chain components represents a legitimate use of USAF monies, both under international best practices and applicable South African legislation. The use of USAF monies for such purposes will likely accelerate the realisation of universal service and access to ICT services in South Africa.

In an ideal world, the USAF would have enough money to fund every meritorious program in every USA value chain component. Yet the USAF has a limited amount of money. It also faces increasing demands for use of such funds to support a wide variety of programs. Among the three USA value chain components, the funding of infrastructure projects should take precedence over the funding of programs in other areas.

ICT services cannot be delivered to people without using communications networks. Without access to such networks, there is no need to educate people on the use of ICT services. As such, the existence of communications networks is the linchpin that delivers the capacity to provide communications services and justifies the need to provide training programs. Analogous to the principle of 'build it and they will come', the market will respond to the availability of communications capacity by providing services, creating training solutions and settling the price of such services and solutions in accordance with market dynamics. To the extent that private sector actors do not adequately provide available, accessible or affordable services and solutions, the Government of South Africa may intervene and use USAF monies to address such lacuna. Without network capacity, however, there is no need for such intervention.

The construction of communications networks is also the most expensive component of the USA value chain as it requires the largest amount of upfront, irrevocable investment on risk by the funders of such networks. As such, the use of USAF monies in tandem with private sector solutions (such as project finance and structured finance) and market structures (such as public-private partnerships) to help overcome the entry barriers and financial risks of building

communications networks represents the most prudent use of such funds. The delivery of ICT services and training solutions does not confront similarly substantial entry barriers or financial risks. Furthermore, the funding of communications networks is more readily adaptable to transparent funding solutions. Networks are tangible assets that can be hypothecated, encumbered, sold, leased and otherwise dealt with as real property. Most ICT services and training solutions are intangible, ephemeral and transitory goods or services that cannot be dealt with in a similar manner.

The construction and operation of communications networks also suffer from a narrower range of funding solutions and implementation partners relative to the solutions and partners available to fund and implement ICT services and training solutions. Funding the construction of a communications network requires specialist financial expertise. Building and operating a communications network requires specialist technical expertise. Such expertise is found in a defined range of specialised funds and specialised firms throughout the world.

The delivery of ICT services and training solutions generally benefits from a broader range of funding solutions and implementation partners. Both USA value chain components are characterised by a 'commoditisation' of services and solutions. Indeed, the involvement of numerous departments at various levels of government (national, provincial, municipal), a multitude of NGOs and QUANGOs and a myriad of private sector actors (industry associations, businesses, individuals) in the delivery of cyberlab programs and computer literacy programs illustrates the greater pool of resources (financial, technical, operational) and lower implementation barriers that support the delivery of ICT services and training solutions in South Africa's communications market.[365] Moreover, private sector actors have shown a greater willingness to cross-subsidise, self-subsidise or otherwise absorb costs associated with the delivery of ICT services and training solutions to marginal constituencies relative to subsidising the construction and operation of communications networks in marginal areas.[366]

---

[365] Supra, sections 5.3.2.1.2 and 7.3.6.

[366] Ibid.

> In terms of the allocation of scarce USAF financial resources, therefore, the Government of South Africa should focus on using USAF monies to support expansion of the footprints of the country's communications networks as its paramount priority. Such a focus should enhance the delivery of network coverage to unserved areas (the focus of the Universal Coverage Program) and accelerate the roll out of national broadband network capabilities (the focus of the Free Broadband Program). USAF support for programs that deliver affordable ICT services to South Africans represents a subsequent priority with financial support for ICT training projects managed in tandem with the delivery of ICT services. Through this hierarchy of funding priorities, the USAF likely maximises the value unlocked from USAF monies and accelerates the realisation of universal service and access to communications services.

The use of public money to fund programs to advance universal service and access to communications services is a well-established practice, particularly in developing countries (ITU, 2011b, 87). Yet the efficacy of such funds remains debatable: Uganda and Colombia are cited as the only two examples among hundreds of such funds worldwide that have positively influenced an increase in the availability of communications services in domestic markets (ITU, 2007a, 1; GSMA, 2006, 21). The ITU identified seven critical failure factors that plagued the performance of many funds (ITU, 2011b, 98). At least five of these factors are relevant to the USAF in South Africa:

- Universal service fund contributions are over-collected and under-spent.
- Contributions are used to fund specific programs inefficiently.
- Public sector actors involved in the implementation of programs, particularly telecentre projects, are not successful in their efforts.
- Programs are initiated without sufficient coordination among different levels of government.
- Records of collections and distributions are not published on a periodic basis (ITU, 2011b, 8).

The ITU also identified five critical success factors that support the positive performance of many funds. These factors are relevant to the USAF in South Africa:

- Respect for OBA approaches and principles.
- Good governance.
- Alignment with national regulatory and policy framework.
- Technology neutrality in the design and implementation of programs.
- Emphasis on market orientation, sustainability and entrepreneurship (ITU, 2011b, 7-8).

Proposed amendments to the USAASA and USAF overcome the five critical failure factors and achieve the five critical success factors that underpin the successful administration of universal service agencies and funds. Furthermore, the three new proposed policies (Universal Coverage Program; Free Air Program; and Free Broadband Program) are structured and may be introduced and implemented in accordance with the five critical success factors. They also avoid the five critical failure factors that have undermined previous efforts by the Government of South Africa to realise universal service and access to communications services in the country. Taken together, such reforms hopefully reposition the USAASA (whether as a stand-alone agency or division of ICASA) for future success and increase opportunities for the USAF to join Uganda and Colombia as examples of funds that have materially contributed to the realisation of universal service and access to communications services in their countries.

### 8.5.3 Independent Communications Authority of South Africa

Responsibility for the turnaround of the Government of South Africa's universal service and access policies does not rest solely on the shoulders of the USAASA and USAF. To varying degrees, all communications market stakeholders need to participate in the development of programs and the effective and efficient coordination of such programs to accelerate the availability, accessibility and affordability of communications services. As the independent regulatory authority, ICASA can play a central role in the success or failure of such efforts.

ICASA has been bedevilled by a wide range of problems and faces significant challenges as the Government of South Africa seeks to reform its governance, mandate and powers in South Africa's communications market.[367] Discussion of a broad range of potential ICASA reforms falls beyond the scope of this study, but strengthening ICASA's financial independence, promoting competition and technological innovation through prudent regulatory practices and empowering ICASA to manage the administration and allocation of South Africa's radio frequency spectrum are three reforms which may affect ICASA's ability to positively influence the realisation of universal service and access to communications services in the country.

#### 8.5.3.1 Financial independence

ICASA is an independent statutory body, but not a truly independent regulatory authority. One of the key aspects of an independent authority contemplated by the *White Paper on Telecommunications Policy* was '*independence from the Government in dealing with its mandated functions, once the general framework of telecommunications policy has been set'* (South Africa, 1996c, 26). Yet existing legislation enables the Minister of Communications to exert significant influence over ICASA while pending legislation enhances the Minister of Communication's control over ICASA.[368] Extensive discussion of this concern is beyond the scope of this study. However, the strengthening of ICASA's financial independence represents a key reform which may erode the potential for political capture and improve ICASA's ability to play a meaningful role in the realisation of universal service and access to communications services in South Africa.

ICASA's budget is currently approved by the Minister of Communications in accordance with applicable law (South Africa, 2006c). To improve ICASA's financial independence, ICASA's budget should be established through a consultative process between ICASA and the Minister of Communications with the Portfolio Committee on Communications designated as the final arbiter of ICASA's annual funding allocation. As with ICASA's current funding procedures, ICASA would submit a draft budget to the Department of

---

[367] Supra, sections 3.5.1.2 and 7.3.8.

[368] Ibid.

Communications. ICASA and the Department of Communications would subsequently attempt agreement on a budget for submission to and review and ratification by the PCC. With PCC ratification, ICASA's budget would form part of the Minister of Communication's budget submitted for approval by the National Assembly (consistent with current practice).

In the event that ICASA and the Department of Communications fail to agree on a budget, each party would submit proposals to the PCC which would undertake a consultative process with both parties in an effort to mediate agreement on such budget within a prescribed period. Failing its ability to realise such a budget within the prescribed period, the PCC would be empowered to confirm a budget for ICASA based on its independent view of ICASA's best interests which would bind all parties and form part of the Minister of Communication's budget vote without amendment.

This proposed funding mechanism falls short of calls for ICASA to become financially independent, including though a right to retain licensing fees (ANC, 2012a, 10). Notwithstanding its standing as an independent regulatory authority, ICASA's organisational challenges suggest that it should not be given greater freedom to unilaterally collect and spend money without institutional restraint or accountability. The proposed funding mechanism preserves the statutory requirement for ICASA to obtain money from Parliament and recognises the legitimate role of the Department of Communications in validating ICASA's proposed budget. At the same time, the mechanism introduces the opportunity for ICASA to circumvent any inequitable financial constraints imposed on the Agency by the Department of Communications through recourse to a nominally independent body.

Under current arrangements, ICASA has no recourse to any budget imposed on it by the Department of Communications. The proposed funding mechanism likely improves the amount of financial resources available to ICASA if it is able to defend its proposed budget. The ability to appeal to the PCC to adjudicate any intractable differences of opinion over ICASA's annual funding envelope encourages all parties to compromise to avoid any public skirmish and potentially unfavourable PCC adjudication decision. The ability to appeal to the PCC for additional (or reduced) funding also enables both parties to accept such risks if they believe particularly strongly in the importance of any funding

proposal in any particular area. Collectively, the proposed funding mechanism creates a more equitable process for adjudication of ICASA's budget. It respects the Department of Communications' role in the financial planning process. Yet it removes the Minister of Communications' ability to capture ICASA and unilaterally impose a budget on ICASA which may not sufficiently reflect the financial support required by the Agency to discharge its statutory duties, including certain responsibilities related to the realisation of universal service and access to communications services in the country.

#### 8.5.3.2 Regulatory philosophy (competition and technology)

ICASA's regulatory philosophy may significantly influence the realisation of universal service and access to communications services in South Africa. ICASA's regulation of South Africa's communications market affects the ways in which existing actors undertake their business in the market. ICASA's regulation of South Africa's communications market also affects the ways in which prospective actors consider entry into the market. Through its overall policing of South Africa's communications market, ICASA likely exerts the most significant influence over the availability, accessibility and affordability of communications services in the country.

The growth of competition and introduction of technological advances are two catalysts[369] that have underpinned the realisation of universal service and access to communications services in most countries, including South Africa. The advent of competition and introduction of technological innovation in the mobile market segment are predominantly responsible for the realisation of universal service to voice communications services in South Africa. Such achievements have been driven by the invisible hand of market forces without any material regulatory compulsion.[370] As a catalyst for the further realisation of universal service and access to communications services in South Africa, the acceleration of competition and opportunities for technological innovation need to be central concerns for ICASA as the responsible regulatory agency.

---

[369] Supra, sections 2.5.1, 3.5.2.1, 3.5.2.2 and 4.4.2.

[370] Supra, sections 5.3.1, 7.3.2 and 7.3.3.

To promote the acceleration of universal service and access to communications services in South Africa, ICASA needs to proactively identify further ways to increase competition in the domestic communications market. In addition to amendments found in proposed legislation, ICASA may wish to review its licensing process to ensure that aspiring private sector actors can enter the market in a cost effective and timely manner. Further review of ICASA's interconnection regulations may also identify ways to accelerate competition between license holders.

ICASA currently proposes a 'glide path' towards a cost-based Mobile Termination Rate (MTR) that enforces asymmetrical interconnection rates that favour smaller operators.[371] This represents a market-distorting paradigm based on subjective assessments of cost inputs that enable operators to arbitrage rates and engage in rent seeking practices. Cutting the MTR to zero[372] does not distort market conditions, eliminates the need to calculate input costs and eliminates rent seeking opportunities. It is likely to improve competition and spur innovation such as the introduction or expansion of Voice over Internet Protocol (VoIP) services (OECD, 2012, 17).

The enforcement of mandatory infrastructure sharing and facilities leasing which oblige owners of existing and new infrastructure to share such assets with other market participants on a cost-recovery basis (with the right to appeal to ICASA and enforce remedies in the event of any frustration of such requirements) represents another legitimate exercise of regulatory power by ICASA likely to benefit the realisation of universal service and access to communications services in the country. Such programs have generally accelerated the availability and accessibility of communications services in international markets (ITU, 2011b, 34). The adoption of an expedited process for obtaining rights of way to build communications networks represents an administrative innovation likely to accelerate the roll out of networks which generally correlates to heightened opportunities to realise universal service and access to communications services (ITU, 2011b, 74).[373]

---

371 Supra, section 8.4.

372 Known as the Bill and Keep (B&K) system or Sender Keeps All (SKA) system, this practice has been adopted in Asia (China, Hong Kong, Singapore) and for specific types of traffic in various OECD countries (OECD, 2012, 20).

373 Proposed amendments to existing rights of way contained in the *Independent Communications Authority of South Africa Amendment Bill of 2012* may frustrate competition, among other consequences.

In tandem with the promotion of competition within South Africa's communications market, ICASA needs to proactively encourage the introduction of technological advances that may increase the availability, accessibility and affordability of communications services in South Africa. The use of technology neutral regulations that endow market participants with the broadest discretion to use innovative and cost effective solutions to deliver their products and services should improve opportunities for universal service and access to communications services in the country. The creation of a facilitative body that enables market participants to expedite the fast-track approval of new communications technologies by ICASA, the South African Bureau of Standards (SABS) and other relevant government agencies, particularly devices that may bring down the cost of communications services, should improve opportunities to accelerate the realisation of universal service and access to communications services in South Africa.

#### 8.5.3.3 Spectrum management

Beyond strengthening ICASA's financial independence and adopting regulatory practices that promote competition and technological innovation, the efficient use of radio frequency spectrum can be an instrumental tool in the realisation of universal service and access to communications services. Management of South Africa's radio frequency spectrum is divided between the Department of Communications and ICASA (APC, 2012, 1). The Government of South Africa has issued various policies and pronouncements on the matter including a *Radio Frequency Spectrum Policy* (South Africa, 2010b) and currently proposes the creation of the Spectrum Management Agency under the *Electronic Communications Amendment Bill of 2012*.

A discussion of the history of spectrum management policies and current spectrum management challenges in South Africa is beyond the scope of this study. However, the Government of South Africa's management (or lack of management) of the country's radio frequency spectrum has not materially contributed to the realisation of available, accessible and affordable communications services in the country.[374] Four reforms to the ways in which

[374] Infra, section 8.5.3.3.

the Government of South Africa deals with the allocation and management of radio frequency spectrum may materially improve opportunities to realise universal service and access in the domestic communications market.

The Government of South Africa needs to allocate spectrum in a timely manner to enable expansion of the capacity of South Africa's communications networks. In terms of broadband-friendly frequencies, for example, only 34% of spectrum in the 2.6 GHz band and 49% of spectrum in the 3.5 GHz band have been allocated for use (APC, 2012, 2). The Minister of Communications has halted revisions to the country's spectrum policy which would empower ICASA to release additional spectrum (Claasen, 2012a, 1). The Government's efforts to migrate broadcasters to a digital platform and realise the 'digital dividend' has been beset by litigation which may delay reallocation of bandwidth for up to three years (ICASA, 2013d, 1).[375] Moreover, the Government has historically allocated spectrum in 15 MHz blocks which are not compatible with international technology standards and potentially reduce the accessibility of WiMax communications services in the country (Jones, 2010b, 1). The release of additional spectrum and use of internationally recognised allocation sizes would enable market participants to increase the availability, accessibility and likely affordability of broadband communications services in South Africa, particularly in peri-urban and rural areas most disadvantaged by the lack of such services.

The South African Government needs to enforce the use of allocated spectrum. For example, Sentech historically held a 50 MHz allocation in the 2.6 GHz band which was never used (Jones, 2010c, 1). The hoarding of spectrum adversely affects the availability, accessibility and affordability of communications services in South Africa. The Government is acutely aware of this problem: the *Radio Frequency Spectrum Policy* (South Africa, 2010b) mandates ICASA to enforce a 'use it or lose it' policy' but ICASA has failed to take any action against license holders squatting on spectrum. The realisation of universal service and access to communications services in South Africa suffers until resolution of this situation.

---

[375] The digital dividend is the spectrum that is released when television broadcasters switch from analog platforms to digital platforms (ITU, 2010b, 1-2).

The Government needs to maximise the value obtained from the allocation of South Africa's radio frequency spectrum. Revenues earned through the lease of spectrum to operators could fund a multitude of public policy priorities, including programs that increase the availability, accessibility and affordability of communications services in South Africa. Private sector actors have shown a healthy appetite to pay large amounts of money to lease spectrum in other countries (Klemperer, 2001, 1-22). Yet initial radio frequency licences were allocated to mobile operators in South Africa for relatively nominal amounts in exchange for fulfilment of nominal USO and CSO projects.[376]

The Government of South Africa has not availed itself of the opportunity to auction the lease of radio frequency spectrum. ICASA issued two invitations to bid for 2.6 GHz and 3.5 GHz spectrum licenses between 2010 and 2012 but subsequently cancelled such invitations (APC, 2012, 2). Some operators have proposed the allocation of spectrum licenses through a 'beauty contest' rather than auction (APC, 2012, 2). Regardless of the market-oriented means used to realise revenues from the award of radio frequency spectrum licenses, the Government of South Africa needs to do a better job of maximising proceeds from the allocation of such licenses and commit a significant portion of such proceeds towards the realisation of programs that materially improve universal service and access to communications services.

The Government needs to ensure the optimal administration and management of the country's radio frequency spectrum. Regulation of the country's communications market has been poxed by a history of poor relationships between public sector actors and poor performances by such actors.[377] The introduction of another stand-alone agency (Spectrum Management Agency) into this politically and jurisdictionally fragmented regulatory market appears imprudent. While international precedents exist for such a stand-alone agency (Roetter & Parle, 2012, 1-2), other international precedents support the incorporation of the functions of such an agency within the offices of the regulatory authority (Link Centre, 2012, section 4.2).

---

[376] Supra sections 4.3.2, 5.2.1.2 and 5.3.1.2.

[377] Supra, sections 3.5, 5.3, 5.4 and 7.3.3 through 7.3.8.

> The regulation of commercial conditions to achieve the optimal configuration of available, accessible and affordable communications services is best achieved through a holistic approach that integrates policy development, management and enforcement functions within a single body. Properly mandated, manned and managed, ICASA is uniquely positioned to deliver such a holistic approach that best serves the realisation of universal service and access to communications services in South Africa.

Taken together, the proposed reforms of the USAASA, USAF and ICASA likely create the kind of regulatory environment conducive to the optimal realisation of universal service and access to communications services in South Africa. Notwithstanding the establishment of well-designed programs and the presence of empowered public sector institutions, however, the effectiveness of such programs depends heavily on the involvement of private sector market participants. In the event that private sector actors resist opportunities to support collaborative programs, the Government of South Africa may impose more substantial interventions in the domestic communications market to improve the availability, accessibility and affordability of communications services in the country.

Significant public sector interventions in South Africa's communications market need to be considered carefully. While individual interventions may advance public policy priorities in the near term, they may also create market distortions that frustrate such priorities in the long term. Among an arsenal of options, the strategic use of State Owned Enterprises (SOEs) and State Controlled Enterprises (SCEs) represents one of the more sweeping public sector inventions available to the Government of South Africa to achieve universal service and access priorities in the domestic communications market.

## 8.6 MARKET REFORMS

South Africa's communications market is an amalgam of private and public sector market participants. Key market participants within the Government of South Africa's sphere of influence include SOEs such as Sentech Limited and Broadband Infraco Proprietary Limited as well as SCEs such as Telkom SA Limited. As part of its sweeping ICT policy review, the Government of South Africa is considering the roles played and potentially played by these enterprises in South Africa's communications market. The revised *National Broadband Policy* calls for the creation of a national

broadband network comprised of public and private sector participants (South Africa, 2013b, 42-45). The ANC has called for the merger of Sentech Limited and Broadband Infraco Proprietary Limited (ANC, 2012a, 11). Market commentators have speculated over the potential sale, nationalisation or unbundling of Telkom (Claasen, 2012b, 1). Indeed, the Competition Commission has mandated the separation of Telkom's wholesale and retail divisions (Claasen, 2013, 57). Such developments, along with the interventionist approach adopted by the Minister of Communications in Telkom's governance (Claasen, 2012c, 1) and the policy rationale behind various legislative proposals and policy pronouncements since the *Electronic Communications Amendment Act,* suggest a willingness by the Government of South Africa to undertake more significant interventions in the country's communications market to accelerate the realisation of universal service and access to communications services, particularly broadband services.

As discussed elsewhere in this study, the Government of South Africa has a right to intervene in the domestic communications market to facilitate the realisation of universal service and access to communications services. While the use of SOEs and SCEs represents one of the many tools available to the Government to affect the realisation of universal service and access to communications services, the involvement of such actors as policy implementation agents may adversely affect many other facets of South Africa's communications market. Given the failure of the Government's previous universal service and access programs, careful consideration needs to be given to the precise means by which the Government uses such enterprises as the sharp end of any policy implementation efforts.

While the identification of optimal forms for such efforts remains beyond the scope of this study, one of the most substantial opportunities would involve the merger of Sentech Limited, Broadband Infraco Proprietary Limited and the wholesale business of Telkom into a 'common carrier' network that would feed wholesale bandwidth to other networks in South Africa's communications market. A growing number of international precedents support the involvement of a SOE in the ownership of a national broadband network that provides wholesale services to other market participants.[378] The unification of SOEs and SCEs for such a purpose may dramatically improve the availability, accessibility and affordability of communications services in

[378] Supra, sections 2.3 and 2.4 as well as the *SADC Toolkit on Universal Access Funding and Universal Service Implementation* (ITU, 2011b).

South Africa. Such an initiative is likely to accelerate the roll out of high speed broadband services and lower the prices of all communications services if the common carrier network adopts cost-based (rather than profit-maximising) pricing practices. Yet significant perils also exist. Given the potential rewards but prospective risks of such an endeavour, careful consideration needs to be given to any potential amalgamation of SOEs and SCEs into a common carrier network.

Any common carrier network should complement and not compete with private sector market interests. While Broadband Infraco, Sentech and Telkom own substantial communications networks (with Telkom owning the only truly national fixed line network), most of the major mobile operators also own substantial networks and, in some instances, own shares in submarine cables which provide wholesale bandwidth to downstream market players. The footprints of such networks overlap in many cases. Moreover, it is likely that any common carrier network that adopts a cost-based pricing model would undercut the commercial-based pricing model used by privately-owned wholesale transmission networks to generate returns on the (higher cost) capital required to build such networks.

Any cost-based pricing model adopted by any Government-supported common carrier network would undermine the commercial viability of private networks in overlapping areas. As Andile Ngcaba, the Chairperson of Convergence Partners and former Director General of the Department of Communications notes, the threat of such unfair competition is not lost upon market participants:

> *. . . the role of the government in the broadband ecosystem has to be defined carefully . . . . state-led initiatives in the broadband space must not be allowed to crowd-out investments by the private sector. . . . government must be careful not to compete with private-sector players in ways that will land their investments in trouble* (McLeod, 2012d, 14).

Existing private sector market providers of transmission capacity cannot compete fairly against state-subsidised transmission capacity. Although they would have the opportunity to average down their wholesale capacity cost by blending capacity purchased at the lower state-supported threshold with their higher market-related threshold, customers would be able to purchase all their capacity from the common carrier at the lower threshold and not only gain an unfair commercial advantage but also diminish demand for existing market-supplied capacity. Private sector actors may defer construction of new transmission infrastructure under such circumstances. They may allow existing infrastructure to decay while substituting the loss of proprietary

capacity with low cost state-supplied capacity. Moreover, the availability of state-supported low cost wholesale bandwidth in areas already served by private sector actors defeats the purpose of state intervention which should focus on market gaps and not undermine private sector activities.

Yet no actor in South Africa's communications market has built a national transmission network capable of delivering broadband services to all areas of South Africa. As such, the optimal configuration for a common carrier national network in South Africa may involve creation of a Special Purpose Vehicle (SPV) which not only combines the wholesale transmission capabilities of the trio of Government-related enterprises but also the wholesale transmission capabilities of all other operators (including municipalities). Absent any desire by private sector market participants to participate in this common carrier network, the networks owned by such private sector actors could be purchased by the Government of South Africa.[379] This national network would hold a *de facto* monopoly over the provision of wholesale transmission services in South Africa. The Government's Broadband Policy appears to support this arrangement (South Africa, 2013b, 9). At least one major mobile operator (Cell C) supports this public-private partnership model and would participate in such a common carrier (Claasen, 2012b, 1).

To the extent that the combination of the existing wholesale transmission capabilities of Government-related enterprises and private sector actors did not achieve national coverage, the common carrier would have the obligation to roll out such coverage within a prescribed period regardless of market conditions. To the extent that the roll out of this national network was not commercially feasible in specific areas, particularly given cost-based pricing restrictions, the Government could subsidise such areas in a manner substantially similar to the methodology proposed to subsidise the roll out of communications services to unserved areas under the Universal Coverage Program.

The Government of South Africa could also realise significant value and achieve significant public policy objectives through the creation of this national common carrier. Consistent with the principle that governments should regulate but not operate commercial enterprises, the Government could sell its interests in the common carrier

---

[379] As undertaken by the Government of Australia through the introduction of legislation that provides for the provision of compensation to private sector actors as a prerequisite to creation of the state owned National Broadband Network (Australia, 2011a; 2011b).

to the Public Investment Corporation, the state-owned pension fund company, which would earn reasonable annuity-like (but not market-related) returns from its investment. Proceeds from the sale of such shares could be directed to the fiscus or fund other universal service and access policies in South Africa's communications market. The loss of ownership and control over the common carrier would not prejudice the Government's ability to enforce cost-based pricing which would be achieved through regulation rather than ownership rights. Alternatively, the Government could sell the wholesale transmission infrastructure of the Government-related enterprises and ring-fence the proceeds to finance the capital costs of rolling out broadband network capabilities to marginal territories on an expedited basis.

As this discussion demonstrates, the creation of a national common carrier is a complex proposition. It involves the potential use of public sector resources that may compromise the viability of private sector resources. It creates a monopoly that diminishes competition in the wholesale market segment. Its sustainability requires a credible regulatory framework that depends on the presence of a regulatory authority with sufficient sophistication and capacity to monitor, evaluate and enforce such a framework. Given these challenges, other less disruptive interventions may be available to the Government of South Africa to achieve its twin policy objectives of facilitating the creation of a national broadband network and reducing the cost of communications services (including broadband services) in the country.

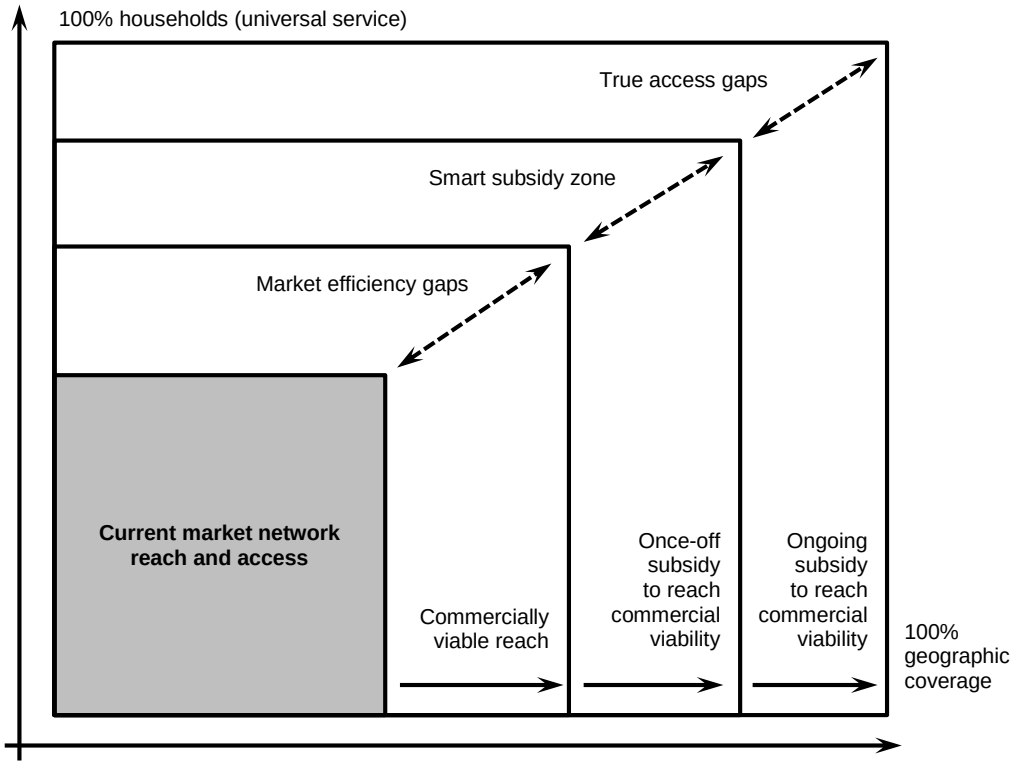
Private sector market participants have shown an ability to surpass Government expectations in terms of the proliferation of mobile communications services in South Africa. Given rapid advances in technology and strong consumer demand for communications services, a similar experience may occur in terms of the delivery of broadband communications services in South Africa. The World Economic Forum (WEF) places South Africa 70$^{th}$ among 144 countries in terms of the country's '*ability to benefit from the digital era'* (Phakathi, 2013, 1) and notes that:

> *. . . government delays in improving broadband internet access were having a negative effect on SA's economy. Even though SA improved information and communications technology (ICT) infrastructure and bandwidth during the past year, this was mostly because of the private sector* (Phakathi, 2013, 1).

Indeed, private sector actors are investing heavily in such networks and accelerating plans for further investment: '*the private sector has stepped up to the plate already. Private companies want to build the next-generation fibre networks that SA so desperately needs*' (McLeod, 2012d, 14).

Given the likelihood that private sector actors will focus on commercially viable areas as their top priority, it may make sense for the Government to limit its involvement to interventions that incentivise such actors to deliver broadband services to those areas that do not justify the roll out of broadband capacity on commercially viable terms. As with customary public policy considerations, perhaps the Government should focus on ways to remedy the three essential market gaps that hold back the availability, accessibility or affordability of communications services (as shown in Figure 8.2).

**Figure 8.2**
**Three gap model**




Source: ITU, 2011b, 3; GSMA, 2006, 32; Navas-Sabater, Dymond & Juntunen, 2002, 8; ITU, 2007a, 1

The Government of South Africa should explore ways to reduce regulatory inefficiencies which diminish the commercial viability of building broadband communications services in specific areas. Such 'market efficiency gaps' are particularly notable in the context of the roll out of broadband services in South Africa,

where bureaucracy is undermining private sector appetite for the construction of broadband-capable communications networks:

> *. . . the private sector is itching to build these networks but companies urgently need structures in all spheres of government that don't impede infrastructure roll out. Today, it can take months to get the necessary approvals to lay fibre through a suburb or across a bridge. And the rules change between municipalities and between provinces. There is little by way of consistency, making planning difficult* (McLeod, 2012d, 14).

The Government should examine ways to subsidise the roll out of broadband-capable communications networks to high priority areas which may not be targeted by private sector actors under customary commercial conditions. At least one major network operator (MTN) is prepared to bid for the right to undertake such activities (Vermeulen, 2012b, 1). As with the Universal Coverage Program, the availability of 'smart subsidies' to transform marginal opportunities into viable enterprises in the 'smart subsidy zone' and the use of other financial incentives and funding schemes to address the 'true access gap' may represent a more manageable, more appropriate and less expensive means of achieving universal service and access to broadband communications services than creating a national common carrier with SOE and SCE assets.

As shown by ICASA's intervention to regulate the Mobile Termination Rate (MTR) in the mobile market segment, ICASA could intervene to regulate the price of wholesale communications capacity without any need for the Government of South Africa to own any market participants or create any national common carrier. The Government could sell all of Telkom, Sentech and Broadband Infraco into the market. Proceeds from this sale could realise significant revenues to underwrite public policy priorities, including programs that accelerate the realisation of universal service and access to communications services in South Africa, without diminishing competition or requiring 'Chinese walls' to manage the conflicts of interest that arise from its role as a regulator of market activity and owner of market actors.

Overall, the potential role of SOEs and SCEs in South Africa's communications market requires careful consideration. The checkered track records of SOEs and SCEs in operating commercial enterprises on a sustainable basis require scrutiny. The demonstrated ability of private actors to exceed forecasts in terms of the roll out of communications networks merits consideration. The likely availability of more effective and less expensive means of supporting the realisation of universal service and access to communications services, particularly through well-placed incentives to private

sector actors, warrants consideration. The Government of South Africa may wish to review a range of less disruptive public sector interventions than the deployment of SOEs and SCEs as catalysts for the implementation of universal service and access priorities in South Africa's communications market.

As the Government of South Africa continues with its national ICT policy review, an exceptional opportunity exists to right the wrongs of past policy and program failures through new policies and programs that accelerate the availability, accessibility and affordability of communications services in the country. Echoing Marshall McLuhan's theories on the evolution of media (McLuhan, 1964), the Government may build upon the achievements of the convergence period to realise a 'post-convergence period' which, among other important aspirations, ensures that all parts of the South African village have available, accessible and affordable communications services, including broadband connectivity. Collectively, the Universal Coverage Program, Free Air Program and Free Broadband Program, along with the proposed regulatory reforms and market reforms, may play a positive role in realising such ambitions.

## 8.7 CONCLUSION

Based on an understanding of universal service and access acquired in the course of the study, this chapter identifies key trends that have affected and may affect the realisation of universal service and access to communications services in South Africa. It identifies gaps and deficiencies which may stunt the realisation of universal service and access to communications services in the country. The chapter outlines three new programs to accelerate the availability, accessibility and affordability of communications services. It proposes numerous reforms to the regulatory environment and public sector agencies to optimise implementation of universal service and access policies and programs. The chapter also considers the role of state owned enterprises (SOE) and state controlled enterprises (SCE) as potential catalysts for the realisation of universal service and access to communications services.

The advent of new technologies and introduction of competition have improved the availability, accessibility and affordability of communications services in South Africa. The proliferation of nascent technologies is likely to pay a pivotal role in expanding the availability, accessibility and affordability of communications services in South Africa. The consolidation of competition between operators is likely to play an instrumental role in the acceleration of universal service and access to communications services in South Africa in the years ahead.

As outlined earlier in this chapter, Government targets for universal service and universal access to voice communications services have been achieved in South Africa. The realisation of such targets for data communications services in nearly in hand. Yet parts of South Africa remain without access to any terrestrial communications network. Some South Africans also cannot afford to pay for basic communications services. Future policies and programs need to address those areas of South Africa and those South Africans without the benefit of communications services under current market conditions.

The Universal Coverage Program offers a remedy to the lingering lack of basic communications services in some parts of South Africa. The Free Air Program offers a remedy to the lingering unaffordability of basic communications services for some South Africans. These initiatives rely on policy makers to craft programs that motivate private sector actors to implement such programs. Along with various regulatory reforms and potential market reforms, these programs should materially accelerate the realisation of universal service and access to communications services in South Africa.

Yet universal service and access to basic communications services is no longer sufficient to satisfy the rationale driving universal service and access imperatives in South Africa's communications market. As restated from earlier parts of this study:[380]

> *The purpose of Universal Service is to ensure that the part of the population which would not receive essential telecommunications services under normal market conditions, has access to those services. Universal Service provision is required primarily to cover those citizens who can not* [sic] *afford essential service* (USA, 1999, 15).

In an environment as sophisticated and substantial as South Africa's communications market, the scope of '*essential telecommunications services*' now incontrovertibly includes broadband services.

Among various programs to achieve these objectives, the Free Broadband Program materially improves the accessibility and affordability of broadband services to diverse swathes of South African society. Importantly, it relies on connectivity centres dotted across the county that obtain such services from private sector market participants acting pursuant to program prescriptions established by public sector policy makers.

---

[380] Supra, sections 5.3.2.2.2 and 8.4.

While Government-related market actors may also achieve such objectives, prospective market distortions may not justify such severe state intervention into South Africa's communications market given the availability of less intrusive policy options likely to achieve substantially similar results with less risk.

As the country stands on the precipice of a radical realignment of the domestic communications market through the Government of South Africa's ICT policy review, it is timely to look back and consider the failures of the Government's universal service and access policies and programs to learn lessons that may help design better programs and limit the likelihood of future failures. The Government needs to ensure that the original ambitions of universal service and universal access in South Africa's communications market are fulfilled in a timely manner. It is not enough to satisfy quantitative targets that confirm that most of South Africa's territory and most South Africans enjoy available, accessible and affordable communications services. There are still numerous parts of South Africa without basic communications services. There are still numerous South Africans who cannot afford to pay for basic communications services. It is precisely these under serviced areas and needy persons left behind under customary commercial conditions that need to remain a central focus of the Government's intervention in the country's communications market.

The Government of South Africa does not currently have any coherent plan to realise universal service or access to communications services in the country. As it undertakes its policy review of South Africa's ICT sector, therefore, the Government has a unique opportunity to forge a national strategy that not only fulfils the original aspirations for universal service and access to voice communications services but extends such aspirations to the equitable distribution of broadband services that have become as essential to effective communications in democratic South Africa as fixed line phones in apartheid South Africa. The Universal Coverage Program, Free Air Program and Free Broadband Program may play an important part in any such national strategy. The regulatory reforms and market reforms proposed by this study may make an equally meaningful contribution to the realisation of such a strategy.

Regardless of the ultimate form of reforms adopted by the Government of South Africa in its renewed quest to realise universal service and access to communications services in the country, the overarching imperative remains the delivery of communications services to all South Africans in all parts of South Africa. No one must be left behind, for the importance of available, accessible and affordable communications services is only going to increase as South Africa marches ahead into the second decade of the 21st century. *Neminem relinquere*.

The next chapter provides a synopsis of the study. It reviews the problem statement, central aim, objectives and key research questions posed by the study to confirm that the study has addressed such matters. It summarises key conclusions arising from the study. It highlights limitations of the study. It recommends further areas for research. In conclusion, the chapter culminates and closes the study.

# CHAPTER 9

# REALISATION OF THE PROBLEM STATEMENT, AIM, OBJECTIVES AND RESEARCH QUESTIONS, CONCLUSIONS AND RECOMMENDATIONS, LIMITATIONS AND FURTHER RESEARCH AREAS

## 9.1 INTRODUCTION

Chapter 8 presented the key outcomes of the study. It identified key trends that have affected and may continue to affect the realisation of universal service and access to communications services in South Africa. It described key gaps and deficiencies that challenge the realisation of universal service and access to communications services in South Africa. Chapter 8 proposed three new programs to accelerate the realisation of universal service and access to communications services. In addition, it offered numerous reforms to the existing regulatory environment and regulatory agencies to optimise implementation of universal service and access policies and programs. It also considered the viability of reforms to the roles of SOEs and SCEs in South Africa's communications market that may enhance the availability, accessibility and affordability of communications services in the country.

This chapter reviews the problem statement, central aim, principal objectives and key research questions posed by the study to confirm that the study has addressed such matters. It summarises the key conclusions and recommendations arising from the study. The chapter highlights limitations of the study. It suggests further areas for research. In conclusion, it culminates and closes the study.

## 9.2 PROBLEM STATEMENT, AIM, OBJECTIVES AND RESEARCH QUESTIONS

This body of work answers the question posed by the problem statement. It fulfils the central aim and nine key objectives of the study. It addresses the five clusters of research questions proposed at the outset of the study.

As outlined in Chapter 1, the central problem addressed by the study is:

> *What kinds of new public policies and programs and reforms to existing policy, regulatory or market paradigms are required to accelerate the realisation of universal service and access to communications services in South Africa?*

To answer this problem, the study's central aim was to identify public policies and programs that may optimally accelerate the availability, accessibility and affordability of communications services in South Africa given extant regulatory, market and policy environments. Embedded within the problem statement and central aim of the study was a prerequisite for a substantive understanding of:

- The natures and performances of public policies, programs and actors used in other markets to realise universal service and access to communications services.

- The natures of and performances of existing public policies, programs and actors related to the realisation of universal service and access to communications services in South Africa.

- The regulatory and commercial environments of South Africa's communications market.

To satisfy these prerequisites, answer the problem statement and address the central aim, the study satisfies nine key objectives through a deliberate and deductive pedagogical process that, in sequential order:

- Commences with a discussion of the pivotal role played by communications services in modern society (particularly South Africa) and introduces the study, particularly the research plan (Chapter 1).

- Discusses the origins and definitions of universal service and access as well as the applications and performances of policies and programs related to universal service and access in international communications markets to identify lessons that may benefit consideration of similar ambitions in South Africa (Chapter 2).

- Considers and evaluates characteristics of the regulatory environment of South Africa's communications market between 1958 and 2013, particularly the period between 1993 and 2013, to identify factors that may have affected and continue to affect the realisation of universal service and access to communications services in the country (Chapter 3).

- Considers and evaluates characteristics of the commercial environment of South Africa's communications market between 1958 and 2013, particularly the period between 1993 and 2013, to identify factors that may have affected and continue to affect the realisation of universal service and access to communications services in the country (Chapter 4).

- Examines and evaluates the natures and performances of the Government of South Africa's universal service and access policies and programs in the domestic communications market between 1996 and 2013 to identify challenges that may affect the availability, accessibility and affordability of communications services in South Africa in the years ahead (Chapter 5).

- Establishes the research design and methodologies associated with the primary and secondary research conducted as part of the study that generates the data universe that informs many of the subsequent recommendations found in this study (Chapter 6).

- Interprets and analyses primary data derived from semi-structured interviews with key informants drawn from a representative sample of the population of public and private sector actors involved in the design or implementation of universal service and access policies or programs in South Africa's communications market to benchmark perceptions regarding the performances of such policies, programs and actors associated with the same (Chapter 7).

- Identifies trends, isolates gaps and makes recommendations regarding potential program reforms, regulatory reforms and market reforms available to the Government of South Africa that may accelerate the realisation of universal service and access to communications services in South Africa given prevailing regulatory, commercial and policy environments in the domestic communications market (Chapter 8).

- Confirms that the study has addressed the central problem, aim, objectives and research questions and summarises the key conclusions, recommendations, limitations and areas for further research arising from the study (Chapter 9).

In fulfiling these nine objectives, the study answers the five clusters of research questions posed at the outset of Chapter 1:

- What are the definitions and origins of universal service and universal access as public policies in international communications markets? What are the principal features of universal service and access policies and programs in the communications sectors of countries, including developed markets in North America (United States of America), Oceania (Australia), Asia (Japan) and the European Union as well as developing markets in South America (Brasil, Chile and Peru), Southeast Asia (Malaysia) and Africa (Uganda)? What lessons can be learned from universal service and access policies and programs in the communications markets of these markets which might be avoided, adopted or adapted to accelerate the delivery of universal service and access to communications services in South Africa?

  These questions are addressed in Chapter 2.

- What were the primary characteristics of the regulatory environment of South Africa's communications market between 1958 and 2013, particularly the period between 1993 and 2013? What was the nature of regulatory authorities, relevant legislation and regulatory frameworks in South Africa's communications market during this period? How did this regulatory environment affect implementation of the Government of South Africa's universal service and access policies and programs in this period and likely affect implementation of such policies and programs in the years ahead?

  These questions are addressed in Chapter 3.

- What were the primary characteristics of the commercial environment of South Africa's communications market between 1958 and 2013, particularly the period between 1993 and 2013? What were the market conditions, market segments and nature of market participants in South Africa's communications market during this period? How did this commercial environment affect implementation of the Government of South Africa's universal service and access policies and programs in this period and likely affect implementation of such policies and programs in the years ahead?

  These questions are addressed in Chapter 4.

- What were the principal characteristics of the Government of South Africa's universal service and access policies and programs between 1996 and 2013? How did such policies and programs perform in meeting stated policy objectives and realising universal service and access to communications services in South Africa?

  These questions are addressed in Chapters 5 and 7.

- Based on analyses of international precedents as well as South Africa's regulatory, commercial and policy environments between 1958 and 2013, particularly the period between 1993 and 2013, what kinds of new policies or programs and amendments to existing policy, regulatory or commercial paradigms are recommended to accelerate the realisation of universal service and access to communications services in South Africa in the years ahead?

  This question is addressed in Chapter 8.

In addition to answering the five clusters of research questions, this study includes chapters which establish the rationale and background for the research (Chapter 1), the research design and methodologies associated with the primary and secondary research conducted as part of the study (Chapter 6) and the key components, limitations and areas for further research arising out of the study (Chapter 9).

## 9.3 KEY CONCLUSIONS

This is an extensive study. It commences with an overview of the importance of communications services in today's interconnected world. It reviews the origins and definitions of universal service and access and applications and performances of attendant policies and programs in international markets. It reviews of the regulatory and commercial environments of South Africa's communications market between 1958 and 2013, particularly the period between 1993 and 2013. It focuses on the key policies, programs and actors charged by the Government of South Africa with the realisation of universal service and access to communications services between 1996 and 2013. It describes the methodologies used to collect data and undertakes sophisticated analyses of such data. It presents the findings and results of interviews conducted with key informants drawn from a representative sample of the population of public and private sector actors involved in the design or implementation of universal service and access policies and programs in South Africa.

Based on this cumulative effort, the study identifies key trends and isolates important gaps that have affected and may continue to affect the realisation of universal service and access to communications services in South Africa. It proposes three significant new programs to accelerate the realisation of universal service and access to communications services in South Africa. It recommends substantive changes to the regulatory environment and considers prospective changes to the commercial environment that may promote the availability, accessibility and affordability of communications services in South Africa.

The restatement of conclusions found throughout this study is neither practical nor prudent. Each chapter has a summary section which highlights key findings arising from the subject matter considered in that chapter. Chapters that describe and explore the performances of previous programs, policies and actors (Chapters 2, 3, 4 and 5) include a 'lessons' section which presents substantive analyses of such matters and makes recommendations regarding areas for further consideration in any contemplation of future policies and programs. The entire Chapter 7 is devoted to analyses of primary data derived from the interviews conducted by this study. The entire Chapter 8 is devoted to identifying key trends, isolating key gaps and making substantive recommendations for new programs and amendments to the existing regulatory and commercial environments of South Africa's communications market that may accelerate the realisation of universal service and access to communications services in the country.

At the same time, a concise consolidation of the key findings found across preceding chapters represents an appropriate *denouement* to this study. Any summary is necessarily limited to a brief review of key themes that overlooks many specific conclusions that support or expand upon such themes. Further discussion of the particulars of such themes and supporting conclusions may be found in the relevant chapters. Acknowledging such precepts, a succinct summary of the key conclusions, trends, gaps and recommendations arising from this study, identified by chapter, are found in the succeeding sections:

### 9.3.1 Chapter 1: Introductory chapter

Chapter 1 establishes the foundation for the study. It highlights the importance of the subject matter and presents the rationale for the study. It includes four key observations:

- The ability to communicate represents an essential ingredient for leading a healthy and prosperous life in today's interconnected world. It may represent a fundamental human right enshrined by international and South African law.

- The opportunity to communicate is not distributed evenly in the world. It is not distributed evenly in South Africa, particularly due to the lingering effects of apartheid policies which deprived the majority of the population of basic communications services.

- To address such deficiencies, governments around the world intervened in domestic communications markets through policies and programs design to deliver 'universal service' or 'universal access' to communications services to all areas and citizens of their countries.

- Redressing the historical imbalance in the distribution of communications services in South Africa was a significant priority of the African National Congress and subsequently the democratically-elected Government.

Based on these observations, Chapter 1 presents the research plan for the conduct of the study.

### 9.3.2 Chapter 2: Origins, applications and performances of universal service and access policies and programs in international communications markets

The Government of South Africa did not create its universal service and access policies and programs without international precedent. As such, any consideration of the policies and procedures adopted by the Government to improve the availability, accessibility and affordability of communications services in the country requires an informed understanding of the natures and performances of policies and programs previously undertaken by public sector actors in other countries. Chapter 2 reviews precedents drawn from a representative sample of a population of developed and developing countries to draw nine key conclusions:

- The concept of ‘universal service’ historically represented the right to available, accessible and affordable communications services on a household basis. The concept of ‘universal access’ historically represented the right to available, accessible and affordable communications services within walking distance of a household.

- In developed markets, the right to universal service was conceived in the era of fixed line analog communications to deliver communications services to rural areas. The concept has evolved in these markets to include every citizen’s right to receive communications services on an individual basis through a myriad of different digital technologies. It now often includes the right to a minimum speed of broadband connectivity as part of such communications services.

- In developing markets, the substantially lower penetration of communications services focused initial public policy interventions on the realisation of universal access to such services as an achievable goal.

- The widespread penetration of mobile communications services in emerging economies has substantially redressed the historic imbalance between developed and developing countries in terms of the availability and accessibility of voice communications services. An increasing number of emerging economies are focusing on bridging the ‘digital divide’ through policies and programs that promote the proliferation of broadband connectivity.

- The need to deliver communications services to all people in all parts of a country extends beyond geographic considerations (rural and urban) to include low income areas, ethnic minorities, women, youth and people with disabilities.

- For a variety of reasons, private sector actors will not roll out communications services to all people in all parts of a country. As such, well-crafted universal service and access policies and programs represent appropriate public sector interventions into the affairs of private sector actors in domestic communications markets.

- Successful public sector interventions in domestic communications markets have been characterised by strong political support, the creation of a dedicated universal service fund, reliance on significant consultative processes and use of market-friendly practices that account for private market imperatives, including reverse auctions and lowest cost subsidy tenders, to maximise results and minimum costs to the fiscus.

- The funding of universal service and access programs have generally relied on revenue-linked compulsory operator contributions, cross-subsidies and risk-sharing partnerships that back load financial risks onto market participants through performance incentives.

- Private sector actors are best positioned to implement universal service and access policies and programs. Public sector actors are best positioned to evaluate, monitor and regulate (but not operate or implement) such policies and programs through a 'carrot and stick' regulatory approach that combines incentives with obligations in the event of non-compliance with specified program parameters.

### 9.3.3 Chapter 3: Regulatory environment of South Africa's communications market

The regulatory environment of South Africa's communications market has changed dramatically in the past two decades. The introduction of new legislation has created new actors, roles and responsibilities. Consequential amendments of prevailing laws have realigned such actors, roles and responsibilities. Based on a review of the evolution of this regulatory environment, Chapter 3 draws four key conclusions:

- The transformation of South Africa's communications market from a monopoly into a moderately competitive market has stimulated competition and technology advances that have materially accelerated the availability, accessibility and affordability of communications services.

- The complicated and overlapping regulatory responsibilities of public sector actors in South Africa's communications market, notably between the Minister of Communications, ICASA and the USAASA, have materially diminished opportunities to accelerate the realisation of universal service and access to communications services in South Africa.

- The lack of sufficient institutional capacity among key public sector actors in South Africa's communications market, including monitoring and enforcement capabilities, has materially diminished opportunities to accelerate the realisation of universal service and access to communications services.

- The inefficient allocation of responsibilities and ineptitude of key regulatory authorities have stunted competition in South Africa's communications market which has diminished opportunities to accelerate the availability, accessibility and affordability of communications services.

### 9.3.4 Chapter 4: Commercial environment of South Africa's communications market

The commercial environment of South Africa's communications market has changed dramatically in the past two decades. The advent of competition has improved the availability, accessibility and affordability of communications services in the country. The advent of new technologies has fundamentally changed the way people communicate. Based on a review of the evolution of this commercial environment, Chapter 4 draws five key conclusions:

- Based on Government targets, South Africa has achieved universal service to voice communications services, including the availability, accessibility and affordability of such services.

- Based on Government targets, South Africa is likely to achieve universal service to data communications services, including the availability, accessibility and affordability of such services, in the near term.

- Gaps in the delivery of communications services to some parts of South Africa are generally attributable to perceptions by operators that such areas do not retain a sufficient population or sufficiently affluent population to generate the traffic required to earn the commercial returns necessary to invest in communications network infrastructure to serve such areas.

- Certain segments of South Africa's population suffer from 'phone poverty' and cannot afford communications services.

- The Government of South Africa has a legitimate right to intervene in the domestic communications market to resolve service gaps and affordability issues on behalf of the public good. It has a responsibility to ensure that every such intervention is undertaken in the most efficient, cost effective and least market-distorting manner.

### 9.3.5 Chapter 5: Origins, applications and performances of universal service and access policies and programs in South Africa's communications market

Although the Government of South Africa did not create its universal service and access policies and programs without international precedent, such policies and programs were formulated in unique circumstances. As a country, South Africa was coming out of decades of international isolation caused by the legislated segregation of a country's population on an unprecedented scale: political conditions were unique; economic conditions were unique; sociological conditions were unique; and the skew of the availability, accessibility and affordability of communications services was unique. In this environment, the ANC and ultimately the new democratically-elected Government crafted policies and programs borrowed from international precedent and adapted, as best thought, to the emerging socio-economic experiment called the new South Africa.

Chapter 5 reviews the four principal policies and programs pursued by the Government of South Africa to realise universal service and access in the country's communications market. It discusses the natures and performances of such policies, programs and public sector actors associated with the same. Following consideration of such matters, Chapter 5 draws 10 key conclusions:

- The increased availability, accessibility and affordability of communications services in South Africa may be materially attributed to the effects of private sector initiatives rather than public sector interventions.

- The universal service and access obligations (USAOs) imposed on operators did not materially contribute to the acceleration of universal service and access to communications services in South Africa. Every operator failed to satisfy its USAOs and, to the extent that they satisfied requirements to roll out community service telephones, such compliance was driven by market forces rather than regulatory compulsion.

- The Universal Service and Access Agency (USAASA) has discharged its four principal functions with minimal success:

  - In terms of its enabling function, the four programs undertaken by the USAASA have failed to materially increase the availability, accessibility or affordability of communications services.

  - In terms of its advisory function, the USAASA has delivered a limited amount of recommendations to the Minister of Communications. The realisation of definitions for the concepts of 'universal service', 'universal access' and 'under serviced area' represents a rare achievement.

  - In terms of its monitoring function, the USAASA has undertaken limited research and appraisal efforts with mixed results.

  - In terms of its administrative function, the Agency has not managed the USAF (or itself) in a competent manner.

- Despite the USAASA's efforts to resuscitate the program in various forms, the Telecentre Program was a failure and the Agency has embarked on the transfer of legacy centres to other agencies of Government.

- Due to weak policy design, a lack of integration and coordination with other similar initiatives and a relatively small scale, the Cyberlab Program has failed to materially expand the availability, accessibility or affordability of communications services.
- The Public Information Terminal (PIT) Program is an orphan stranded between the USAASA, the Department of Communications and the South African Post Office. It suffers from significant program design and implementation flaws and has failed to materially expand the availability, accessibility or affordability of communications services.

- The Community Digital Hub (CDH) Program appears to have suffered from the same flaws as the Telecentre Program. It has failed to materially expand the availability, accessibility or affordability of communications services.

- The Universal Service and Access Fund (USAF) has failed to spend the billions of Rands of operator contributions. Where the USAF has spent money, the principal beneficiary has been the USAASA's proprietary projects. The USAF has not generated any material returns from such investments. Funds have not been properly accounted for or managed by the USAASA. The Government appears ready to allocate the mammoth mountain of unallocated USAF proceeds to subsidise the distribution of Set Top Boxes (STBs) in the broadcasting market, a purpose wholly unfunded by broadcasters and wholly devoid of any benefit to the realisation of universal service and access to communications services.

- The Under Serviced Area License (USAL) Program has come and gone. A substantial investment of public sector resources (political, managerial, technical, operational and financial) has gone to waste. Beyond systemic deficiencies, the Program failed to materially expand the availability, accessibility or affordability of communications services.

- Failure of the Government's universal service and access policies and programs may be attributed to three recurring mistakes made by public sector actors:

    - They overlooked the transformative role potentially played by private sector actors in the implementation of such policies and programs.

    - They overlooked the need for empirical program reviews that could have identified problems during implementation efforts, held responsible parties accountable for their performances, corrected deficiencies and measured performances against relevant benchmarks.

    - They created unworkable policy and programming environments characterised by overlapping mandates and activities which encouraged conflicts and discouraged accountability among public sector actors.

### 9.3.6 Chapter 6: Research design and methodologies

Chapter 6 outlines the research design and methodologies used by the study. It describes the key research approaches and attributes adopted to address the central problem, aim, objectives and research questions of the study. As part of such discussion, it highlights six important aspects of the research design and methodologies:

- The study adopts a methodologically pluralistic research approach that combines elements of qualitative and quantitative schools of inquiry as the preferred research paradigm.

- The study applies a 'model-dependent realism' approach that combines post-positivist perspectives with elements of interpretivism as the preferred research methodology.

- Three distinct yet overlapping approaches (applied thematic analysis; case studies; and mixed methods approach) represent the optimal means to collect and analyse data for the study.

- A combination of secondary research (two literature reviews) and primary research (six semi-structured interviews) yields a diverse, deep and context-rich data universe that unites existing data with new data to further consideration of universal service and access to communications services in South Africa and elsewhere.

- The study adopts measures that encourage the trustworthiness of its findings and results.

- The study adheres to ethical principles in the conduct of research.

### 9.3.7 Chapter 7: Analysis and interpretation of primary research data

Chapter 7 considers the data universe derived from the semi-structured interviews conducted with key informants drawn from a representative sample of the population of public and private sector actors involved in the design or implementation of universal service and access policies in South Africa's communications market. It seeks relationships and structures within this data universe. The chapter evaluates quantitative data generated by the interviews using five statistical analysis techniques. It examines qualitative data generated by the interviews for insights into the views of key informants on the performances of relevant public policies, programs and actors. Following consideration of such matters, Chapter 7 draws 14 key conclusions:

- Key informants generally suggest that improvements in the availability and accessibility of communications services have arisen largely as a result of private sector initiatives rather than public sector interventions. The affordability of communications services remains a key concern.

- Key informants suggest that the Government of South Africa has adequately defined universal service goals but failed to translate noble intentions into well-designed and well-executed policies and programs. As such, these policies and programs have failed to achieve stated objectives or under-performed against objectives.

- Key informants generally blame poor policy design for failure of the USAO policy. Whether the proliferation of communications services under the CST component was spurred by private sector impetus or public sector intervention remains a debate among such informants.

- Key informants generally hold negative views regarding the Universal Service and Access Fund's success in the implementation of its mandate and the amount and application of the USAF levy. The cumbersome approval process required to allocate USAF proceeds and the lack or inefficient spending of such proceeds and notional accrual of billions of Rands in USAF reserves represent principal concerns.

- Key informants generally have low regard for the Universal Service and Access Agency of South Africa's success in the implementation of its mandate and four key functions. The uncertain tenure of the Agency, a history of conflicts with the Department of Communications, a lack of clarity and mandate, a lack of institutional capacity and a misplaced emphasis on the implementation (rather than the enabling) of programs are cited as key reasons for the USAASA's poor performance.

- Key informants generally hold negative views of the Telecentre Program. Some informants laud the isolated achievements of the Program. Most informants highlight poor program design and flawed implementation methodologies as fatal flaws.

- Key informants generally regard the MPCC and Cyberlab Program as more effective initiatives than the Telecentre Program. At the same time, they express significant reservations about the implementation methodology, transparency and marginal impact of such programs.

- Key informants applaud the Public Information Terminal (PIT) Program's objectives but highlight the lack of a program champion, poor program design, high costs and poor implementation practices as key factors that undermine the efficacy of the Program.

- Key informants generally appreciate the objectives underlying the Under Serviced Area Licenses (USAL) Program but fault public sector actors for their failure to properly design and facilitate the implementation of the Program.

- Key informants generally hold neutral to negative views of the success of the Minister of Communications and ICASA in discharging their respective responsibilities related to the realisation of universal service and access to communications services in South Africa. Private sector sample members generally hold marginally negative views of such success while public sector members generally hold marginally positive views of such success. Many members cite a structurally flawed regulatory environment and lack of institutional capacity as key causes for the poor performances of such public sector actors.

- As a whole, key informants hold moderately unfavourable views of the Government of South Africa's efforts to realise universal service and access to communications services in the country. Some sample members hold highly critical views of specific efforts while other members hold highly favourable views of specific efforts. Private sector members generally hold more unfavourable views of such efforts compared to the views of such efforts held by their public sector counterparts.

- The information provided by key informants during the interviews is remarkably consistent. A significant degree of validity permeates each data set. A similar degree of validity exists between data sets. Data derived from the interviews generally confirm data obtained during secondary research.

- Positional bias is within expected norms. Private sector sample members retain some bias against public sector actors perceived to adversely affect their commercial interests. They tend to highlight the contributions of private sector actors to the delivery of available, accessible and affordable communications services. Conversely, public sector sample members retain some bias against private sector actors perceived to act without regard for any public good. They tend to highlight the contributions of public sector actors to the realisation of universal service and access to communications services.

- On an aggregated basis, key themes arising from the perceptions of sample members, as a whole, are summarised as follows:

    - The Government of South Africa has demonstrated a commitment to the realisation of universal service and access to communications services and adequately defined the goals of universal service and access.

    - The policies and programs devised by the Government to achieve this commitment and such goals have been designed and implemented poorly. They have failed to materially improve the availability, accessibility and affordability of communications services in the country.

- Public sector actors and resources tasked with the realisation of universal service and access to communications services in South Africa, particularly the USAASA and the USAF, have failed to discharge their mandates in a competent manner and, in some cases, performed in such responsibilities in a negligent manner.

- Key reasons for the failure of such policies, programs and actors include the presence of a dysfunctional regulatory environment and lack of institutional capacity among public sector actors.

- Private sector actors (particularly mobile operators) have played a predominant role in the proliferation of available, accessible and affordable communications services in South Africa despite and not because of the interventions of public sector actors in the domestic communications market.

### 9.3.8 Chapter 8: Trends, gaps and recommendations related to the acceleration of universal service and access to communications services in South Africa

Chapter 8 builds upon the cumulative understanding of universal service and access found in earlier chapters to identify key trends, isolate key gaps and make significant recommendations regarding program, regulatory and market reforms designed to accelerate the realisation of universal service and access to communications services in South Africa. A synopsis of these trends, gaps and proposed reforms is found in succeeding sections:

#### 9.3.8.1 Key trends

Beyond the numerous conclusions found throughout each chapter, this study identifies two key trends which have influenced and may continue to have a material influence on the realisation of universal service and access to communications services in South Africa in the years ahead:

- Technology

  Technology advances underpinned the proliferation of available, accessible and affordable communications services in South Africa. Forthcoming technology solutions are likely to play a pivotal role in the acceleration of

universal service and access to communications services in the country. Along with a technology neutral licensing regime, public sector actors need to promote policies and programs that embrace the transformative role of technology in increasing the availability, accessibility and affordability of communications services. They need to ensure that the regulatory environment encourages early adoption of technologies and fast tracks the implementation of such technologies in the marketplace.

- Competition

  The introduction of competition into South Africa's communications market supported and likely continues to support the proliferation of available, accessible and affordable communications services in the country. Yet public sector actors need to leverage private sector capabilities and resources to implement specific universal service and access policies and programs in the domestic communications market. The use of competitive, market-driven and market-friendly policies, programs and procurement practices likely represents one of the most significant opportunities for public sector actors to accelerate the realisation of universal service and access to communications services in South Africa in the years ahead.

#### 9.3.8.2 Key gaps

Beyond these key trends, this study identifies two key gaps that need to be addressed as part of any new policies or programs intended to accelerate the realisation of universal service and access to communications services into South Africa in the years ahead:

- Availability and accessibility of communications services

  The central purpose of universal service and access policies and programs is to ensure the delivery of communications services to those parts of the population and country that do not receive such services under customary commercial conditions. As such, the expansion of communications services to those areas of South Africa not presently addressed by existing communications networks should represent a focus of future public policy interventions. The 1% of South Africa's population currently without access

to any form of terrestrial communications services should no longer be left behind. The 25% of South Africa's population without access to broadband communications services should not suffer from this lacuna for much longer.

- Affordability of communications services

  Despite recent price decreases, South Africans continue to suffer from high communications costs relative to their neighbours in other parts of Africa. High communications costs have adverse effects on the socio-economic development of the country. Moreover, more than 1% of South Africa's population do not own or have access to mobile phones. Given that mobile communications networks reach 99% of South Africa's population, the higher proportion of citizens afflicted by such 'phone poverty' likely suffer from this predicament due to affordability constraints. Harking back to the central purpose of universal service and access policies and programs, the reduction of the cost of communications services to those people who cannot pay for such services under customary commercial conditions should represent a primary focus of future public sector interventions into South Africa's communications market.

#### 9.3.8.3 Program reforms

Based on the cumulative research effort and relying on the earlier conclusions and analyses of trends and gaps, this study proposes the introduction of three new programs to ensure the delivery of communications services to those parts of the population and country that do not receive such services under customary commercial conditions. A Universal Coverage Program delivers some form of communications network coverage to 100% of South Africa's continental territory. A Free Air Program makes a minimum amount of communications services available to 100% of South Africa's population. A Free Broadband Program delivers broadband communications connectivity to key public access facilities. Further particulars of each of these three programs are summarised in succeeding paragraphs:

- Universal coverage program

  The Government of South Africa should adopt a Universal Coverage Program which mandates that all of South Africa's continental territory should be served by some form of a communications network. This Program would effectively require the expansion of current communications networks to cover the balance of South Africa's territory not addressed by current network coverage. Acknowledging the sparsely populated nature of such territory, this Program should mandate the creation of public access points to deliver communications services at key geographical or population points within this territory until the entire area is saturated by coverage from additional communications networks.

  The Government of South Africa likely has sufficient USAF funds to pay for construction costs associated with the roll out of additional communications network capabilities to unserved areas required by the Universal Coverage Program. Building on lessons learned from its previous program failures, however, the Government should avoid this option. It should not play any role in the implementation of the Universal Coverage Program. While it has a legitimate role in the design, administration, monitoring, evaluation and regulation of the Universal Coverage Program, responsibility for implementation of the Program (construction and operation of the communications network infrastructure required to deliver communications services to unserved areas) should vest to private sector actors.

  The Government of South Africa should conduct a well-crafted competitive reverse auction that motivates private sector interest in building and operating the public access points required to realise the Universal Coverage Program. The Government can design the auction with several incentives that enhance the attractiveness of the opportunity for private sector actors and reduce the subsidy imperative. Crucially, the auction of a subsidy to make it commercially viable for licensed operators to provide communications services to unserved areas does not rely on any asymmetrical interconnection tariffs to support the delivery of communications services in any area within South Africa. Winning bidders (concession holders) should be required to satisfy strict concession terms in exchange for subsidies and the opportunity to provide communications services within their concession area. Concessions should be awarded on a non-exclusive basis.

- Free air program

To improve the affordability of communications services for impoverished South Africans, the Government of South Africa should adopt a Free Air Program that requires all vendors of retail communications services to offer consumers an opportunity to acquire a subscription-based suite of bundled services that comprises a free basic telephone, free SIM card and 60 minutes of free monthly access on their networks (a zero first block tariff) that can be used for voice or data services (up to 100 Mb of free data) after which the cost to consume additional minutes of air time would be charged at market-related tariffs. The Free Air Program ensures that no South African is left without the ability to connect to communications services due to price barriers.

There is wide latitude within the economics of South Africa's communications market for private sector actors to absorb the cost of minutes made available under the Free Air Program. The marginal cost to communications networks of delivering free minutes may not be high. As a proportion of expenditures, mobile operators have high fixed costs and low variable operating costs. Capital costs to roll out and maintain mobile networks are high but largely impervious to the number of users or amount of traffic carried over such networks after reaching a minimum breakeven level. The marginal increase in traffic arising from the inclusion of minutes allocated under the Free Air Program is not likely to stress the infrastructure capabilities or capacities of existing communications networks. Administrative costs arising from implementation of the Program are likely low. The intake of price-dispossessed South Africans as new consumers should not strain existing administrative capabilities or back office capacities of most communications services providers.

The South African Government should avoid the use of any monies from the USAF to pay for the cost of the Free Air Program. The marginal cost of providing free phones, SIM cards and minutes under the Program, the flexible economics of existing packages and the likelihood that many subsidised subscribers may ultimately become paying subscribers suggest that operators have sufficient capacity and motivation to absorb any costs associated with implementation of the Program.

- Free broadband program

  The Government of South Africa should adopt a Free Broadband Program that provides free broadband bandwidth to qualified connectivity centres. The Program should be a technology neutral effort but impose a minimum actual throughput speed of 5 Mbps as an appropriate near term benchmark to assure delivery of the connectivity required to support the accessibility of meaningful online resources by Program beneficiaries.

  ECNS and ECS license holders should be required to deliver up to 10 TB per month of free broadband bandwidth to qualified connectivity centres. These connectivity centres would operate like online 'public libraries' that issue virtual versions of the traditional library card (for free) that entitles the card holder to 'take out' a certain amount of bandwidth per month. As with any library, a connectivity centre would have the ability to track the kind of material 'checked out' from its 'library' by users. Unlike many public libraries, however, connectivity centres would have the opportunity to profit from the presence of users within their facilities. Beyond the delivery of free bandwidth services, they could sell other products and services to consumers and reasonably exploit the value of data mined from users for commercial gain.

  The Free Broadband Program should allocate bandwidth on an industry basis rather than an individual basis. A number of market groups could discharge this function or license holders could form a new industry association for such purposes. Beyond administrative and regulatory benefits, such an industry association has the ability to identify networks in specific areas with surplus capacity and manage such capacity through a 'bandwidth bank'. Without divulging any competitive information to any public sector body, it can direct such capacity to supply free bandwidth to connectivity centres within the territorial reach of such networks.

  The industry association can also cross-subsidise bandwidth allocated to connectivity centres between license holders. If any individual license holder is required to allocate a significant portion of its capacity to supply free bandwidth due to a concentration of connectivity centres within its

territorial reach that cannot be shared with other license holders, the industry association may offset part of its contribution by 'swopping' such bandwidth for additional capacity on other networks. In the event that operators cease to have surplus capacity or the amount of bandwidth required under the Free Broadband Program grows significantly to represent capacity not capable of being addressed through swops, the industry association may levy a bandwidth contribution, either in cash or kind, on every license holder and distribute such contributions between operators to effect an equality of obligation across the industry

The costs incurred by operators to implement their obligations under the Free Broadband Program are likely to be low. Operators are well positioned to allocate surplus capacity to connectivity centres without compromising their ability to serve existing commercial customers. The provision of free bandwidth to connectivity centres (additional traffic) does not materially increase the fixed costs of broadband networks which remain largely the same regardless of the amount of traffic carried over such networks. As with the Free Air Program, the marginal cost to operators of handling additional traffic is quite low and consists principally of administrative costs related to the management of additional clients.

If the Government of South Africa does not want operators to manage the cost of the Free Broadband Program through market-oriented mechanisms, it has the ability to provide free broadband bandwidth to qualified connectivity centres using the communications networks of SOEs such as Broadband Infraco Limited or SCEs such as Telkom SA Limited as well as municipally-controlled networks in various parts of the country. The Government may also mandate bandwidth swops between such enterprises and private sector market participants as another means of delivering free broadband services to qualified connectivity centres.

The Government of South Africa's regulation of radio frequency spectrum licenses may also be used to advance the objectives of the Free Broadband Program. The Government could prescribe the allocation of a specific minimum per centum of broadband transmission capacity to be set aside as free bandwidth to be allocated to qualifying connectivity centres as part of the requirements imposed on every radio frequency license holder.

Alternatively, the Government could host an auction of available spectrum and allocate a substantial portion of funds raised from this auction to underwrite the costs of the Program. Without reliance on revenues from any auction, the Government may decide to simply pay operators, in whole or part, for the allocation of free bandwidth to connectivity centres. The allocation of USAF contributions to pay such costs represents a legitimate use of such funds and essentially mirrors the current provision of subsidised rates to qualified institutions.

#### 9.3.8.4 Regulatory reforms

This study proposes significant reforms to the regulatory environment of South Africa's communications market that should accelerate the realisation of universal service and access to communications services. These reforms generally affect the roles and responsibilities of the USAASA, USAF and ICASA. Further particulars of the 11 key regulatory reforms proposed by the study, broken down by key public sector agency, are summarised as follows:

- Universal Service an Access Agency of South Africa

  This study makes four suggestions to transform the USAASA into a meaningful partner in the constellation of public sector actors driving the realisation of universal service and access to communications services in South Africa:

  - The USAASA should be subsumed by ICASA and continue to operate, *mutatis mutandis*, as a Universal Service and Access Division within ICASA.

  - It should focus more narrowly on identifying and facilitating the realisation of specific universal service and access objectives in South Africa's communications market, particularly the delivery of communications services to those pockets of people and parts of the country that have not acquired such services under customary commercial conditions.

- The USAASA should promote incentive-based rather than obligation-based programs that motivate private sector actors to implement the objectives of such programs. A Program Accountability Paradigm (PAP) should be followed by the USAASA to ensure that the design, implementation and evaluation of such programs follow best practices.

- The USAASA should discharge a facilitative role rather than implementation role in the realisation of new programs to realise universal service and access to communications services.

- Universal Service and Access Fund

  This study proposes four structural changes to transform the USAF into a meaningful underwriter of policies and programs that realise universal service and access to communications services in South Africa:

  - The USAASA needs to improve reporting procedures for the collection, administration and allocation of USAF contributions, including the preparation and publication of quarterly reports and an audited Annual Report.

  - A USAF Funding Panel (UFP) should be established with representation from public and private sector stakeholders to adjudicate and monitor the allocation of USAF contributions.

  - USAF contributions should only be allocated in accordance with Output Based Aid (OBA) principles that rely on competitive, market-driven procurement practices that maximise benefits and minimise the costs of subsidies awarded from USAF contributions.

  - The allocation of USAF contributions should be based on a hierarchy of needs. USAF contributions are most needed to fund infrastructure projects that expand the reach of communications networks into under serviced areas. The funding of ICT services to specific constituencies represents a secondary consideration. As required, the funding of ICT training may occur in tandem with the delivery of ICT services.

- Independent Communications Authority of South Africa

  This study proposes three reforms designed to improve ICASA's position and performance as the regulator of communications services in South Africa. Such improvements likely enhance ICASA's ability to play a meaningful role in the realisation of universal service and access to communications services in South Africa:

  - ICASA's budget should be established through a consultative process between the Agency and the Minister of Communications with the Portfolio Committee on Communications designated as the final arbiter of ICASA's annual funding allocation. Through increased financial autonomy, ICASA should obtain sufficient financial support to discharge its statutory duties, including certain responsibilities related to the realisation of universal service and access to communications services in South Africa.

  - ICASA should adopt regulatory practices that promote competition and technological innovation, including: cutting the Mobile Termination Rate (MTR) to zero; introducing mandatory infrastructure sharing and facilities leasing; adopting expedited procedures for granting rights of way to build communications infrastructure; promoting technology neutral regulations; and creating a facilitative body to fast track approval of new technologies.

  - ICASA should be given responsibility for the allocation of South Africa's radio frequency spectrum. This responsibility should include the timely and efficient allocation of spectrum as well as the optimal administration and management of such spectrum. As part of such responsibility, ICASA should ensure that the fiscus maximises value from the allocation of such spectrum, with proceeds from the auction of spectrum used, in part, to fund the realisation of universal service and access programs in South Africa's communications market.

#### 9.3.8.5 Market reforms

This study considers the viability of using state owned enterprises (SOEs) and State Controlled Enterprises (SCEs) to deliver broadband services to boost universal service in South Africa. After discussion of salient dynamics, the study draws six key conclusions in respect of such matters:

- Careful consideration needs to be given to the precise means by which the Government of South Africa uses SOEs and SCEs to accelerate the availability, accessibility and availability of broadband communications services in South Africa. SOEs and SCEs such as Telkom and Sentech have not performed well in South Africa's communications market. Furthermore, the use of these enterprises to roll out broadband services in South Africa may unfairly undermine private sector initiatives.

- The merger of the wholesale businesses of Telkom, Sentech and Broadband Infraco represents a substantial opportunity to create a common carrier likely to improve the availability, accessibility and affordability of broadband communications in the country.

- The creation of a common carrier which merges the wholesale businesses of Telkom, Sentech and Broadband Infraco with the wholesale businesses of private sector actors (such as mobile operators and fibre optic network operators) represents an even more substantial opportunity to create a common carrier likely to improve the availability, accessibility and affordability of broadband communications in the country.

- The creation of a common carrier might unlock substantial financial value to the Government of South Africa if it sold public assets into a public-private joint venture. The Government could continue to press policy objectives through regulation rather than ownership of such a venture.

- The monopoly conditions created by the formation of a national common carrier require careful consideration.

- Other less intrusive interventions remain available to the Government of South Africa to accelerate the roll out of broadband communications services in the country, including the subsidy of private sector efforts in unserved and under serviced areas and the regulation of wholesale communications costs.

As these conclusions, trends, gaps and recommendations show, this study involves substantive consideration of the threats and opportunities to the realisation of universal service and access to communications services in South Africa. Based on an examination and evaluation of precedents and practices from international markets, it proposes three new programs and identifies substantial reforms required within the regulatory environment of South Africa's communications market to accelerate the availability, accessibility and affordability of communications services in the country. It also considers the potential role of SOEs and SCEs in the acceleration of broadband connectivity in the country. Notwithstanding such efforts, there are always areas of limitation which challenge the study.

## 9.4 LIMITATIONS OF THE STUDY

The study suffers from several limitations. Four initial limitations were identified at the outset of the study.[381] Two subsequent limitations were identified during the course of the study.[382] The particular nature of each limitation, likely impact on the study and management of such limitation are discussed in the following two sections:

### 9.4.1 Initial limitations

Chapter 1 identifies four limitations on the scope of investigation undertaken by this study at the outset of the research effort, namely:

#### 9.4.1.1 Longitude

This study restricts consideration of the natures and performances of the principal policies, programs and public sector actors involved in the design or implementation of universal service and access to communications services in

---

[381] Supra, section 1.5.

[382] Infra, section 9.4.2.

South Africa to the period between 1993 and 2013. It also considers the natures and performances of policies, programs and actors that arise before or after this period which are reasonably regarded to affect contemporary consideration of past or future policies and programs. However, the study may have overlooked information germane to consideration of such matters if the same falls outside this 20 year period.

#### 9.4.1.2 Lack of empirical information

The study suffers from a lack of primary empirical data about the performances of the principal policies, programs and actors associated with the design or implementation of universal service and access to communications services in South Africa between 1996 and 2013. This condition limits opportunities for evaluation of the performances of such policies, programs and actors on a quantitative basis. It consequently diminishes the reliability of retrospective analyses of the same based on anecdotal evidence or the subjective perceptions of key informants.

#### 9.4.1.3 Forecasts

The study contains some forecasts of future market conditions in South Africa's communications market. Any estimates of future performance are based upon a variety of known and unknown risks and uncertainties. Actual results, performances, achievements and developments may differ from those expressed or implied by such forward-looking information. This study limits the use of such forecasts wherever possible and, in any such event, restricts the application of such forecasts to a maximum three year forward period.

#### 9.4.1.4 Other Government policies

The Government of South Africa has enacted a broad range of policies and programs in the ICT sector which may have affected and continue to affect the realisation of universal service and access to communications services in the country.[383] Wherever possible, every effort has been made to account for such

---

[383] Supra, Chapters 1, 5 and 7.

policies and programs in the study. Consideration of the totality of such policies and programs is beyond the scope of this study, however, and the study may have overlooked or given insufficient attention to specific policies or programs that may have affected or continue to affect the availability, accessibility and affordability of communications services in South Africa.

### 9.4.2 Subsequent limitations

In addition to the four limitations identified at the outset of the research effort, the following two additional limitations were identified during the study:

#### 9.4.2.1 Market conditions

South Africa's communications market is a dynamic, rapidly changing environment. The evolution of technologies, introduction of new products, shifting commercial fortunes, nascent consumer habits, resurgent regulatory activities and changes to the natures of commercial and regulatory structures in the market in the past few years make it difficult to predict the future of this market in the next few years. Wherever possible, this study attempts to address any emerging trends likely to impact, positively or negatively, the realisation of available, accessible and affordable communications services.

#### 9.4.2.2 Currency of data and recommendations

Contemporaneous changes in the natures of policies, programs and actors deployed by the Government of South Africa in its efforts to realise universal service and access to communications services that occurred during the study period often challenged the currency of information relied upon by the study and the nature of conclusions adopted by the study. For example, most of the USAASA's proprietary programs and the USAL Program were terminated during the course of this study. ICASA regulated Mobile Termination Rates (MTRs) which substantially decreased interconnection costs in 2011 and 2013. The original *National Broadband Policy* which prescribed a minimum broadband download speed of 256 kbps in 2010 was replaced by a revised *National Broadband Policy* which prescribed a minimum broadband download speed of 5 Mbps in 2013.

As such, analyses of the performances of certain policies, programs and actors evolved over the course of this study. For example, many of the recommendations identified to improve the performance of the USAL Program were rendered moot by the termination of the Program. In every instance, the study accounts for developments in South Africa's communications market to December 2013 but otherwise 'draws a line' against consideration of further developments after this date.

Collectively, such limitations are not regarded to materially prejudice the research, findings, results, conclusions or recommendations found in this study. Indeed, many of these limitations may be addressed through subsequent research and inspire additional activity within the academic community, including in those areas contemplated in the subsequent section.

## 9.5 RECOMMENDATIONS AND AREAS FOR FURTHER RESEARCH

Several opportunities for additional research arise from this study. 11 areas of interest which may warrant further consideration include:

- Conduct of an empirical analysis of the precise configuration and nature of the gaps that exist in the geography of South Africa not covered by the footprints of existing communication networks.[384]

- Construction of a financial model which identifies the likely costs of delivering communications infrastructure to areas of South Africa not covered by the footprints of existing communications networks, including sensitivity analyses based on the costs of different communications delivery platforms.

- Construction of a financial model which quantifies the likely costs to implement the Free Air Program.

- Construction of a financial model which quantifies the likely costs to implement the Free Broadband Program.

---

[384] The USAASA suggests that it has compiled such information and continues to refine such information as part of its market gap analysis. However, it has not released such information for public consumption (USAASA, 2013a, 13).

- Creation of a financial model which estimates the economic impact of adjusting the Mobile Termination Rate (MTR) to zero.

- Creation of a standard methodology for the pricing of communications services in South Africa to enable the transparent analyses and comparison of tariffs between communications services providers in South Africa which is not open to debate between different stakeholders with divergent interests.

- Creation of a web-based access portal available to consumers that facilitates the comparison of the communication costs of each operator in a simple, standardised, user-friendly manner.

- Creation of a national ICT database which aggregates key ICT indicators and inter-relates such indicators with other socio-economic benchmarks.[385]

- Investigation of the total amount of money paid by mobile operators as USAF contributions, the total amount of such contributions spent by the USAASA and the notional amount of USAF contributions held by National Treasury.

- Creation of a spectrum plan which not only identifies the optimal ways to use the different bandwidths within South Africa's radio frequency spectrum but also the optimal means to unlock value from the allocation of such spectrum.

- Completion of a feasibility study, including a financial model, which reviews various options for creation of a common carrier of wholesale communications services in South Africa, including scenario and sensitivity analyses that contemplate public, private and public-private solutions and variations therein.

## 9.6 CONCLUSION

This chapter culminates and closes the study. It reviews and confirms that the study answers the problem statement, central aim, nine principal objectives and five clusters of research questions presented at the outset of the study. It provides a succinct

---

[385] ICASA's ICT Indicators Portal launched in March 2013 has the capacity but not yet the capability to fulfil this function (ICASA, 2013j).

summary of key conclusions and recommendations arising out of analyses of the secondary and primary data collected during the study. The chapter highlights the limitations of the study. It recommends further areas for research.

As summarised in this chapter, the outputs of this study address the underlying need for new public policies and programs and reforms to existing policy, regulatory and market paradigms that accelerate the realisation of universal service and access to communications services in South Africa. As further summarised in this chapter, the realisation of available, accessible and affordable communications services for those South Africans and those parts of South Africa left behind under current commercial conditions constitutes a paramount public policy priority. The right to communications services and the right to access the information delivered through such communications services represent essential enablers to the social and economic advancement of South Africa and bulwarks against the entrenchment of a form of socio-economic apartheid between the connected and unconnected segments of society. The policies, programs and reforms advocated by this study represent the kind of pragmatic public-private partnerships that may be helpful to the Government of South Africa as it seeks to resolve the lingering lack of available, accessible and affordable communications services in the country in the context of its comprehensive ICT policy review.

## REFERENCES

Abelson, H, Ledeen, K & Lewis, H. 2008. *Blown to bits: Your life, liberty and happiness after the digital explosion*. New York: Addison-Wesley Professional.

Abeyasekera, S. 2013. Quantitative analysis approaches to qualitative data: Why, when and how. Reading: Statistical Services Centre, Reading University. http://www.reading.ac.uk/ssc/n/resources/Docs/Quantitative_analysis_approaches_to_qualitative_data.pdf (accessed 7 August 2013).

ACCC. 2001. *Report on telecommunication price falls, June 2001*. Canberra: Commonwealth of Australia, Australia Competition and Consumer Commission. http://www.accc.gov.au/content/index.phtml/itemId/87765 (accessed 8 June 2005).

Access Division. 1994. Division acceso universal a la sociedad de la Informacion, Subsecretaria de Telecomuniciones, Gobierno de Chile. World Trade Organization slide presentation 1994. Geneva: World Trade Organization. www.wto.org (accessed 29 May 2006).

Ace. 2013. Overview. Paris: Orange SA. http://www.ace-submarinecable.com/ace/default/EN/all/ace_en/the_project.htm (accessed 22 December 2013).

Adam, F. 2010. *Free basic electricity: A better life for all.* Johannesburg: Earthlife Africa. http://www.earthlife.org.za/wp-content/uploads/2010/03/Free-Basic-Electricity-Final-Low-res.pdf (accessed 2 August 2013).

Africa & Middle East Telecom-Week. 2012. Major African mobile markets: Future growth prospects 2006-2011. http://www.africantelecomsnews.com/resources/AfricaOpp_Conclusion.shtml (accessed 9 December 2013).

Ahmed. S. 2009. Fast Internet access becomes a legal right in Finland. Atlanta: CNN. http://edition.cnn.com/2009/TECH/10/15/finland.internet.rights/index.html?_s=PM:TECH (accessed 18 September 2014).

*Altech Autopage Cellular (Pty) Ltd v Chairperson of the Council of the Independent Communications Authority of South Africa and Others* (20002/08) [2008] ZAGPHC 268 (29 August 2008). http://www.saflii.org/za/cases/ZAGPHC/2008/268.html (accessed 6 November 2011).

Alvarez-Rivera, M. 2004. Election resources on the Internet: General elections in the Republic of South Africa. http://electionresources.org/za/ (accessed 27 February 2005).

Analysis Mason. 2012. Hot topics for the Sub-Saharan Africa telecoms market in 2012. http://www.analysysmason.com/About-Us/News/Insight/Insight_SSA_hot_topics_Feb2012 (accessed 4 August 2013).

Anatel. 2000. *Anatel Magazine*, November 2000, 42.

ANC. 2012a. Communications policy discussion document: Building an inclusive society through information and communication technology, 5 March 2012. Johannesburg: African National Congress. http://www.anc.org.za/docs/discus/2012/communication.pdf (accessed 17 June 2013).

ANC. 2012b. Recommendations from the 4th national policy conference, June 2012. Johannesburg: African National Congress. http://www.anc.org.za/docs/pol/2012/policy_conferencev.pdf (accessed 17 June 2013).

ANC. 1994. Reconstruction and development programme: A policy framework. Johannesburg: African National Congress. www.anc.org.za/rdp/rdpall.html (accessed 21 January 2005).

ANC. 1993. Cellular telephones. Johannesburg: African National Congress. www.anc.org.za/ancdocs/pr/1993/pr0921.html (accessed 21 January 2005).

Andre, C & Velasquez, M. 1987. What is ethics? *Issues in Ethics*, 1(1), Fall 1987, 1-2. Santa Clara: Markham Centre for Applied Ethics, Santa Clara University. https://www.scu.edu/ethics/publications/iie/v1n1/whatis.html (accessed 10 April 2014).

APC. 2012. Spectrum for development South Africa. Melville: Association for Progressive Communications.

Ashford W. 2006. Getting left behind, again. *IT Web*, 22 September 2006. http://www.itweb.co.za/sections/columnists/gettingreal/ashford060922.asp?S=Mobile%20and%20Wireless%20Technology&A=MAW&O=FRGN (accessed 1 October 2006).

Australia. 2012a. *Telecommunications Legislation Amendment (Universal Service Reform) Act, Number 44 of 2012*. Canberra: Commonwealth of Australia.

Australia. 2012b. *Universal service policy in the national broadband network environment.* Canberra: Commonwealth of Australia, Department of Broadband, Communications and the Digital Economy. http://www.dbcde.gov.au/broadband/national_broadband_network/universal_service_policy (accessed 24 July 2013).

Australia. 2011a. *National Broadband Network Companies Act, Number 22 of 2011*. Canberra: Commonwealth of Australia.

Australia. 2011b. *Telecommunications Legislation Amendment (National Broadband Network Measures Act – Access Arrangements) Act, Number 23 of 2011*. Canberra: Commonwealth of Australia.

Australia. 2011c. Major changes to Australian telecommunications announced. Canberra: Commonwealth of Australia. http://www.acma.gov.au/WEB/STANDARD./pc=PC_410057 (accessed 24 July 2013).

Australia. 2006. Connect Australia. Canberra: Commonwealth of Australia, Department of Communications, Information Technology and the Arts. http://www.dcita.gov.au/tel/connect_australia (accessed 26 May 2006).

Australia. 1999. *Telecommunications (Consumer Protection and Services Standards) Act 1999, Number 50 of 1999.* Canberra: Commonwealth of Australia. http://www.austlii.edu.au/au/legis/cth/consol_act/tpassa1999620/notes.html (accessed 25 May 2006).

Australia. 1998. *Telecommunications (Equipment for the Disabled) Regulations 1998, Number 133 of 1998*. Canberra: Commonwealth of Australia. http://www.austlii.edu.au/au/legis/cth/num_reg/tftdr19981998n133575/s1.html (accessed 25 May 2006).

Australia. 1997. *Telecommunications Act 1997, Number 47 of 1997*. Canberra: Commonwealth of Australia. http://www.austlii.edu.au/au/legis/cth/consol_act/ta1997214/longtitle.html (accessed 25 May 2006).

Baldwin T, McVoy, D & Steinfield, C. 1996. *Convergence: Integrating media, information and communication*. London: Sage Publications.

Barnes, C & De Klerk, E. 2002. South Africa's multi-party constitutional negotiation process. In Barnes, C. (ed). 2002. *Owning the process: Public participation in peacemaking*, 13, 26-33. London: Accord. http://www.c-r.org/sites/c-r.org/files/Accord%2013_5South%20Africa%27s%20multi-party%20constitutional%20negotiation%20process_2002_ENG.pdf (accessed 3 June 2013).

Barron, C. 2013. Does broadband mean anything to Zuma's cabinet? *Sunday Times*, 1 December 2013, 7.

Barron, C. 2005. Holding out for a telecoms revolution. *Sunday Times*, 30 January 2005, 6.

Benjamin, P. 2003. *The Universal Service Agency's telecentre program: 1998-2000*. A HSRC Occasional Paper. Cape Town: Human Sciences Research Council. www.hsrcpublishers.ac.za (accessed 12 November 2004).

Bate, D. 2014a. Interview by David Bate with a senior representative of the Universal Service and Access Agency of South Africa. Johannesburg: Unpublished.

Bate, D. 2014b. Interview by David Bate with a senior representative of the Internet Service Providers' Association of South Africa. Bryanston: Unpublished.

Bate, D. 2014c. Interview by David Bate with a senior representative of the Department of Communications, Government of South Africa. Midrand: Unpublished.

Bate, D. 2014d. Interview by David Bate with a senior representative of the Independent Communications Authority of South Africa. Johannesburg: Unpublished.

Bate, D. 2014e. Interview by David Bate with a senior representative of Telkom SA Limited. Pretoria: Unpublished.

Bate, D. 2014f. Interview by David Bate with a senior representative of Vodacom Proprietary Limited. Johannesburg: Unpublished.

Benjamin, P. 1997. Information access for all in South Africa: Universal service in information and communication technologies. Paper prepared for the *Information Systems and the Public Sector Conference*, Manchester, 29 June to 2 July 1997. Johannesburg: University of the Witwatersrand. http://www.sn.apc.org/nitf/report/addenda1.htm (accessed 27 March 2002).

BEREC. 2010. BEREC report on universal service: Reflections for the future. Riga: Body of Regulators of Electronic Communications. http://www.irg.eu/streaming/BoR%20(10)%2035%20BEREC%20Report%20on%20USO_final.pdf?contentId=546910&field=ATTACHED FILE (accessed 15 December 2013).

Bidoli, M. 2004. See you in court. *Financial Mail*, 11 June 2004, 14.

Bidoli, M. 2003. A seat on the cartel. *Financial Mail*, 28 March 2003. http://secure.financialmail.co.za/03/0328/technology /atech.html (accessed 8 May 2003).

BizCommunity. 2010. Flaws in proposed ICASA bill. http://www.bizcommunity.com/Article/196/15/50220.html (accessed 14 April 2012).

Blaine, S. 2006. Schools languishing in digital dark age. *Business Day*, 22 March 2006. http://www.mybroadband.co.za/nephp/?m=show&id=2260 (accessed 28 August 2007).

Bloomberg. 2013. Vodacom worried by Tanzanian fee cuts. *The Star,* 23 January 2013, 18.

Bluman, A. 2000. *Elementary statistics, brief version.* New York: McGraw-Hill.

BMI TechKnowledge. 2013a. Fibre optic project map provided to David Bate by BMI TechKnowledge, 16 May 2013. Johannesburg: BMI TechKnowledge.

BMI TechKnowledge. 2013b. Email from Tim Parle of BMI TechKnowledge to David Bate, 20 May 2013. Johannesburg: BMI TechKnowledge.

BMI TechKnowledge. 2012a. Information provided by BMI TechKnowledge to David Bate based on outlook for terrestrial fibre projects in South and Southern Africa, December 2012. Johannesburg: BMI TechKnowledge.

BMI TechKnowledge. 2012b. Information provided by BMI TechKnowledge to David Bate based on VANS research report, 16 May 2013. Johannesburg: BMI TechKnowledge.

BMI TechKnowledge. 2012c. Information provided by BMI TechKnowledge to David Bate based on infrastructure investment report, 17 May 2013. Johannesburg: BMI TechKnowledge.

BMI TechKnowledge. 2011a. Information provided by BMI TechKnowledge to David Bate based on Africa telecoms services and infrastructure market analysis and forecast, August 2011. Johannesburg: BMI TechKnowledge.

BMI TechKnowledge. 2011b. Information provided to David Bate by BMI TechKnowledge, last updated 16 May 2013. Johannesburg: BMI TechKnowledge.

BMI TechKnowledge. 2010. USAO compliance review of licensees for ICASA, March 2010. Johannesburg: BMI TechKnowledge and Mkhabela Huntley Adekeye Inc.

Boland, J & Whittington, D. 1998. *The political economy of increasing block tariffs in developing countries*. Special Paper, 20 November 1998. Ottawa: International Development Research Centre. http://idl-bnc.idrc.ca/dspace/bitstream/10625/31784/8/118117.pdf (accessed 27 March 2013).

Bonorchis, R. 2004a. Thintana makes R7bn off Telkom. *Business Report*, 22 November 2004. http://www.busrep.co.za (accessed 2 November 2005).

Bornstein, R. 2004. Face validity. In Lewis-Beck, M, Bryman, A & Liao, T. (eds). 2004. *Sage encyclopedia of social science research*. Thousand Oaks: Sage Publications. http://srmo.sagepub.com/view/the-sage-encyclopedia-of-social-science-research-methods/n323.xml (accessed 19 April 2014).

Bowman. 2011. Publication of the Electronic Communications Amendment Bill. Johannesburg: Bowman Gilfillan Africa Group. http://www.bowman.co.za/eZines/Custom/TMT/Newsflash/ElectronicCommunicationsAmendment-Bill-2011.html (accessed 4 June 2012).

Brait. 2004. Information memorandum relating to the disposal of CellSaf (Pty) Limited of equity and shareholder loans in 3C Telecommunications (Pty) Ltd., November 2004. Johannesburg: Brait South Africa Limited.

Brands, H & Leo, E. 1998. *The law and regulation of telecommunications carriers*. Boston: Artech House.

Branigan, T. 2010. State owned China Mobile is world's biggest mobile phone operator. *The Guardian*, 11 January 2010, 1. http://www.guardian.co.uk/business/2010/jan/11/china-mobile-telecomms (accessed 27 March 2012).

Brasil. 2000. *Fund for the Provision of Universal Access to Telecommunications Services, Law Number 9,998 of August 17 2000*. Brasilia: Federative Republic of Brasil. http://www.mc.gov.br/fust/l_9998_17082000.htm (accessed 29 May 2006).

Brasil. 1998a. *General plan of goals for universal access to fixed switched telephone service*. Brasilia: Federative Republic of Brasil.

Brasil. 1998b. *General target plan for universal access to services, PGMU Decree 2592 of 15 May 1998.* Brasilia: Federative Republic of Brasil. http://www.fndc.org.br/internas.php?p=leglei&cont_key=169 (accessed 29 May 2006).

Brasil. 1998c. *General plan for quality targets, Resolution 30 of 29 June 1998.* Brasilia: Federative Republic of Brasil. http://www.anatel.gov.br/index.asp?link=/biblioteca/Resolucao/1998/Res_030_98.htm?Cod=1177 (accessed 29 May 2006).

Brasil. 1997. *Lei Geral das Telecomunicações (LGT), Lei Number 9,472 of 16/07/1997*. Brasilia: Federative Republic of Brasil. http://www.anatel.gov.br/Tools/frame.asp?link=/biblioteca/leis/leigeral/leigeral.pdf (accessed 29 May 2006).

BRICS. 2013a. Network. Johannesburg: Cables for Africa. http://www.bricscable.com/network/ (accessed 28 December 2013).

BRICS. 2013b. About us. http://www.bricscable.com/about-us/ (accessed 28 December 2013).

British Telecommunications plc. 2006. Privatisation. London: British Telecommunications Plc. http://www.btplc.com/thegroup/btshistory/privatisationinfosheetissue2.pdf (accessed 7 December 2013).

Brock, G. 2002. Historical overview. In Cave, M, Majumdar, S & Vogelsang, I. (eds). 2002. *Handbook of telecommunication economics, Volume 1: Structure, regulation and competition.* Amsterdam: Elsevier.

Brookwood. 2014. Africa telecommunications market overview. London: Brookwood Capital Corporation.

Brown, J. 2006. Generalizability from second language research samples. *Shiken: JALT Testing & Evaluation SIG Newsletter*, 10(2), December 2006, 21-24. http://jalt.org/test/bro_24.htm (accessed 13 August 2013).

Brown, A, Hossain, M & Nguyen, D. (eds). 2004. *Telecommunications reform in the Asia-Pacific region*. Cheltenham: Edward Elgar.

Bryman, A. 2006. Integrating quantitative and qualitative research: how is it done? *Qualitative Research,* 6(1), 97-113. London: Sage Publications.

Budde, P. 2013a. Australia telecoms market analysis – top trends moving into 2014. Bucketty: BuddeComm. http://www.budde.com.au/Research/Australia-Telecoms-Market-Analysis-Top-Trends-Moving-into-2014.html (accessed 27 December 2013).

Budde, P. 2013b. Japan – key statistics, telecom market, regulatory overview and forecasts. Bucketty: BuddeComm. http://www.budde.com.au/Research/Japan-Key-Statistics-Telecom-Market-Regulatory-Overview-and-Forecasts.html (accessed 27 December 2013).

Budde, P. 2013c. South Africa – Telecoms, mobile, broadband and forecasts. Bucketty: BuddeComm. http://www.budde.com.au/Research/South-Africa-Telecoms-Mobile-Broadband-and-Forecasts.html (accessed 23 December 2013).

Budde, P. 2012a. Brazil: Fixed-line infrastructure: Overview, statistics and forecasts. Bucketty: BuddeComm. http://www.budde.com.au/Research/Brazil-Fixed-Line-Infrastructure-Overview-Statistics-and-Market-Forecasts.html (accessed 30 October 2012).

Budde, P. 2012b. Brazil: Mobile market: Overview, statistics and forecasts. Bucketty: BuddeComm. http://www.budde.com.au/Research/Brazil-Mobile-Market-Overview-Statistics-and-Forecasts.html (accessed 30 October 2012).

Budde, P. 2011a. African fixed line and fibre telecoms markets and infrastructure. Bucketty: BuddeComm. http://www.budde.com.au/Research/African-Fixed-line-and-Fibre-Telecoms-Markets-and-Infrastructure.html (accessed 30 October 2012).

Budde, P. 2011b. Chile: Telecoms, mobile, broadband and forecasts. Bucketty: BuddeComm. http://www.budde.com.au/Research/Chile-Telecoms-Mobile-Broadband-and-Forecasts.html (accessed 30 October 2012).

Budde, P. 2011c. Peru: Telecoms, mobile, broadband and forecasts. Bucketty: BuddeComm. http://www.budde.com.au/Research/Peru-Telecoms-Mobile-Broadband-and-Forecasts.html (accessed 30 October 2012).

Budde, P. 2006. Telecoms infrastructure technology handbook – volume 1 – last mile. Bucketty: BuddeComm. http://www.budde.com.au/Research/Telecoms-Infrastructure-Technology-Volume-1-Last-Mile.html#execsummary (accessed 18 September 2014).

Burger, M. 2010. *Bibliographic style and reference techniques*. Pretoria: University of South Africa Press.

Business Day. 2012. Neotel drops consumer call rates. *Business Day*, 12 September 2012, 14.

Business Dictionary. 2013a. Research design. http://webcache.googleusercontent.com/search?q=cache:http://www.businessdictionary.com/definition/research-design.html (accessed 28 July 2013).

Business Dictionary. 2013b. Research methodology. http://www.businessdictionary.com/definition/research-methodology.html (accessed 28 July 2013).

Business Dictionary. 2013c. Structured interview. http://www.businessdictionary.com/definition/structured-interview.html (accessed 11 August 2013).

BusinessTech. 2014. MTN, Vodacom call termination case: court rules. BusinessTech, 31 March 2014, 1. http://businesstech.co.za/news/mobile/55112/mtn-vodacom-call-termination-case-court-rules/ (accessed 11 April 2014).

BusinessTech. 2013a. Vodacom, MTN feel Cell C's punches: Investor. *BusinessTech*, 7 March 2013. http://businesstech.co.za/news/mobile/33155/vodacom-mtn-feel-cell-cs-punches-investor/ (accessed 30 July 2013).

BusinessTech. 2013b. Cash boost for Virgin Mobile SA. *BusinessTech*, 13 March 2013. http://businesstech.co.za/news/telecommunications/33532/cash-boost-for-virgin-mobile-sa/ (accessed 30 July 2013).

BusinessTech. 2012. eFive: SAex cable plans on track. *BusinessTech*, 5 March 2012. http://businesstech.co.za/news/telecommunications/7232/efive-saex-cable-plans-on-track/ (accessed 18 September 2014).

Buthelezi, L. 2013a. Timeline set for cutting cellular costs. *Business Report*, 1 August 2013, 18.

Buthelezi, L. 2013b. Telecoms firms pin hopes on mobile banking. *Business Report*, 13 November 2013, 21.

Byrnes, R. (ed). 1996. *South Africa: A country profile*. Washington: GPO for the Library of Congress. http://countrystudies.us/south-africa/44.htm (accessed 31 December 2013).

Cabanda, E. 2011. *A comparative study of Asian telecommunications policy reforms: Japan, Malaysia and the Philippines*. Clayton: Monash University. http://aspac.info/wp-content/uploads/2011/06/Cabanda_Emily_A-Comparative-Study-of-Asian-Telecommunications-Policy-Reforms.pdf (accessed 28 March 2014).

Calfucoy, P, Cibulka, J, Davison, J, Hinds, T & Park, M. 2009. Improving free basic water provision in South Africa. Prepared for the Financial and Fiscal Commission, Republic of South Africa. http://www.lafollette.wisc.edu/publications/workshops/2009/southafrica.pdf (accessed 12 September 2012).

Camp J & Tsang R. 2001. *Universal service in a ubiquitous digital network*. Boston: Harvard University, KSG Faculty Research Working Paper Series RWPO1-006, February 2001. http://www.ljean.com/files/inet.html (accessed 20 December 2005).

Canada. 2008a. *Green papers*. Ottawa: Library of the Parliament of Canada. http://www2.parl.gc.ca/Parlinfo/Pages/GreenPapers.aspx (accessed 24 August 2009).

Canada. 2008b. *White papers*. Ottawa: Library of the Parliament of Canada. http://www2.parl.gc.ca/Parlinfo/Pages/WhitePapers.aspx?Language=E (accessed 24 August 2009).

Canada. Statistics Canada. 2013a. Sampling error. Ottawa: Statistics Canada. http://www.statcan.gc.ca/edu/power-pouvoir/ch6/sampling-echantillonage/5214807-eng.htm (accessed 19 August 2013).

Canada. Statistics Canada. 2013b. Types of data collection. Ottawa: Statistics Canada. http://www.statcan.gc.ca/edu/power-pouvoir/ch2/types/5214777-eng.htm (accessed 19 August 2013).

Cannock, G. 2001. *Telecom subsidies: Output-based contract for rural services in Peru*. Washington: Public Policy for the Private Sector, World Bank Group. http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2012/05/03/000333038_20120503035343/Rendered/PDF/248180VP0REPLA0ies0CANNOCK0Jun02001.pdf (accessed 13 December 2013).

Cape Gateway. 2006. Innovation awards for Khanya Project. Cape Town: Province of the Western Cape. http://www.capegateway.gov.za/eng/your_gov/14311/pubs/mags/106028/107010/3 (accessed 29 September 2006).

Careless, J and McLoughlin, E. (eds). 1951. How man learned to write. *The book of knowledge*, Volume 10, 3545-3553. Toronto: Grolier Society of Canada.

Cave, M, Majumdar, S & Vogelsang, I. (eds). 2002. *Handbook of telecommunication economics, Volume 1: Structure, regulation and competition*. Amsterdam: Elsevier.

Cell C. 2013. Cell C. Johannesburg: Cell C. www.cellc.co.za (accessed 2 April 2013).

Cell C. 2012. Data specials. Johannesburg: Cell C. http://www.cellc.co.za/data-specials (accessed 24 July 2012).

Cell C. 2010a. Cell C launches Africa's first HSPA+ 900 network with great speed, 6 September 2010. Johannesburg: Cell C. http://www.cellc.co.za/explore/newsroom/cell-c-launches-africas-first-hspa-900-network-with-great-speed (accessed 13 January 2011).

Cell C. 2010b. American Tower Corporation and Cell C (Pty) Limited announce the sale of Cell C's tower portfolio in South Africa, 5 November 2010. Johannesburg: Cell C. http://www.cellc.co.za/explore/newsroom/american-tower-corporation-and-cell-c-pty-limited-announce-the-sale-of-cell-cs-tower-portfolio-in-south-africa (accessed 12 December 2010).

Cell C. 2005. Financial results for the month ended 31 December 2004. Johannesburg: Cell C Pty Limited.

Cell C. 2004. About Cell C. Latest headlines: The launch of MMS. Johannesburg: Cell C. http://www.cellc.co.za/renderxml.asp?sectionpage=latestheadlines&ANo=69 (accessed 24 December 2004).

Cellular News. 2001. Out of court settlement in South Africa. *Cellular News,* 11 June 2001. http://www.cellular-news.com/story/3723.php (accessed 9 March 2005).

Cellular Online. 2001. A brief overview of the third mobile license story. *Cellular Online*, 11 June 2001. http://www.cellular.co.za/third_license_timeline.htm (accessed 15 December 2013).

Cellular Online. 1999. Siemens. *Cellular Online*, 7 July 2009. http://www.cellular.co.za/news_1999/news-07071999_siemens_third_sa_license.htm (accessed 3 September 2005).

Chao-Ying, J & Mueller, D. 2004. Construct validity. In Lewis-Beck, M, Bryman, A & Liao, T. (eds). 2004. *Sage encyclopedia of social science research*. Thousand Oaks: Sage Publications. http://srmo.sagepub.com/view/the-sage-encyclopedia-of-social-science-research-methods/n163.xml (accessed 19 April 2014).

Charmaz, K. 2006. *Grounded theory: A practical guide through qualitative analysis*. Thousand Oaks: Sage Publications.

Cherry, B & Wildman, S. 1999. Unilateral and bilateral rules: A framework for increasing competition while meeting universal service goals in telecommunication. In Cherry, B, Wildman, S & Hammond, A. (eds). 1999. *Making universal service policy: Enhancing the process through multidisciplinary evaluation.* New Jersey: Lawrence Erlbaum Associates.

Chile. 1994a. *1994 amendment to the General Telecommunications Law of 1982. Ley General de Telecomunicaciones No. 18.168 of October, 1982, Titulo IV as amended by law 19.302 of March 1994.* Santiago: Republic of Chile. http://www.bcn.cl/publicadores/pub_leyes_mas_soli/admin/ver_archivo_leyes.php?id_ley=127&file=1 (accessed 29 May 2006).

Chile. 1994b. *FDT Regulations, Supreme Decree Number 457 of 22 December 1994*. Santiago: Republic of Chile.

CIA. 2012. *CIA world factbook 2012*. Washington: Central Intelligence Agency. https://www.cia.gov/library/publications/the-world-factbook/geos/my.html (accessed 4 November 2012).

CITEL. 2000. Universal service in the Americas, February 2000. Paris: Organization of the American States. http://www.citel.oas.org/pubs/Universal_service.pdf (accessed 27 March 2003).

City Press. 2012. Cell C move sparks price war. *City Press*, 27 May 2012. http://www.fin24.com/Companies/ICT/Cell-C-move-sparks-price-war-20120527 (accessed 4 May 2013).

Claasen, L. 2013. Telkom: A necessary separation. *Financial Mail*, 26-31 July 2013, 57.

Claasen, L. 2012a. Minister mired in controversy. *Financial Mail*, 20 November 2012. http://www.financialmail.co.za/economy/local/2012/11/20/minister-mired-in-controversy (accessed 23 December 2013).

Claasen, L. 2012b. Telkom's future: Is it worth the trouble? *Financial Mail*, 26 November 2012. http://www.financialmail.co.za/business/2012/11/16/telkom-s-future (accessed 23 December 2013).

Claasen, L. 2012c. Dodgy calls: Telkom's woes. *Financial Mail*, 16 November 2011. http://www.financialmail.co.za/business/2012/11/15/telkom-s-woes (accessed 23 December 2013).

Cohen, T. 2002. Rethinking (reluctant) capture: The development of South African telecommunications, 1992 – 2002 and the impact of regulation. Texas: TPRC. http://tprc.org/papers/2002/115/DevSAfTelecom.pdf#search='National%20Telecommunications%20Forumsouth%20africa (accessed 19 October 2003).

Coleman, A, Herselman, M & Jacobs, S. 2008. Factors influencing the utilization of the public Internet terminal system in two rural communities. *South African Journal of Information Management*, 10(1), March 2008, 1-11. Pretoria: Tswhane University, 2008.

Commonwealth Ministers. 2011. Uganda's Communications Sector. London: Commonwealth of Ministers. http://www.commonwealthministers.com/special_reports/ugandas_communication_sector/ (accessed 19 May 2012).

Comninos, A, Esselaar, S, Gillwald, A, Moyo, M & Naidoo, K. 2010. South African ICT sector performance review 2009/2010. *Towards Evidence-Based ICT Policy and Regulation*, 2(6), 2010. Cape Town: Research ICT Africa.

ComTask. 1996. Communications 2000: A vision for government communications in South Africa. Final report of the task group on communications to Deputy President Thabo Mbeki. Johannesburg: African National Congress, 1996. http://www.gcis.gov.za/content/resource-centre/reports/comtask (accessed 13 May 2005).

Concordia University. 2013. How to write a literature review. Montreal: Concordia University. http://library.concordia.ca/help/howto/litreview.php (accessed 14 February 2013).

Coopers & Lybrand. 1996. Universal service and rural telephony in Peru: Policy paper prepared for Osiptel, 1996. Lima: FITEL. http://www.fitel.gob.pe/archivos/FI509c3a1fa4116.pdf (accessed 24 November 2013).

COPASA. 2004. Submission about pay phones in reply to Ministerial determination in September. Johannesburg: Commercial Payphone Association of South Africa. http://www.icasa.org.za/Repository/resources/lena/submissions%20received%20by%20icasa%20for%20qolloquium/submission%20to%20icasa%20(ministerial%20determination)%202004-10-15.doc (accessed 11 November 2005).

COSATU. 2001. Submission on the Telecommunications Amendment Bill, presented to the Communications Portfolio Committee on 28th September 2001. Cape Town: Congress of South African Trade Unions and Communication Workers Union.

Côté, P. 1984. *The interpretation of legislation in Canada*. Québec: Les Editions Yvon Blais, 1984.

Council of Social Services. 2004. Review of the universal service obligation and customer service guarantee, submitted to the Department of Communications, Information Technology and the Arts. Pretoria: Council on Social Services. http://www.dcita.gov.au/__data/assets/word_doc/10239/Australian_Council_of_Social_Service.doc (accessed 30 May 2006).

Creswell, J & Plano Clark, V. 2007. *Designing and conducting mixed methods research*. Thousand Oaks: Sage Publications.

Creswell, J & Miller, D. 2000. Determining validity in qualitative inquiry. *Theory Into Practice*, 39(3), 124-131. Columbus: Ohio State University.

CRTC. 1999. CRTC alerts payphone service providers, 26 April 1999. Ottawa: Canadian Radio-Television Telecommunications Commission. http://www.crtc.gc.ca/eng/NEWS/RELEASES/1999/R990426.htm (accessed 25 May 2006).

CTV. 2006. Use special funds to upgrade phone service: CRTC. Toronto: CTV Television Network Limited. http://www.ctv.ca/servlet/ArticleNews/story/CTVNews/20060217/crtc_phone_service_060217?s_name=&no_ads (accessed 26 May 2006).

Curtin University, 2013. Understanding society through its records. Perth: Curtin University John Curtin Prime Ministerial Library. http://john.curtin.edu.au/society/overview (accessed 9 September 2013).

Da Silva, I. 2010. ICASA Amendment Bill: Civil society demands more time for comment. *BizCommunity*, 21 July 2010. http://www.bizcommunity.com/Article/196/15/50220.html (accessed 5 April 2012).

Dataplot Reference Manual. 1997. Analysis commands: Median polish. *Dataplot reference manual*, 12 March 1997. http://www.itl.nist.gov/div898/software/dataplot/refman1/ch3/median_p.pdf (accessed 19 August 2013).

Davies, D & Dodd, J. 2002. Qualitative research and the question of rigor. *Qualitative Health Research*, 12(2), 279-289. Thousand Oaks: Sage Publications.

Dictionary, 2013. Strata. Oakland: Dictonary.com. http://dictionary.reference.com/browse/stratum?s=t (accessed 14 August 2013).

Digital Divide Institute. 2012. Digital divide institute. http://www.digitaldivide.org/category/digital-divide/ (accessed 6 July 2012).

Di Silvestro, F. 2004. SA telecoms, December 2004. Johannesburg: HSBC.

Dodds, C. 2013. Cellphone firms deny their charges are exhorbitant [sic]. *Saturday Star*, 3 August 2013, 7.

Driscoll, D. 2011. Introduction to primary research: Observations, surveys and interviews. In Lowe, C & Zemliansky, P. 2011. *Writing Spaces: Readings on Writings,* 2, 153-174. http://wac.colostate.edu/books/writingspaces2/driscoll--introduction-to-primary-research.pdf (accessed 7 August 2013).

Dutta, S. 2011. Tata Communications increasing shareholding in Neotel to 61.5%. *Media4Mana*, 17 June 2011. http://www.medianama.com/2011/06/223-tata-communications-increases-shareholding-in-neotel-to-61-5/ (accessed 5 March 2012).

Earle, A, Goldin, J & Kgomotso, P. 2005. *Domestic water provision in the democratic South Africa: Changes and challenges, September 2005*. Pretoria: University of Pretoria. http://www.acwr.co.za/pdf_files/02.pdf (accessed 3 May 2012).

EASSy. 2013a. About EASSy. Kenya: EASSy Project Secretariat. http://www.eassy.org/about.html (accessed 22 December 2013).

EASSy, 2013b. EASSy network – overview. Kenya: EASSy Project Secretariat. http://www.eassy.org/network_overview.html (accessed 22 December 2013).

EASSy. 2013c. EASSy ownership. Kenya: EASSy Project Secretariat. http://www.eassy.org/ownership.html (accessed 22 December 2013).

Easton, V & McColl, J. 1997. *Statistical glossary*, 1(1). Glasgow: University of Glasgow. http://www.stats.gla.ac.uk/steps/glossary/index.html accessed 11 August 2013).

Economic Expert. 2014. Telecommunication. http://www.economicexpert.com/a/Telecommunication.htm (accessed 18 September 2014).

Economic Times. 2009. Tata increases stake in Neotel to 56%. http://articles.economictimes.indiatimes.com/2009-01-21/news/28397424_1_neotel-tata-communications-tata-africa-holdings (accessed 9 July 2012).

Economic Times. 2007. Tata Communications Limited. http://www.tata.com/article.aspx?artid=JSsSkB13v9Q (accessed 9 July 2012).

Economist. 2007. Telecoms in the developing world: at your service. *The Economist*, 31 March 2007, 75.

Economist Intelligence Unit. 2006. *Doing business in Brazil*. London: Economist Intelligence Unit. http://www.ebusinessforum.com/index.asp?layout=newdebi&country_id=BR&channelid=6&country=Brazil&title=Doing+e-business+in+Brazil (accessed 26 May 2006).

ECP. 2012. IHS acquires MTN towers. Washington: Emerging Capital Partners. http://www.ecpinvestments.com/index.php/ihs-acquires-mtn-towers/ (accessed 20 December 2012).

Ellipsis. 2013. Strategic integrated project (SIP) 15: Expanding access to community technology. Cape Town: Ellipsis Regulatory Solutions. http://www.ellipsis.co.za/strategic-integrated-project-sip-15-expanding-access-to-communication-technology/ (accessed 26 December 2013).

Ellipsis. 2012. Snippets. Cape Town: Ellipsis Regulatory Solutions. http://www.ellipsis.co.za/category/snippets/ (accessed 20 December 2012).

Ellis, C. 1966. *A giant step*. New York: Random House.

Els, F. 2005. Micromanaging telecoms. *Finance Week*, 20 July 2005, 56.

Emerick, N. 2005. Mixed signals in telecoms policy. *Business Day*, 8 April 2005, 7.

Ensor, L. 2005a. ICASA says telecoms shake-up threatens its independence. *Business Day,* 25 May 2005, 2. http://mybroadband.co.za/vb/showthread.php/21133-Icasa-says-telecoms-shake-up-threatens-its-independence?s=46134dbf134d3bd3b631726730042869 (accessed 27 December 2013).

Ensor, L. 2005b. Licences must not be technology-specific. *Business Day*, 30 May 2005, 4.

Eskom. 2005a. Eskom Enterprises: About us: Background. Johannesburg: Eskom Holdings Limited. www.mbendi.co.za/eskomenterprises/about/background.html (accessed 17 February 2005).

Eskom. 2005b. Eskom Telecommunications: Company profile. Johannesburg: Eskom Holdings Limited. www.eskom.co.za/live/content.php?Item_ID=75&Revision=en/0 (accessed 16 February 2005).

Eskom. 2005c. Eskom Telecommunications: Telecommunications assets. Johannesburg: Eskom Holdings Limited. www.eskom.co.za/live/content.php?Item_ID=7 (accessed 16 February 2005).

Esselaar, S and Stork, C. 2005. Mobile cellular telephone: Fixed-line substitution in Sub-Saharan Africa. *African Journal of Information and Communication*, 6, 2005, 64-73. http://www.wits.ac.za/files/5bfo5_695130001348061684.pdf (accessed 26 December 2013).

Etherington-Smith, J. 2010. Broadband Infraco here in November, significant savings expected. *MyBroadband,* 3 October 2010. http://mybroadband.co.za/news/telecoms/15551-broadband-infraco-here-in-november-significant-savings-expected.html (accessed 7 August 2012).

European Union. 2002. *Directive 2002/22/EC of the European Parliament and of the Council of 7 March 2002 on universal service and users' rights relating to electronic communications networks and services (Universal Service Directive).* Brussels: European Union. http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32002L0022:EN:NOT (accessed 12 November 2005).

FCC. 2014. History of communications. Washington: Federal Communications Commission. http://transition.fcc.gov/omd/history/ (accessed 18 September 2014).

FCC. 2012. Lifeline: Affordable telephone service for income-eligible consumers. Washington: Federal Communications Commission. http://www.fcc.gov/guides/lifeline-and-link-affordable-telephone-service-income-eligible-consumers (accessed 14 April 2012).

FCC. 2011. Connect America Fund. Washington: Federal Communications Commission. http://www.fcc.gov/encyclopedia/connecting-america (accessed 12 November 2011).

FCC. 2006a. Lifeline across America. Washington: Federal Communications Commission. http://www.lifeline.gov/ accessed 30 March 2006).

FCC. 2006b. Connect the globe. Washington: Federal Communications Commission. http://www.fcc.gov/connectglobe/sec6.html (accessed 30 March 2006).

FCC. 2005. Connecting the globe: A regulator's guide to building a global information community. Washington: Federal Communications Commission. http://www.fcc.gov/connectglobe/sec5.html (accessed 3 June 2005).

FCC. 2004. Telecom. Washington: Federal Communications Commission. http://www.fcc.gov/telecom.html#text (accessed 3 June 2005).

Fendelman, A. 2013. Definition of MVNO: What is an MVNO cell phone carrier? About.com. http://cellphones.about.com/od/phoneglossary/g/mvnodefinition.htm (accessed 16 December 2013).

Fibre Optic Association. 2012. Fiber to the home architedctures. Guide to fiber optics & premises cabling. Fallbrook: Fiber Optic Association. http://www.thefoa.org/tech/ref/appln/FTTHarch.html (accessed 18 September 2014).

FibreCo. 2013a. FibreCo project update. Johannesburg: FibreCo Telecommunications. http://fibreco.co.za/News/tabid/98/Post/577/FibreCo-Project-Update.aspx# (accessed 26 December 2013).

FibreCo. 2013b. FibreCo's first 2,000 km state-of-art fibre optic network is now operational. Johannesburg: FibreCo Telecommunications. http://fibreco.co.za/Network.aspx (accessed 26 December 2013).

Field, R. 2011. WASACE cable system to lnik Africa to Americas. *CommsMEA*, 27 November 2011. http://www.commsmea.com/11698-wasace-cable-system-to-link-africa-to-americas/ (accessed 18 September 2014).

Finweek. 2013. The Internet's transformative potential in Africa. *Finweek*, 5 December 2013.

Flores-Macias, F & Musacchio, A. 2009. The return of state-owned enterprises. *Harvard International Review*, April 2009. Cambridge, Massachusetts: Harvard University. http://hir.harvard.edu/the-return-of-state-owned-enterprises?page=0,0 (accessed 3 February 2012).

Fox. 2012. Obama's top donor makes millions selling taxpayer-funded 'Obama phones'. *Now the End Begins*, 11 October 2012. http://www.nowtheendbegins.com/blog/?tag=lifeline (accessed 3 March 2013).

Fox. 2011. Africa's mobile economic revolution. *The Observer*, Sunday 24 January 2011. http://www.guardian.co.uk/technology/2011/jul/24/mobile-phones-africa-microfinance-farming (accessed 7 May 2013).

Fraser Health, 2013. Introduction to statistics and quantitative research methods. Surrey: Fraser Health. http://www.fraserhealth.ca/media/Introduction-to-Statistics-and-Quantitative-Research-Methods.pdf (accessed 7 August 2013).

Frontier Market Intelligence. 2012. KZN growth fund provides finance to Dark Fibre Africa. *Frontier Market Intelligence*, 20 June 2012. http://www.frontiermarketnetwork.com/ (accessed 5 November 2012).

Fuentes-Bautista, M. 2001. *Universal service in times of reform: Affordability and accessibility of telecommunication services in Latin America*. Austin: University of Texas at Austin, September 2001. http://arxiv.org/ftp/cs/papers/0109/0109104.pdf (accessed 2 June 2006).

Gage, J. 2002. What the world needs now, part two. http://nz.sun.com/2002-0129/wef/forum2.html (accessed 5 June 2005).

Galvin, M. 2012. Evolving rights: South Africa's free basic water policy. Ottawa: Council of Canadians, 6 June 2012. http://canadians.org/blog/?p=15632 (accessed 3 June 2013).

Garcia, D & Gorenflo, N. 1999. Rural networking cooperatives: Lessons for international development and aid strategies. Washington: Foundation for Rural Service. http://www.fao.org/WAICENT/FAOINFO/SUSTDEV/CDdirect/CDre0033.htm (accessed 20 December 2005).

Garfinkel, H. 2002. *Ethnomethodology's program: Working out Durkheim's aphorism.* Lanham: Rowman & Littlefield.

Garfinkel, H. 1967. *Studies in ethnomethodology.* Englewod Cliffs: Prentice-Hall.

Gasmi, F & Recuero, V. 2005. Telecommunications technologies deployment in developing countries role of markets and institutions. University of Florida, Gainesville: Public Utility Research Center. http://bear.warrington.ufl.edu/centers/purc/DOCS/PRESENTATIONS/events/0205%20LBS/papers/RecueroVirto.pdf (accessed 31 December 2013).

Gauteng. 2006. Gauteng Online. Johannesburg: Province of Gauteng. www.gautengonline.com (accessed 27 November 2006).

GCIS. 2006a. GCIS budget vote. Pretoria: Government Communication and Information System. www.gcis.gov.za (accessed 27 November 2006).

GCIS. 2006b. MPCC business plan. Pretoria: Government Communication and Information System. http://www.gcis.gov.za/docs/publications/mppcplan.html (accessed 27 November 2006).

GCIS. 2006c. Communication strategy for Government's multipurpose community centre initiative. Pretoria: Government Communication and Information System. http://www.gcis.gov.za/mpcc/initiative/documents/implementation/strategy.html (accessed 27 November 2006).

GCIS. 2003. GCIS budget vote 2003: Briefing. Pretoria: Government Communication and Information System. www.gcis.gov.za (accessed 6 November 2005).

GCIS. 2001. GCIS budget vote: Summary of annual report and programme, May 2001. Pretoria: Government Communication and Information System. www.gcis.gov.za (accessed 6 November 2005).

GCIS. 2000. GCIS budget vote 2000: Address by Minister. Pretoria: Government Communication and Information System. www.gcis.gov.za (accessed 6 November 2005).

Gedye, L. 2012. Owning the spectrum. *Mail & Guardian*, 10 March 2012. http://mybroadband.co.za/news/wireless/45393-owning-the-spectrum.html (accessed 3 March 2013).

Geldenhuys, P. 2005. Government looking down wrong path. *Finance Week*, 25 May 2005, 49.

Getstats. 2013. Definition of average: Mean, median and mode. London: Getstats, Royal Statistical Society. http://www.getstats.org.uk/getstats-stats-glossary/definitions-of-average-mean-median-and-mode/ (accessed 19 August 2013).

Ghosh, S. 2004. Presentation on universal service obligation fund administration & management: The Indian model. Paper presented at the *Symposium on Access and the USO,* Hanoi, Vietnam, 2004. Asia Pacific Telecommunity. http://www.aptsec.org/meetings/2004/USO/Session%207-Fund%20Administration%20(Mr.Shyamal%20Ghosh)NEW.ppt (accessed 1 April 2005).

Gillwald, A., Moyo, M. & Stork, C. 2012. Understanding what is happening in ICT in South Africa: A supply- and demand-side analysis of the ICT sector. *Evidence for ICT Policy Action*, Policy Paper 7, 2012. Cape Town: Research ICT Africa. http://www.researchictafrica.net/docs/Policy%20Paper%207%20-%20Understanding%20what%20is%20happening%20in%20ICT%20in%20South%20Africa.pdf (accessed 26 December 2013).

Gillwald, A. 2012. Cost of communication in SA. Cape Town: Research ICT Africa, November 2012. http://www.researchictafrica.net/docs/PPC%20Pricing%20Public%20Hearing%2029112012.pdf (accessed 6 May 2013).

Gillwald, A. 2002. *Under-serviced area licences in South Africa: Steps to achieving viable operators*. Link Policy Research Paper Series, No. 3. Johannesburg: Link Centre, Witwatersrand University, February 2002.

Gillwald, A. 2001a. Experimenting with institutional arrangements for communications policy and regulation: The case of telecommunications and broadcasting in South Africa. *Southern African Journal of Information and Communication*, 2(1). Johannesburg: Wits University. http://www.sajic.org.za/index.php/SAJIC/article/view/SAJIC-2-3 (accessed 7 December 2013).

Gillwald, A. 2001b. In James, T. (ed). 2001. *An Information policy handbook for Southern* Africa, 2001. Johannesburg: International Development Research Centre. http://idl-bnc.idrc.ca/dspace/bitstream/10625/7521/1/120185.pdf (accessed 31 December 2013).

Gillwald, A. 2001c. Policy and regulatory challenges of the digital divide. Johannesburg: *ITU African Telecom*, 2001.

Gleason, D. 2013. SA lagging Africa in telecom stakes. *Business Day*, 5 July 2013, 12.

Goko, C & Mochiko, T. 2013. ICASA warns licensees about price information. *Business Day*, 10 June 2013, 4.

Golafshani, N. 2003. Understanding reliability and validity in qualitative research. *Qualitative Report*, 8(4), 597-607. Fort Lauderdale: Nova Southeastern University. http://www.nova.edu/ssss/QR/QR8-4/golafshani.pdf (accessed 9 April 2014).

Goldstuck, A. 2013a. Data on the rise as voice is relegated. *Business Times*, 1 December 2013, 12.

Goldstuck, A. 2013b. Data new cash cow for African cellular players. *Business Times*, 17 November 2013, 4.

Goldstuck, A. 2012a. The broadband narrows. *Media Online*, 13 August 2012. http://themediaonline.co.za/2012/08/the-broadband-narrows/ (accessed 4 August 2013).

Goldstuck, A. 2012b. *Internet matters: The quiet engine of the South African economy.* Johannesburg: Google Inc. http://www.internetmatters.co.za/report/ZA_Internet_Matters.pdf (accessed 4 August 2013).

Gonenc, R, Maher, M & Nicoletti, G. 2000. *The implementation and effects of regulatory reform: Past experience and current issues.* OECD ECO/WKP 2000, 24. Paris: Organization for Economic Cooperation and Development.

Gorard, S. 2004. Revisiting a 90-year old debate: the advantage of mean deviation. Paper presented at the *British Educational Research Association Annual Conference*, University of Manchester, 16-18 September 2004. http://www.leeds.ac.uk/educol/documents/00003759.htm (accessed 26 August 2013).

Grace, J, Kenny, C, Qiang, C, Liu, J & Reynolds, T. 2001. *Information and communications technology and broad-based development: A partial review of the evidence*. Washington: World Bank. http://wbln0018.worldbank.org/ict/resources.nsf/eDocsPublications?OpenView (accessed 31 January 2005).

Graphpad. 2009. What is the difference between ordinal, interval and ratio variables? Why should I care? La Jolla: Graphpad Software, Inc. http://graphpad.com/support/faqid/1089/ (accessed 18 September 2014).

Griffin, T. 2012. Uncle Sam's unlimited plan: How the Government's cell phone giveaway is costing you billions. http://griffin.house.gov/Lifeline (accessed 12 July 2013).

Grindle, M. & Hilderbrand, M. 1995. Building sustainable capacity in the public sector: What can be done? *Public Administration and Development,* 1995, 15(5), 441-463. London: John Wiley & Sons. http://onlinelibrary.wiley.com/doi/10.1002/pad.4230150502/abstract (accessed 30 July 2013).

Gross, G. 1999. Obama includes Internet-based smart energy grid in stimulus package. *Computerworld*, 9 January 2009. http://computerworld.co.nz/news.nsf/news/99AECAD329D8C329CC25753800760761 (accessed 12 May 2013).

GSMA. 2011a. African mobile observatory 2011: Driving economic and social development through mobile services. London: GSM Association. http://www.gsma.com/publicpolicy/wp-content/uploads/2012/04/africamobileobservatory2011-1.pdf (accessed 8 May 2013).

GSMA. 2011b. African mobile observatory 2011: Executive summary. London: GSM Association. http://www.gsma.com/publicpolicy/wp-content/uploads/2012/04/africamoeswebfinal.pdf (accessed 8 May 2013).

GSMA. 2006. Universal access: How mobile can bring communications to all. London: GSM Association. http://www.gsma.com/publicpolicy/wp-content/uploads/2012/03/universalaccessfullreport.pdf/ (accessed 8 May 2013).

Guba, E. 1981. Criteria for assessing the trustworthiness of naturalistic inquires. *Educational Communication and Technology*, 29 (2), 75-91. New York: Springer Publishing Company.

Guide, D. 2011. MTN makes gains in first half. *Modern Ghana*, 24 August 2011. http://www.modernghana.com/news/346866/1/mtn-makes-gains-in-first-half.html (accessed 5 August 2012).

Guest, G, Namey, E. & Mitchell, M. 2013. *Collecting qualitative data: A field manual for applied research*. Thousand Oaks: Sage Publications.

Guest, G, MacQueen, K & Namey, E. 2012. *Applied thematic analysis.* Thousand Oaks: Sage Publications.

Gulube, S. 2006. Telephonic conversation by David Bate with Dr Sam Gulube, CEO of the Universal Service Agency, on 26 January 2006. Johannesburg: unpublished.

Habib, T. 2012. Is LTE all it's hyped up to be? *IT Week*, 5 December 2012. http://www.iweek.co.za/report-back/is-lte-all-it-s-hyped-up-to-be (accessed 27 March 2013).

Hardy, A. 2002. The role of the telephone in economic development. *Telecommunications Policy*, 4(4), December 1980, 278-286. Austin: University of Texas at Austin. http://dx.doi.org/10.1016/0308-5961(80)90044-0 (accessed 8 May 2005).

Harvey, L. 2013. Social research glossary. Quality Research International. http://www.qualityresearchinternational.com/socialresearch/interview.htm (accessed 19 August 2013).

Hawking, S & Mlodinow, L. 2010. *The grand design*. New York: Bantam Books.

Hawkins, T. 1994. Calmer waters of national consensus. *Financial Mail*, 18 July 1994, vi.

Herlambang, B. 2004. Recent developments in rural communications technology: Paper presented at the *Symposium on Access and the USO*, Hanoi, Vietnam, 2004. Asia Pacific Telecommunity. http://www.aptsec.org/meetings/2004/USO/Session%204-Indonesia_APT-USO-Rural%20Communication.ppt (accessed 2 June 2006).

Hodge, J. 2004. Universal service through roll out targets and license conditions: Lessons from telecommunications in South Africa. *Development South Africa* 21(1), March 2004. London: Routledge. http://www.commerce.uct.ac.za/Economics/Programmes/postgraduate_programmes/masters/Specialisations/TRP/Research/Hodge_services2.pdf (accessed 13 December 2013).

Hoehler, J & McHenry, A. 2012. Insights into mobile telecoms in Africa. http://www.slideshare.net/jonhoehler/insights-into-mobile-telecoms-in-africa-by-jonhoehler-andrewmchenry (accessed 15 July 2013).

Hogg, A. 2006. Ray Webber: Communication Users Association of SA. *Moneyweb*, 18 May 2006. http://www.moneyweb.co.za/moneyweb-historical-news-transcripts/ray-webber-communication-users-association-of-sa?sn=Daily%20news%20detail (accessed 13 August 2013).

Horwitz, R. 2001. *Communication and democratic reform in South Africa*. Cambridge: Cambridge University Press. http://catdir.loc.gov/catdir/samples/cam031/00063041.pdf (accessed 9 December 2013).

Horwitz, R. 1999. South African telecommunications: History and Prospects. In Noam, E. (ed). 1999. *Telecommunications in Africa*, 205-248. Oxford: Oxford University Press. http://www.vii.org/papers/horwitz2.htm (accessed 5 December 2013).

Horwitz, R & Currie, W. 2007. Another instance where privatization trumped liberalization: The politics of telecommunications reform in South Africa – A ten year perspective. *Telecommunications Policy,* 31(8-9): 445-462. California: Elsevier, 2007.

HSRC. 2003. Annual report 2002/2003. Pretoria: Human Sciences Research Council. http://www.hsrc.ac.za/en/about/annual-report/a-r-2002-2003 (accessed 13 December 2013).

IBA. 1995. Triple inquiry report. Johannesburg: International Broadcasting Authority. http://www.mdda.org.za/IBA%20Triple%20Inquiry%20Report.pdf (accessed 8 May 2005).

IBM. 2011. Is mobile Africa's future? Johannesburg: International Business Machines Corporation. http://www.ibm.com/smarterplanet/global/share/19jan2012/mobile_africa/ (accessed 15 March 2012).

ICASA. 2013a. ICASA I-ECS/I-ECNS licensees database. Johannesburg: Independent Communications Authority of South Africa. https://www.icasa.org.za/LegislationRegulations/LicensingCompliance/Licensees/IndividualLicensees/tabid/700/ctl/ItemDetails/mid/949/ItemID/183/Default.aspx (accessed 5 August 2013).

ICASA. 2013b. West African cable system (WACS). Johannesburg: Independent Communications Authority of South Africa. http://ictindicatorportal.icasa.org.za/Portal/index.php?p=184 (accessed 5 August 2013).

ICASA. 2013c. Organogram. Johannesburg: Independent Communications Authority of South Africa. https://www.icasa.org.za/AboutUs/Organogram/tabid/60/Default.aspx (accessed 5 August 2013).

ICASA. 2013d. DoC media release: Statement on meeting with broadcasters. Johannesburg: Independent Communications Authority of South Africa. https://www.icasa.org.za/AboutUs/ICASANews/tabid/630/post/statement-on-meeting-with-broadcasters/Default.aspx (accessed 5 August 2013).

ICASA. 2013e. ICASA is reviewing universal service and access obligations. Johannesburg: Independent Communications Authority of South Africa. http://www.icasa.org.za/AboutUs/ICASANews/tabid/630/post/Universal_Service_and_Access_Obligations/Default.aspx (accessed 15 December 2013).

ICASA. 2013f. Notice of intention to implement a cost to communicate programme. General Notice 574/2013 *Government Gazette* 36532, 4 June 2013. Johannesburg: Independent Communications Authority of South Africa. www.gov.za/documents/download.php?f=191500 (accessed 16 December 2013).

ICASA. 2013g. Explanatory note to the draft call termination regulations. Johannesburg: Independent Communications Authority of South Africa. http://www.ellipsis.co.za/wp-content/uploads/2013/10/Explanatory-Note-to-the-Draft-Call-Termination-Regulations-2013.pdf (accessed 26 December 2013).

ICASA. 2013h. Draft call termination regulations pursuant to section 67(4) of the Electronic Communications Act No. 36 of 2005. Johannesburg: Independent Communications Authority of South Africa. http://www.ellipsis.co.za/wp-content/uploads/2013/10/Call-Termination-draft-regulations-Final-20131004b-1.pdf (accessed 26 December 2013).

ICASA. 2013i. Draft amendment: Universal service and access license obligations. Johannesburg: Independent Communications Authority of South Africa. www.gov.za/documents/download.php?f=204448 (accessed 26 December 2013).

ICASA. 2013j. ICT indicators portal South Africa. Johannesburg: Independent Communications Authority of South Africa. http://ictindicatorportal.icasa.org.za/Portal/index.php (accessed 31 December 2013).

ICASA. 2012. General notice – explanatory memorandum on under-serviced areas definition regulations. General Notice 742/2012 *Government Gazette* 35673, 10 September 2012. Johannesburg: Independent Communications Authority of South Africa. http://thornton.co.za/resources/35673_gen724.pdf (accessed 5 April 2013).

ICASA. 2011. Notice in terms of the licensing of third generation (3G) and 1800 MHz radio frequency spectrum band in South Africa. General Notice 94/2001 *Government Gazette* 34040, 22 February 2011. Johannesburg: Independent Communications Authority of South Africa. http://www.info.gov.za/view/DownloadFileAction?id=142235 (accessed 6 July 2012).

ICASA. 2010. Spectrum licences issued Q1-Q3 version 3, 1 January 2010. Johannesburg: Independent Communications Authority of South Africa. https://www.icasa.org.za/Portals/0/Regulations/Spectrum%20Usage%20and%20Spare%20Frequencies/Spectrum%20Licences/Spectrum%20%20Licences%20issued%20Q1-Q3%20ver%203.xls (accessed 2 January 2012).

ICASA. 2005a. Notice in terms of Section 27 of the Telecommunications Act, No 103 of 1996 ('The Act') inviting representations with regard to a review of mobile prices. General Notice 1327/2005 *Government Gazette* 27854, 28 July 2005. Johannesburg: Independent Communications Authority of South Africa. http://www.info.gov.za/view/DownloadFileAction?id=61331 (accessed 4 July 2006).

ICASA. 2005b. About ICASA. Johannesburg: Independent Communications Authority of South Africa. http://www.icasa.org.za (accessed 4 July 2006).

ICASA. 2005c. Telecommunications Act: Regulations: value-added network services. General Notice 490/2005 *Government Gazette* 27608, 20 May 2005. Pretoria: Department of Communications and Independent Communications Authority of South Africa. http://www.info.gov.za/gazette/regulation/2005/27608.pdf (accessed 4 July 2006).

ICASA. 2005d. Speeches, 2005. Johannesburg: Independent Communications Authority of South Africa. http://www.info.gov.za/speeches/2005/05120712151003.html (accessed 4 July 2006).

ICASA. 2005e. 3G frequency spectrum license (MTN) – 2 February 2005. Johannesburg: Independent Communications Authority of South Africa.

ICASA. 2005f. Media release about licensing of 4 USALs. Johannesburg: Independent Communications Authority of South Africa. http://www.icasa.org.za/Repository/resources/Events&%20Publications/Media%20Releases/Press%20Release%20USAL%20Licences%20041104.doc (accessed 4 July 2006).

ICASA. 2005g. Issue of licence to Cell C (Proprietary) Limited in terms of Section 27(1) and as amended in terms of Section 48 of the Telecommunications Act, No. 103 of 1996. General Notice 933/2005 *Government Gazette* 27692, 14 June 2005. Johannesburg: Independent Communications Authority of South Africa. http://www.info.gov.za/view/DownloadFileAction?id=61127 (accessed 4 July 2006).

ICASA. 2005h. Notice for the extension of submission of written representations on applications received by the authority for the under serviced area licenses. General Notice 1209/2005 *Government Gazette* 27832, 21 July 2005. Pretoria: Independent Communications Authority of South Africa.

ICASA. 2005i. Licencees. Johannesburg: Independent Communications Authority of South Africa. http://www/icasa.org.za/default.aspx?page=1076 (accessed 28 February 2005).

ICASA. 2004a. Issue of a license in terms of Section 40A of the Telecommunications Act, Act No. 103 of 1996, to provide telecommunications services to under-serviced areas: Under-serviced area license in terms of Section 40A of the Telecommunications Act 103 of 1996, as amended, issued to Thinta Thinta Telecomms (Proprietary) Limited. General Notice 2725/2004 *Government Gazette* 26996, 17 November 2004. Johannesburg: Independent Communications Authority of South Africa. http://www.info.gov.za/view/DownloadFileAction?id=60305 (accessed 4 July 2006).

ICASA. 2004b. Issue of a license in terms of Section 40A of the Telecommunications Act, Act No. 103 of 1996, to provide telecommunications services to under-serviced areas: Under-serviced area license in terms of Section 40A of the Telecommunications Act 103 of 1996, as amended, issued to Ilizwi Telecommunications (Proprietary) Limited. General Notice 2727/2004 *Government Gazette* 26998, 17 November 2004. Johannesburg: Independent Communications Authority of South Africa. http://www.info.gov.za/view/DownloadFileAction?id=60307 (accessed 4 July 2006).

ICASA. 2004c. Issue of a license in terms of Section 40A of the Telecommunications Act, Act No. 103 of 1996, to provide telecommunications services to under-serviced areas: Under-serviced area license in terms of Section 40A of the Telecommunications Act 103 of 1996, as amended, issued to Bokone Telecoms (Proprietary) Limited. General Notice 2726/2004 *Government Gazette* 26997, 17 November 2004. Johannesburg: Independent Communications Authority of South Africa. http://www.info.gov.za/view/DownloadFileAction?id=60306 (accessed 4 July 2006).

ICASA. 2004d. Issue of a license in terms of Section 40A of the Telecommunications Act, Act No. 103 of 1996, to provide telecommunications services to under-serviced areas: Under-serviced area license in terms of Section 40A of the Telecommunications Act 103 of 1996, as amended, issued to Bokamoso Consortium (Proprietary) Limited. General Notice 2809/2004 *Government Gazette* 27096, 10 December 2004. Johannesburg: Independent Communications Authority of South Africa. http://www.info.gov.za/view/DownloadFileAction?id=60409 (accessed 4 July 2006).

ICASA. 2004e. Issue of a license in terms of Section 40A of the Telecommunications Act, Act No. 103 of 1996, to provide telecommunications services to under-serviced areas: Under-serviced area license in terms of Section 40A of the Telecommunications Act 103 of 1996, as amended, issued to Karabo Telecoms (Proprietary) Limited. General Notice 2808/2004 *Government Gazette* 27095, 10 December 2004. Johannesburg: Independent Communications Authority of South Africa. http://www.info.gov.za/view/DownloadFileAction?id=60408 (accessed 4 July 2006).

ICASA. 2004f. Media release on Ministerial determinations, 3 September 2004. Johannesburg: Independent Communications Authority of South Africa. http://www.icasa.org.za/Repository/resources/whats%20new/ministerial%20determinations_discussion_doc_final_%202004-10-12.doc (accessed 4 July 2006).

ICASA. 2004g. Issue of license in terms of Section 37(1) and as amended in terms of Section 48 of the Telecommunications Act, Act No. 103 of 1996, to provide national mobile cellular telecommunications services: License to provide a national mobile cellular telecommunications service issued to Cell C (Proprietary) Ltd in terms of section 37 and as amended in terms of section 48 of the Telecommunications Act, No. 103 of 1996. General Notice 2796 *Government Gazette* 27087, 9 December 2004. Johannesburg: Independent Communications Authority of South Africa. http://www.info.gov.za/view/DownloadFileAction?id=60403 (accessed 4 July 2006).

ICASA. 2004h. 3G frequency spectrum license (Vodacom) – 16 September 2004. Johannesburg: Independent Communications Authority of South Africa.

ICASA. 2004i. GSM 1800 MHz frequency spectrum license (Vodacom) - 29 October 2004. Johannesburg: Independent Communications Authority of South Africa.

ICASA. 2004j. GSM 1800 MHz frequency spectrum license (MTN) – 29 October 2004. Johannesburg: Independent Communications Authority of South Africa.

ICASA. 2004k. Issue of license in terms of Section 37(1) and as amended in terms of Section 48 of the Telecommunications Act, Act No. 103 of 1996, to provide national mobile cellular telecommunications services: License to provide a national mobile cellular telecommunications service issued to Mobile Telephone Networks (Pty) Ltd in terms of section 37(1) and as amended in terms of section 48 of the Telecommunications Act, No. 103 of 1996. General Notice 2797 *Government Gazette* 27088, 9 December 2004. Johannesburg: Independent Communications Authority of South Africa. http://www.info.gov.za/view/DownloadFileAction?id=60404 (accessed 4 July 2006).

ICASA. 2004l. Issue of license in terms of Section 37(1) and as amended in terms of Section 48 of the Telecommunications Act, Act No. 103 of 1996, to provide national mobile cellular telecommunications services: License to provide a national mobile cellular telecommunications service issued to Vodacom (Pty) Ltd in terms of section 37(1) and as amended in terms of section 48 of the Telecommunications Act, No. 103 of 1996. Johannesburg: Independent Communications Authority of South Africa.

ICASA. 2004m. Media briefing by Mandla Langa, Chairperson of ICASA, on the recommendations to the Minister of Communications about under serviced area licenses – 19 May 2004. Johannesburg: Independent Communications Authority of South Africa. http://www.polity.org.za/article/langa-media-briefing-on-under-serviced-area-licences-recommendation-19052004-2004-05-19 (accessed 13 December 2013).

ICASA. 2003a. Regulations in respect of the annual contributions to the universal service fund by holders of telecommunication service licenses. Regulation 1241/2003 *Government Gazette* 25408, 28 August 2003. Johannesburg: Independent Communications Authority of South Africa.

ICASA. 2003b. Extension for USAL applications: Media release, June 2003. Johannesburg: Independent Communications Authority of South Africa. http://www.icasa.org.za/Repository/Resources/Whats%20New/media%20release%20usal%20closing%20date%20300603.doc (accessed 5 March 2004).

ICASA. 2003c. Written submissions re USALs, 19 December 2003. Johannesburg: Independent Communications Authority of South Africa. http://www.info.gov.za/view/DownloadFileAction?id=65010 (accessed 13 December 2013).

ICASA. 2002a. License to provide a national mobile cellular telecommunication service issued to Vodacom (Pty) Ltd in terms of s 37(1) of the Telecommunications Act, No. 103 of 1996. General Notice 1483/2002 *Government Gazette* 23760, 19 August 2002. Johannesburg: Independent Communications Authority of South Africa.

ICASA. 2002b. License to provide a national mobile cellular telecommunication service issued to Mobile Telephone Networks (Pty) Ltd in terms of s 37(1) of the Telecommunications Act, No. 103 of 1996. General Notice 1484/2002 *Government Gazette* 23760, 19 August 2002. Johannesburg: Independent Communications Authority of South Africa.

ICASA. 2002c. License issued to Sentech Limited on Monday, 6 May 2002 to provide multimedia services in terms of section 32c(1)(b) and section 32(c)(6) of the Telecommunications Act 103 of 1996 as amended. Johannesburg: Independent Communications Authority of South Africa.

ICASA. 2002d. License issued to Sentech Limited on Monday, 6 May 2002 to provide an international gateway service enabling it to operate as a carrier of carriers in terms of section 32c(1)(a) and section 32(c)(6) of the Telecommunications Act 103 of 1996 as amended. Johannesburg: Independent Communications Authority of South Africa.

ICASA. 2001. Mobile cellular telecommunication service license issued to Cell (Pty) Limited. General Notice 1601/2001 *Government Gazette* 22429, 29 June 2001. Johannesburg: Independent Communications Authority of South Africa. http://www.icasa.org.za/Repository/resources/Events&%20Publications/Publications/Government%20Gazzettes/Cell%20C%20Licence%20terms%20and%20conditions.txt (accessed 27 March 2003).

ICASA. 2000. Notice in respect of a review of fees and charges in the public switched telecommunications sector. Government Notice 4715//2000 *Government Gazette* 21925, 22 December 2000. Johannesburg: Independent Communications Authority of South Africa. http://www.info.gov.za/view/DownloadFileAction?id=66347 (accessed 15 March 2001).

IFRS. 2012. International financial reporting standards. London: International Financial Reporting Standards Foundation. http://www.ifrs.org/Pages/default.aspx (accessed 3 April 2012).

InfoDev. 2012. Mobile usage at the base of the pyramid in South Africa. Official draft, December 2012. Washington: World Bank. http://www.infodev.org/en/Publication.1193.html (accessed 28 February 2013).

Informa. 2012. Connecting to Africa. Excerpt from Africa telecoms outlook 2013. *iWeek,* 5 December 2012, 1. Florida: Informa.

Intekom. 2005. This day in history. http://home.intekom.com/southafricanhistoryonline/pages/chronology/thisday/2005-03-26-04-01_extra-dates.htm (accessed 6 April 2006).

Intelecon. 2009. Universal access and service funds: 2009 update from Intelecon. Vancouver: Intelecon. http://www.inteleconresearch.com/pages/documents/UASFFunds2009update-Oct2009.pdf (accessed 12 December 2013).

Intven H. 2000. Universal service. In Intven, H. (ed). 2000. *Telecommunications regulatory handbook*. Washington: World Bank. http://www.infodev.org/projects/314regulationhandbook/module6.pdf (accessed 4 November 2003).

Ireland. 2012. Fixed line telephone services in Ireland. Dublin: Republic of Ireland, Citizens Information Board. http://www.citizensinformation.ie/en/consumer_affairs/telecommunications_and_postal_services/fixed_line_telephone_services_in_ireland.html (accessed 5 April 2013).

Ismail, A. 2012. Africa: Shaping the future of broadband. *All Africa*, 5 June 2012. http://allafrica.com/stories/201206061023.html (accessed 12 June 2012).

ISPA. 2013a. Policy. Johannesburg: Internet Service Providers' Association of South Africa. http://ispa.org.za/inx/inx-policy/ (accessed 8 May 2013).

ISPA. 2013b. Welcome to the Internet Service Providers' Association. Johannesburg: Internet Service Providers' Association of South Africa. http://ispa.org.za/ (accessed 13 August 2013).

ISPA. 2005. Submission on proposed regulations for value added network services. Johannesburg: Internet Service Providers' Association of South Africa. http://old.ispa.org.za/regcom/submissions.shtml (accessed 9 December 2013).

IT News Africa. 2012. SA's Cell C offers data at less than R9 per GB. *IT News Africa*, 31 October 2012. http://www.itnewsafrica.com/2012/10/cell-c-launches-data-at-less-than-r9-per-gb/ (accessed 4 November 2012).

IT Online. 2013. Sentech re-evaluates broadband role. *IT Online*, 10 April 2013. http://www.it-online.co.za/2013/04/10/sentech-re-evaluates-broadband-role/ (accessed 21 April 2013).

ITU. 2013a. Fixed telephone subscribers, 2000 to 2011 country data. Geneva: International Telecommunication Union. http://www.itu.int/ITU-D/ict/statistics/ (accessed 3 May 2013).

ITU. 2013b. Mobile telephone subscribers, 2000 to 2011 country data. Geneva: International Telecommunication Union. http://www.itu.int/ITU-D/ict/statistics/ (accessed 8 May 2013).

ITU. 2013c. Percentage of individuals using the Internet, 2000 to 2011 country data. Geneva: International Telecommunication Union. http://www.itu.int/ITU-D/ict/statistics/ (accessed 14 October 2013).

ITU. 2013d. Fixed (wired) broadband subscriptions, 2000 to 2011 country data. Geneva: International Telecommunication Union. http://www.itu.int/ITU-D/ict/statistics/ (accessed 14 October 2013).

ITU. 2013e. Core indicators on access to and use of ICT by households and individuals, 2000 to 2011 country data. Geneva: International Telecommunication Union. http://www.itu.int/ITU-D/ict/statistics/ (accessed 14 October 2013).

ITU. 2013f. 2006-2013 ICT data for the world, by geographic regions and by level of development. Geneva: International Telecommuncation Union. http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx (accessed 5 December 2013).

ITU. 2013g. ICT facts and figures. Geneva: International Telecommunication Union. http://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2013-e.pdf (accessed 5 December 2013).

ITU. 2012a. Global survey on rural communications. Geneva: International Telecommunication Union. http://www.itu.int/itunews/manager/display.asp?lang=en&year=2004&issue=05&ipage=globalAgenda&ext=html (accessed 14 October 2013).

ITU. 2012b. *Measuring the information society.* Geneva: International Telecommunication Union. http://www.itu.int/ITU-D/ict/publications/idi/ (accessed 14 October 2013).

ITU. 2012c. Key principles and approach to USAF policy implementation. Geneva: International Telecommunication Union. http://www.ictregulationtoolkit.org/en/toolkit/notes/PracticeNote/3166 (accessed 26 December 2013).

ITU. 2012d. Model outline for a UAS policy. Geneva: International Telecommunication Union. http://www.ictregulationtoolkit.org/en/toolkit/notes/PracticeNote/3165 (accessed 26 December 2013).

ITU. 2011a. *Measuring the information society.* Geneva: International Telecommunication Union. http://www.itu.int/ITU-D/ict/publications/idi/ (accessed 14 October 2013).

ITU. 2011b. SADC toolkit on universal access funding and universal service implementation. Geneva: International Telecommunication Union. http://www.itu.int/ITU-D/projects/ITU_EC_ACP/hipssa/Activities/SA/CRASA/Toolkit%20Final%20Report.pdf (accessed 2 March 2013).

ITU. 2010a . *Measuring the information society.* Geneva: International Telecommunication Union. http://www.itu.int/ITU-D/ict/publications/idi/ (accessed 2 March 2013).

ITU. 2010b. The digital dividend: Opportunities and challenges. *ITU News*, Jan-Feb 2010, 1-2. Geneva: International Telecommunication Union. http://www.itu.int/net/itunews/issues/2010/01/27.aspx (accessed 18 September 2014).

ITU. 2009. *Measuring the information society.* Geneva: International Telecommunication Union. http://www.itu.int/ITU-D/ict/publications/idi/ (accessed 2 March 2013).

ITU. 2007a. Universal access – mobile telephony. Connecting everyone by mobile phone. Geneva: International Telecommunication Union. http://www.itu.int/itunews/manager/display.asp?lang=en&year=2007&issue=07&ipage=universal-telephony (accessed 26 December 2013).

ITU. 2007b. Telecommunication/ICT markets and trends in Africa 2007. Geneva: International Telecommunication Union. http://www.itu.int/ITU-D/ict/statistics/material/af_report07.pdf (accessed 27 December 2013).

ITU. 2006. *World information society report.* Geneva: International Telecommunication Union. http://www.itu.int/osg/spu/publications/worldinformationsociety/2006/report.html (accessed 15 September 2007).

ITU. 2004. Building digital bridges: The case of Malaysia. Geneva: International Telecommunication Union. http://www.itu.int/digitalbridges/docs/casestudies/malaysia-rv3.pdf (accessed 3 February 2006).

ITU. 2002. ITU lighting the way: ITU and telecommunication regulators, 12 March 2002. Geneva: International Telecommunication Union. http://www.itu.int/newsarchive/wtdc2002/Lighting_the_Way.html (accessed 29 May 2006).

ITU. 2001a. Effective regulation case study: Brazil. Geneva: International Telecommunication Union.

ITU. 2001b. Regulatory database, 2001. Geneva: International Telecommunication Union. http://www.itu.int/ITU-D/ICTEYE/Regulators/Regulators.aspx (accessed 16 October 2003).

ITU. 2000. *America telecommunications indicators, 2000.* Geneva: International Telecommunication Union. http://www.itu.int/ITU-D/ict/publications/americas/2000/ (accessed 16 October 2003).

ITU. 1998. *World telecoms development report: Universal access*. 4th ed. Geneva: International Telecommunication Union. http://www.itu.int/ITU-D/ict/publications/wtdr_98/ (accessed 5 December 2013).

ITU. 1995. African green paper: Telecommunication policies for Africa. Geneva: International Telecommunication Union. www.itu.int/itudoc/itu-d/baap/ap/prog1/afr_gp_e.txt (accessed 16 October 2003).

IT Web. 2013. FibreCo completes 2 000km network. *IT Web*, 15 November 2013. http://www.itweb.co.za/?id=69058:FibreCo-completes-2-000km-network (accessed 26 December 2013).

IT Web. 2012a. KT, Telkom deal collapses. *IT Web*, 1 June 2012. http://www.itweb.co.za/index.php?option=com_content&view=article&id=55406 (accessed 4 July 2013).

IT Web. 2012b. Vodacom switches on LTE in Durban. *IT Web*, 5 December 2012. http://www.itweb.co.za/index.php?option=com_content&view=article&id=60762 (accessed 5 July 2013).

IT Web. 2006a. Million SIM cards to be given away. *IT Web*, 20 March 2006. www.itweb.co.za (accessed 8 May 2006).

IT Web. 2006b. SIM cards won't help the poor. *IT Web*, 24 March 2006. www.itweb.co.za (accessed 8 May 2006).

Jacobs, M. 2013. No answers yet on USAASA allegations. *IT Web*, 20 November 2013. http://www.itweb.co.za/?id=69170:No-answers-yet-on-USAASA-allegations (accessed 31 December 2013).

Jaconsen, R. 1989. *An open approach to information policy making: A case study of the Moore Universal Telephone Service Act*. New Jersey: Ablex.

Jaffe, L. 1956. The independent agency: A new scapegoat. *Yale Law Journal* 65:1068. New Haven: Yale University.

Janssen, C. 2014a. Internet of things (IoT). *Techopedia*. http://www.techopedia.com/definition/28247/internet-of-things-iot (accessed 18 September 2014).

Janssen, C. 2014b. Plain old telephone service (POTS). *Techopedia*. http://www.techopedia.com/definition/12148/plain-old-telephone-service-pots (accessed 18 September 2014).

Janssen, C. 2014c. Land line. *Techopedia.* http://www.techopedia.com/definition/27123/land-line (accessed 18 September 2014).

Janssen, C. 2014d. Value-added network (VAN). *Techopedia.* http://www.techopedia.com/definition/26421/value-added-network-van (accessed 18 September 2014).

Janssen, C. 2014e. Mobile virtual network enabler (MVNE). *Techopedia.* http://www.techopedia.com/definition/2957/mobile-virtual-network-enabler-mvne (accessed 18 September 2014).

Janssen, C. 2014f. Fiber to the home (FTTH). *Techopedia.* http://www.techopedia.com/definition/15370/fiber-to-the-home-ftth (accessed 18 September 2014).

Japan. 2007. Universal service policy in Japan. Tokyo: State of Japan, Ministry of Internal Affairs and Communications. www.soumu.go.jp/main_sosiki/joho_tsusin/eng/.../071030_2.pdf (accessed 27 December 2007).

Japan. 1984a. *Nippon Telegraph and Telephone Corporation Law, Number 85 of 25 December 1984 as amended by Law Number 98 of 20 June 1997*. Tokyo: State of Japan. http://www.soumu.go.jp/main_sosiki/joho_tsusin/eng/Resources/laws/NTTLaw.html (accessed 28 August 2005).

Japan. 1984b. *Telecommunications Business Law, Number 86 of 25 December 1984* as amended by *Law Number 125 of 24 July 2003*. Tokyo: State of Japan. http://www.soumu.go.jp/main_sosiki/joho_tsusin/eng/Resources/laws/2001TBL.pdf (accessed 28 August 2005).

Joemat-Pettersson, T. 2002. Speech of the Northern Cape MEC for Education, Ms Tina Joemat-Pettersson, at the launch of the Connectivity and Networking Project, Frances Board District Office, Kimberley, 21 November 2002. Kimberley: Province of the Northern Cape. www.northern-cape.gov.za (accessed 3 March 2006).

Johnston, E. 2005. United States: FCC opens new inquiry into the Universal Service Fund. Baltimore: DLA Piper Rudnick Gray Cary. http://www.mondaq.com/unitedstates/x/33929/Federal+Law/FCC+Opens+New+Inquiry+Into+The+Universal+Service+Fund (accessed 18 September 2014).

Jones, C. 2010a. ICASA Amendment Bill under fire. *TechCentral*, 7 July 2010. http://www.techcentral.co.za/icasa-amendment-bill-under-fire/15353/ (accessed 6 June 2011).

Jones, C. 2010b. Sentech faces shake-up. *IT Web*, 21 April 2010. http://www.itweb.co.za/index.php?option=com_content&view=article&id=32432:sentech-faces-shakeup&catid=190:mobile-and-wireless-technology (accessed 5 January 2011).

Jones, C. 2010c. More bandwidth coming. *IT Web*, 30 March 2010. http://www.itweb.co.za/index.php?option=com_content&view=article&id=31713:more-bandwidth-incoming&catid=147&Itemid=68 (accessed 5 January 2011).

Jones, C. 2010d. Another salvo in broadband war. *IT Web*, 5 May 2010. http://www.itweb.co.za/index.php?option=com_content&view=article&id=32837:another-salvo-in-broadband-war&catid=147&Itemid=68 (accessed 5 January 2011).

Jones, C. 2008. Cell C, MTN lock horns. *IT Web*, 9 October 2008. http://www.iteb.co.za/sections/quickprint/printasp?StoryID=190252 (accessed 5 January 2011).

Jordan, S. 2009. A layered United States Universal Service Fund for an everything-over-IP world. *Telecommunications Policy*, 33 (3-4), April-May 2009, 111-128. http://escholarship.org/uc/item/78x802sg#page-1 (accessed 18 September 2014).

Judd, C, Smith, E & Kidder, L. 1991. *Research methods in social relations*. 6th ed. Toronto: Holt, Rinehart & Winston.

Kay, J. 1999. Mastering strategy in regulating industries. *Financial Times*, 18 October 1999. http://www.johnkay.com/1999/10/18/mastering-strategy-regulated-industries (accessed 7 December 2013).

Kearfott, K & Rucker, R. 1989. Median polish for quality assurance of a PET scanner. *Journal of Computer Assisted Tomography*, 1989, September-October, 13(5), 932-939. http://www.ncbi.nlm.nih.gov/pubmed/2789242 (accessed 23 August 2013).

Keong, W. 2010. MCMC: How is the USP being managed? http://weechookeong.wordpress.com/2010/10/22/mcmc-how-is-the-usp-being-managed/ (accessed 4 March 2011).

Khanya. 2006. Khanya achievements. Cape Town: Western Cape Education Department. http://www.khanya.co.za/projectinfo/?catid=23 (accessed 30 September 2006).

Khumalo, F. 2001. Appendix 8: National telecommunications forum (South Africa). In James, T. (ed). 2001. *Information policy handbook for Southern Africa 2001*, 184. Ottawa: International Development Research Centre. http://idl-bnc.idrc.ca/dspace/bitstream/10625/7521/1/120185.pdf (accessed 31 December 2013).

Kirkpatrick, D. 2010. *The Facebook effect: The inside story of the company that is connecting the world*. New York: Simon & Schuster.

Kirk, J & Miller, M. 1986. *Reliability and validity in qualitative research*. Beverly Hills: Sage Publications.

Klemperer, P. 2001. How (not) to run auctions: the European 3G telecom auctions. England: Oxford University. http://www.nuff.ox.ac.uk/users/klemperer/hownot.pdf (accessed 26 December 2013).

Knott-Craig, A. 2013. The crux of SA's mobile disconnect. *Sunday Times*, 28 July 2013, 10.

Knott-Craig, A. 2005. In McLeod, D. 2005e. Leave us to get on with growth. *Financial Mail*, 25 March 2005, 35-36.

Komives, K, Foster, V, Halpern, J & Wodon, Q. 2005. *Water, electricity and the poor: who benefits from utility subsidies?* Washington: The World Bank, Directions in Development. http://siteresources.worldbank.org/INTWSS/Resources/Figures.pdf (accessed 13 December 2013).

Krefting, L. 1991. Rigor in qualitative research: The assessment of trustworthiness. *American Journal of Occupational Therapy*, 45(3), March 2010, 214-221. Bethesda: American Occupational Therapy Association Press, 2010.

Kuhn, T. 1961. The function of measurement in modern physical science. *Chicago Journals*, 52 (2), June 1961, 161-163. Chicago: University of Chicago Press. http://www.jstor.org/stable/228678 (accessed 31 December 2013).

Kusek, J & Rist, R. 2004. *10 steps to a results-based monitoring and evaluation system*. Washington: World Bank and International Bank for Reconstruction and Development. http://www.oecd.org/derec/worldbank/35281194.pdf (accessed 5 June 2010).

Lahtinen, S. 2009. How is the universal service obligation in Finland to be funded? *Think Broadband*, 21 October 2009. http://www.thinkbroadband.com/news/4075-how-is-the-universal-service-obligation-in-finland-funded.html (accessed 4 March 2010).

Landgrebe, J. 2002. *The mobile telecommunications market in Germany and Europe: Analysis of the regulatory environment - Mobile termination charges and access for mobile virtual network operators*. Munich: Ludwig-Maximilians University of Munich and Haas School of Business, University of California, Berkeley. http://groups.haas.berkeley.edu/fcsuit/Pdf-papers/Regulation-Landgrebe.pdf (accessed 8 September 2003).

Langa, M. 2001a. Address to stakeholders, 19 July 2001. Johannesburg: Independent Communications Authority of South Africa. http://www.icasa.org.za/default.aspx?page=1046 (accessed 30 October 2002).

Langa, M. 2001b. Market development: Tackling the policy challenges, 13 November 2001. Johannesburg: Independent Communications Authority of South Africa. http://www.icasa.org.za/Repository/resources/events&%20publications/speeches/mandla%20langa's%20itu%20speechnov%202001.doc (accessed 30 October 2002).

Lawson, C & Meyenn, N. 2000. Bringing cellular phone services to rural areas: Grameen telecom and village pay phones in Bangladesh. *Viewpoint 205*. Washington: World Bank.

Leininger, M. 1985. Nature, rationale and importance of qualitative research methods in nursing. In Leininger, M. (ed). *Qualitative research methods in nursing*, 1-28. New York: Grune & Stratton.

Lewin, D & Milne, C. 2010. Are telecommunications services universally affordable across the EU? London: Plum Consulting. http://www.vodafone.com/content/dam/vodafone/about/public_policy/affordability_plum.pdf (accessed 5 August 2011).

Lewis, C. 2010. Achieving universal service in South Africa: What next for regulation? *International Telecommunications Society Conference on Telecommunications: Ubiquity and equity in a broadband environment.* http://www.wits.ac.za/files/mn9u6_538984001349357757.pdf (accessed 26 December 2013).

Lewis, C. 2007. South Africa. In *Global information society watch* 2007, 198-206. San Francisco: Association for Progressive Communications and Third World Institute. http://www.globaliswatch.org/en/node/622 (accessed 23 September 2009).

Limpitlaw, J. 2012. South Africa. In Long, C. (ed). 2012. *Global telecommunications law and practice*. London: Sweet & Maxwell.

Lincoln, Y. & Guba, E. 1985. *Naturalistic inquiry*. Beverly Hills: Sage Publications.

Link Centre. 2012. Submission by the Link Centre on the Electronic Communications Amendment Bill, 2012. Johannesburg: Link Centre, University of the Witwatersrand. http://link.wits.ac.za/papers/Link-2012-Submission%20on%20ECA%20Amendment%20Bill.pdf (accessed 7 December 2012).

Linux. 2005. POTS definition. Linux information project. http://www.linfo.org/pots.html (accessed 21 July 2013).

Lipsey, R, Purvis, D & Steiner, P. 1991. *Microeconomics.* 7th Canadian edition. New York: HarperCollins.

Liquid Telecom. 2013a. Building Africa's digital future. Mauritius: Liquid Telecom. http://www.liquidtelecom.com/ (accessed 26 December 2013).

Liquid Telecom. 2013b. Fibre map. Mauritius: Liquid Telecom. http://www.liquidtelecom.com/fibre/fibre-map (accessed 26 December 2013).

Love, D. 2008. An overview of the South African telecommunications industry: From pre-1994 policy making to gloomy 2005 realities. Honours Research Paper submitted to the University of the Witwatersrand. South Africa: University of the Witwatersrand. http://www.hellkom.co.za/media/Debbie_Love_Honours_Report.pdf (accessed 12 June 2013).

Lund Research. 2013a. Measures of central tendency. Derby: Laerd Statistics. https://statistics.laerd.com/statistical-guides/measures-central-tendency-mean-mode-median.php (accessed 26 August 2013).

Lund Research. 2013b. FAQs – measures of central tendency. Derby: Laerd Statistics. https://statistics.laerd.com/statistical-guides/measures-central-tendency-mean-mode-median-faqs.php (accessed 26 August 2013).

Lutgendorf, S & Ullrich, P. 2002. Cognitive processing, disclosure and health: Psychological and physiological mechanisms. In Lepore, S & Smyth, J. (eds). 2002. *The writing cure: How expressive writing promotes health and emotional well-being,* 177-196. Washington: American Psychological Association. http://psycnet.apa.org/psycinfo/2002-01516-009 (accessed 15 July 2013).

Lybio. 2012. Woman hoards 30 government lifeLine phones or Obama phones. *Lybio.net*. http://lybio.net/woman-hoards-30-government-life-line-phones-or-obama-phones/people/ (accessed 8 May 2013).

M2M Datasmart. 2013. What is M2M. Del Mar: M2M Datasmart. http://www.m2mdatasmart.com/d/What+is+M2M.html (accessed 27 December 2013).

MacMillan, A, Preston, D, Wolfe, J & Yu, S. 2007. Basic statistics mean, median, average, standard deviation, z-scores, and p-value. *The Michigan chemical process dynamics and controls open text book*. Ann Arbor: University of Michigan. https://controls.engin.umich.edu/wiki/index.php/Main_Page (accessed 26 August 2013).

Madonsela, T. 2013. Dina Pule, Phosane Mngqibisa and the ICT indaba. Politicsweb, 6 December 2013. http://www.politicsweb.co.za/politicsweb/view/politicsweb/en/page71656?oid=473661&sn=Detail&pid=71656 (accessed 27 December 2013).

Magcawas, B. 2013. ICASA makes another system mess. *The Artery*, 10 May 2013. http://www.the-artery.co.za/blog/icasa-makes-another-system-mess/ (accessed 31 December 2013)

Mahabane, I & Bidoli, M. 2004. Packed away for the holidays. *Financial Mail*, 19 November 2004, 23.

Mahamud, S. 2004. Access and USO in Bangladesh: An overview. Paper presented at the *Symposium on Access and the USO*, Hanoi, Vietnam, 2004. Asia Pacific Telecommunity. http://www.aptsec.org/meetings/2004/USO/Session%204-Bangladesh_Country%20paper.ppt (accessed 2 June 2006)

Mahlong, A. 2011. DoC withdraws hotly contested ECA amendments. *SA IT News*, 24 November 2011. http://saitnews.co.za/?s=DOC+Withdraws+Hotly&x=0&y=0 (accessed 3 June 2012).

Mail & Guardian. 2010. Parliament: Communications department in disarray. *Mail & Guardian*, 13 October 2010. http://mg.co.za/article/2010-10-13-communications-department-in-disarray-parliament (accessed 27 August 2011).

Mail & Guardian. 2009. Telkom shareholders approve Vodacom sale. *Mail & Guardian*, 27 March 2009. http://mg.co.za/article/2009-03-27-telkom-shareholders-approve-vodacom-sale (accessed 27 December 2013).

MainOne. 2013a. MainOne cable system. Mauritius: MainOne Cable Company Mauritius Limited. http://www.mainonecable.com/network (accessed 27 December 2013).

MainOne. 2013b. Who we are. Mauritius: MainOne Cable Company Mauritius Limited. http://www.mainonecable.com/about (accessed 27 December 2013).

Malaysia. 1998a. *Communications and Multimedia Act 1998, Act 588*. Kuala Lumpur: Federation of Malaysia.

Malaysia. 1998b. *Communications and Multimedia Commission Act 1998, Act 589.* Kuala Lumpur: Federation of Malaysia.

Malone, L. 2000. *Commonalities: The REA and high-speed rural Internet access*. New York: Hartwig College. http://www.usinternetcouncil.org/papers/highSpeed.html (accessed 22 May 2006).

Mandela, N. 2005. *A volunteer's guide*. Johannesburg: 46664 Nelson Mandela Foundation. http://www.worldvolunteerweb.org/fileadmin/docdb/pdf/2005/Mandelafoundation_booklet_.pdf (accessed 31 December 2013).

Mandela, N. 1998. Speech by President Nelson Mandela at the opening of *Africa Telecom 98*, Johannesburg, May 1998. Cape Town: Office of the President. www.anc.org.za/ancdocs/history/mandela/1998/sp980504.html (accessed 18 December 2003).

Mandela, N. 1995. Address by President Nelson Mandela at the opening ceremony of *Telecom 95, the 7th World Telecommunications Forum and Exhibition.* Cape Town: Office of the President. www.anc.org.za/ancdocs/history/mandela/1995/sp951003.html (accessed 18 December 2003).

Mantshantsha, S. 2013. MTN zakhele shareholders look forward to juicy payday. *Financial Mail*, 24 October 2013, 1. http://www.financialmail.co.za/moneyinvesting/2013/10/24/mtn-zakhele-shareholders-look-forward-to-juicy-payday (accessed 23 December 2013).

Marcelle, G. 1998. Universal service in Africa: Solving the dilemma. Paper presented at *ITU Africa Telecom 98*, May 1998, Johannesburg, South Africa. http://funredes.org/cardicis/docs/UniversalServicepolicyAFRICATELECOM.rtf (accessed 14 December 2013).

Marketing Systems Group. 2013. Cellular sampling – a new approach – rate centers. Horsham: Market Systems Group. http://www.m-s-g.com/CMS/ServerGallery/MSGWebNew/Documents/GENESYS/whitepapers/CellSampling-RateCenters.pdf (accessed 27 December 2013).

Marshall, M. 1996. Sampling for qualitative research. *Family practice*, 13 (6), 522-525. http://fampra.oxfordjournals.org/content/13/6/522.full.pdf+html (accessed 14 August 2013).

Masango, G. 2004a. Telkom shares take a beating. *Business Report*, 16 June 2004, 15. http://www.busrep.co.za (accessed 19 October 2006).

Masango, G. 2004b. Cell C grabs more local market share. *Business Report*, 8 December 2004. http://www.busrep.co.za (accessed 19 October 2006).

Masango, G. 2005. Telkom stake sale nearly put big bang in back row last year. *Business Report*, 14 January 2005. http://www.busrep.co.za (accessed 19 October 2006).

Masote, M. 2013a. Telkom weighs up what to do with 8ta. *Business Times*, 4 August 2013, 4.

Masote, M. 2013b. Virgin hits out at MTN, Vodacom. *Business Times*, 9 June 2013, 1.

Matote, M. 2013. Bungling at ICASA in the spotlight. *Business Day*, 19 May 2013, 1. http://www.bdlive.co.za/business/technology/2013/05/19/bungling-at-icasa-in-the-spotlight (accessed 1 July 2013).

Matsena, P. 2012. Impact assessment of the effectiveness of the public Internet terminals infrastructure model: SAPO. Unpublished Master's dissertation. Pretoria: University of South Africa. http://uir.unisa.ac.za/bitstream/handle/10500/6317/2012%20MBA3%20Research%20Report%20P%20Matsena.pdf?sequence=1 (accessed 14 December 2013).

Matsepe-Casaburri, I. 2005. Address by the Honourable Minister of Communications, Dr Ivy Matsepe-Casaburri, on the budget vote of the Department of Communications, 19 May 2005. Cape Town: Republic of South Africa, Department of Communications. http://www.info.gov.za/speeches/2005/05o52009451001.htm (accessed 11 November 2005).

Matsepe-Casaburri, I. 2004a. Address by the Honourable Minister of Communications, Dr Ivy Matsepe-Casaburri, to the National Assembly on the occasion of the budget vote of the Department of Communications, 21 June 2004. Cape Town: Republic of South Africa, Department of Communications. http://www.info.gov.za/speeches/2004/04062316151001.htm (accessed 31 January 2005).

Matsepe-Casaburri, I. 2004b. Policy Announcement by the Minister of Communications, Dr Ivy Matsepe-Casaburri, 2 September 2004. Pretoria: Republic of South Africa, Department of Communications. http://www.internet.org.za/doc-min-announce-2-sept.html (accessed 31 January 2005).

Matsepe-Casaburri, I. 2004c. Determination of dates in terms of the Telecommunications Act. Notice 1924/2004 *Government Gazette* 26763, 3 September 2004. Pretoria: Republic of South Africa, Department of Communications. http://www.info.gov.za/view/DownloadFileAction?id=60016 (accessed 31 January 2005).

Matsepe-Casaburri, I. 2003a. Address by the Minister of Communications, Dr Ivy Matsepe-Casaburri, at the *National Colloquium on Convergence Policy*, Johannesburg, 15 July 2003. Pretoria: Republic of South Africa, Department of Communications. http://www.info.gov.za/speeches/2003/03071609461002.htm (accessed 11 November 2003).

Matsepe-Casaburri, I. 2003b. Address by the Minister of Communications, Dr Ivy Matsepe-Casaburri, at the session on SADC economic growth through regional integration: Role of government – policy and legislation – South Africa case, at the *SADC Communications Investment Forum*, Maputo, March 2003. Pretoria: Republic of South Africa, Department of Communications. http://www.info.gov.za/speeches/2003/03031209461008.htm (accessed 11 November 2003).

Matsepe-Casaburri, I. 2003c. Remarks by the Minister of Communications, Dr Ivy Matsepe-Casaburri, at the pre-budget vote media briefing of the Department of Communications, 29 May 2003. Cape Town: Republic of South Africa, Department of Communications. http://www.info.gov.za/speeches/2003/03053010461002.htm (accessed 11 November 2003).

Matsepe-Casaburri, I. 2003d. Extension of closing date for USALs. General Notice 1924/2003 *Government Gazette* 25113, 18 June 2003. Johannesburg: Republic of South Africa, Independent Communications Authority of South Africa. http://www.icasa.org.za/Repository/resources/Events&%20Publications/Publications/Government%20Gazzettes/GG%2025113%20Extension%20of%20Closing%20date%20for%20USAL.pdf (accessed 11 November 2003).

Matsepe-Casaburri, I. 2002a. Schedule. General Notice 276/2002 *Government Gazette* 23164, 21 February 2002. Pretoria: Republic of South Africa, Department of Communications.

Matsepe-Casaburri, I. 2002b. Invitation to apply for under-serviced area licenses. *Government Gazette* 24204, 19 December 2002. Pretoria: Republic of South Africa, Department of Communications. http://www.icasa.org.za/Repository/resources/Events&%20Publications/Publications/Government%20Gazzettes/GG%2024204%20USAL%20%20ITA.pdf (accessed 1 June 2002).

Matsepe-Casaburri, I. 2001a. Public Invitation to lodge written representations in relation to intended telecommunications policy directions to be issued by the Minister of Communications. General Notice 274/2001 *Government Gazette* 22169, 23 March 2001. Pretoria: Republic of South Africa, Department of Communications. Available: http://www.info.gov.za/view/DownloadFileAction?id=65717 (accessed 1 June 2002).

Matsepe-Casaburri, I. 2001b. Policy directions issued by the Minister of Communications. General Notice 1756/2001 *Government Gazette* 22503, 23 July 2001. Pretoria: Republic of South Africa, Department of Communications. http://www.info.gov.za/view/DownloadFileAction?id=65807 (accessed 1 June 2002).

Matsepe-Casaburri, I. 2001c. Policy directions. General Notice 791/2001 Government Gazette 22603, 21 August 2001 as amended by General Notice 652/2002 *Government Gazette* 23372, 26 April 2002. Pretoria: Republic of South Africa, Department of Communications. www.info.gov.za/gazette/notices/2001/22603.pdf (accessed 1 June 2002).

Matsepe-Casaburri, I. 2001d. Policy directions statement, 26 July 2001. Pretoria: Republic of South Africa, Department of Communications. www.info.gov.za/speeches/2001/010727145p1004.htm (accessed 1 June 2002).

Matsepe-Casaburri, I. 2001e. Address by the Minister of Communications, Dr Ivy Matsepe-Casaburri, at the Second National Telecommunications Colloquium, February 2001. Pretoria: Republic of South Africa, Department of Communications. http://www.info.gov.za/speeches/2001/010309945a1001.htm (accessed 7 December 2013).

Matsepe-Casaburri, I. 2001f. Determination of under serviced areas. General Notice 1389/2001 *Government Gazette* 22954, 18 December 2001. Pretoria: Republic of South Africa, Department of Communications. http://www.icasa.org.za/Repository/resources/Events&%20Publications/Publications/Government%20Gazzettes/GG%2022954%20Notice%201389%20of%2018%20December%202001.pdf (accessed 1 June 2002).

Matsepe-Casaburri, I. 2001g. Statement by the Minister of Communications, Dry Ivy Matsepe-Casaburri, during the Parliamentary media briefing, Cape Town, 11 September 2011. Pretoria: Republic of South Africa, Department of Communications. http://www.info.gov.za/speeches/2001/010911322p1001.htm (accessed 1 June 2002).

Matsepe-Casaburri, I. 2000. Statement on behalf of the Communications Minister, Dr Ivy Matsepe-Casaburri, on the proclamation by the President of the Independent Communications Authority of South Africa Act, 11 May 2000. Pretoria: Republic of South Africa, Department of Communications. http://www.info.gov.za/speeches/2000/000512955a1001.htm (accessed 1 June 2002).

Mawson, N. 2013a. Telkom shares slide to new low. *IT Web*, 25 March 2013. http://www.itweb.co.za/index.php?option=com_content&view=article&id=62710 (accessed 31 March 2013).

Mawson, N. 2013b. All change at Telkom. *iWeek*, 5 June 2013. http://www.iweek.co.za/on-the-cover/all-change-at-telkom (accessed 27 December 2013).

Mawson, N. 2012a. Bill strips ICASA of power. *Moneyweb*, 12 December 2012. http://www.moneyweb.co.za/moneyweb-south-africa/bill-strips-icasa-of-power (accessed 27 March 2013).

Mawson, N. 2012b. Boost for flagging electronics sector. *IT Web*, 1 August 2012. http://www.itweb.co.za/index.php?option=com_content&view=article&id=57346 (accessed 27 March 2013).

Mawson, N & Tubbs, B. 2012. Neotel comes of age: SNO rapidly gaining market share. *iWeek*, 5 December 2012. http://www.itweb.co.za/index.php?option=com_content&view=article&id=60636 (accessed 27 March 2013).

Mayanja, M, Acevedo, M, Caicedo, S & Bure, C. (eds). 2013. *A guidebook for managing telecentre networks.* San Francisco: Wikibook. http://en.wikibooks.org/wiki/A_Guidebook_for_Managing_Telecentre_Networks

Mazzocchi, M. 2008. *Statistics for marketing and consumer research*. Singapore: Sage Publications. http://www.sagepub.com/upm-data/25069_5068_Mazzocchi_Ch05.pdf (accessed 13 August 2013).

Mbeki, T. 2005. Address of the President of South Africa, Thabo Mbeki, at the second joint sitting of the third democratic Parliament, 11 February 2005. Cape Town: Republic of South Africa, the Presidency. http://www.info.gov.za/speeches/2005/05021110501001.htm (accessed 12 December 2013).

Mbeki, T. 2004. State of the nation address of the President of South Africa, Thabo Mbeki, to the joint sitting of the Houses of Parliament, 6 February 2004. Cape Town: Republic of South Africa, the Presidency. http://www.dfa.gov.za/docs/speeches/2004/mbek0206.htm (accessed 21 January 2005).

Mbeki, T. 2003b. State of the nation address of the President of South Africa, Thabo Mbeki, to the joint sitting of the Houses of Parliament, 14 February 2003. Cape Town: Republic of South Africa, the Presidency. www.southafrica-newyork.net/pmun/speeches/sna2003.htm (accessed 21 January 2005).

Mbeki, T. 2002. State of the nation address of the President of South Africa, Thabo Mbeki, to the joint sitting of the Houses of Parliament, 8 February 2002. Cape Town: Republic of South Africa, the Presidency. www.dme.gov.za/newscentre/speeches/speech20020211_01.pdf (accessed 21 January 2005).

McLeod, D. 2013a. Telkom: Vodacom sale 'a big mistake'. *TechCentral*, 25 November 2013. http://www.techcentral.co.za/telkom-sheds-more-fixed-lines/41111/ (accessed 27 December 2013).

McLeod, D. 2013b. Telkom sheds more fixed lines. *TechCentral*, 14 June 2013. http://www.techcentral.co.za/telkom-sheds-more-fixed-lines/41111/ (accessed 16 December 2013).

McLeod, D. 2013c. Cell C, Mirage Telecom to launch MVNE platform. *TechCentral*, 28 November 2013. http://www.techcentral.co.za/cell-c-mirage-telecom-to-mvne-platform/45320/ (accessed 16 December 2013).

McLeod, D. 2012a. Recipe for failure. *Financial Mail*. 27 April 2012, 14.

McLeod, D. 2012b. Just think about it. *Financial Mail*. 4 May 2012, 15.

McLeod, D. 2012c. Pule calls for full ICT policy review. *TechCentral,* 19 April 2012. http://www.techcentral.co.za/pule-calls-for-full-ict-policy-review/31148/ (accessed 5 May 2013).

McLeod, D. 2012d. Building broadband. *Financial Mail,* 16-21 November 2012

McLeod, D. 2005a. Pricey, pricier, priciest. . . . *Financial Mail*, 29 April 2005, 40.

McLeod, D. 2005b. Tension in the air. *Financial Mail* 6 May 2005, 14.

McLeod, D. 2005c. Realigning the market. *Financial Mai*l, 2 September 2005, 34-36

McLeod, D. 2005d. Hung up on red tape. *Financial Mail*, 21 January 2005, 34-36

McLeod, D. 2005e. Leave us to get on with growth. *Financial Mail,* 25 March 2005, 35-36.

McLuhan, M. 1964. *Understanding media: The extensions of man.* Toronto: McGraw-Hill.

McLuhan, M. 1962. *The Gutenberg galaxy: The making of typographic man*. Toronto: University of Toronto Press.

MCMC. 2012. Universal to broadband Malaysia: Regulating broadband in the era of convergence. *ITU-TRAI International Training Program*, Hyderabad, India, April 2012. http://www.itu.int/ITU-D/asp/CMS/Events/2012/ITP2012/Malaysia_Presentation.pdf (accessed 2 February 2013).

MCMC. 2010. Universal service provision policy and fund in Malaysia: Evolution of the policy and institutional framework. *Malaysia National Workshop on Rural ICT Development*, 10 May 2010. www.itu.int/ITU-D/asp/.../Malaysia/S2-Mr_Aminuddin_Basiron.pdf (accessed 2 February 2013).

MCMC. 2004a. Universal service provision notification of universal service targets. NT/USP/1/04. Kuala Lumpur: Malaysia Communications and Multimedia Commission.

MCMC. 2004b. Universal service rollout for 16 areas. Kuala Lumpur: Malaysia Communications and Multimedia Commission. http://www.mcmc.gov.my/mcmc/newsdesk/press/ViewPressRelease.asp?cc=7954937 (accessed 8 May 2005).

MCMC. 2003a. A Malaysian experience in USP. Kuala Lumpur: Malaysia Communications and Multimedia Commission.

MCMC. 2003b. Communications and Multimedia (Universal Service Provision) (Amendment) Regulations 2003. *Government Gazette,* 30 October 2003. Kuala Lumpur: Federation of Malaysia.

MCMC. 2002a. Malaysia country report on communications and multimedia regulatory regimes. Kuala Lumpur: Malaysia Communications and Multimedia Commission. http://www.aptsec.org/meetings/2002/forum/default.htm (accessed 23 September 2003).

MCMC. 2002b. *Commission determination on universal service provision: Determination No. 6 of 2002, clause 12*. Kuala Lumpur: Malaysia Communications and Multimedia Commission.

MCMC. 2001a. Report on a public inquiry under Section 55 of the Communications and Multimedia Act, 1998 on a system of universal service provision, 12 March 2001, Section 2.1.14. Kuala Lumpur: Malaysia Communications and Multimedia Commission. http://www.mcmc.gov.my/Admin/FactsAndFigures/PublicEnquiryReport/usp.pdf (accessed 23 September 2003).

MCMC. 2001b. *Commission determination on universal service provision: Determination No 2 of 2001*. Kuala Lumpur: Malaysia Communications and Multimedia Commission.

MCMC. 2000. System of universal service provision: Consultation paper, December 2000. Kuala Lumpur: Malaysia Communications and Multimedia Commission.

Media Monitoring Africa. 2010. Submission to the Department of Communications (DOC) on the ICASA Amendment Bill. Johannesburg: Media Monitoring Africa. http://www.supportpublicbroadcasting.co.za/images/uploads/MMA_ICASA_Amendment_Bill_2010_v2.pdf (accessed 3 March 2011).

Merriam, S. 2009. *Qualitative research: A guide to design and implementation*. San Francisco: Jossey-Bass.

Milne, C. 1998. Stages of universal service policy. *Telecommunications Policy,* 22(9), 775-780). London : Elsevier.

Minges, M. 2002. Multimedia Malaysia: Internet case study. Geneva: International Telecommunication Union. http://www.itu.int/asean2001/reports/material/MYS%20CS.pdf (accessed 6 December 2013).

Mislevy, J & Rupp, A. 2010. Predictive validity. In Salkind, N. (ed.). 2010. *Encyclopedia of research design*. Thousand Oaks: Sage Publications. http://srmo.sagepub.com/view/encyc-of-research-design/n328.xml (accessed 20 April 2014).

Mitomo, H & Tajiri, N. 2010. Provision of universal service and access over IP networks in Japan. *Journal of Telecommunications Policy*, 34(1-2): 98-109, February 2010. New York: Pergamon Press.

Mkize, V. 2014. Cellphone giant drops voice call rate. *The Star*, 17 April 2014, 2.

Mobithinking. 2012. Global mobile statistics 2012. Part F: Mobile payment, NFC, m-commerce, m-ticketing and m-coupons. http://mobithinking.com/mobile-marketing-tools/latest-mobile-stats/f (accessed 17 October 2012).

Mochiko, T. 2013a. Internet-access spending forecast to soar. *Business Day*, 27 September 2013, 14.

Mochiko, T. 2013b. Telkom eyes content to broaden its customer services. *Business Day*, 30 October 2013, 16.

Mochiko, T. 2013c. Icasa issues note on local loop unbundling. *Business Day*, 13 December 2013, 16.

Mochiko, T. 2013d. Spectrum of promise. *Financial Mail*, 29 November – 4 December 2013, 46-47.

Mochiko, T & Vecchiatto, P. 2013. Data dreams inspire R5bn Vodacom talks. *Business Day*, 30 September 2013, 13.

Mody, B & Tsui, L. 1995. The changing role of the state. In Mody, B, Bauer, J & Straubhhar, J. (eds). 1995. *Telecommunications politics: Ownership and control of the information highway in developing countries*, 179-198. New Jersey: Lawrence Erlbaum Associates.

Moses, L. 1987. Graphical methods in statistical analysis. *Annual Review of Public Health*, 1987, 8, 309-353. http://users.monash.edu.au/~damienj/vvv/annurev.pu.08.050187.pdf (accessed 19 August 2013).

Mouton, J. 2001. *How to succeed in your master's and doctorate studies: A South African guide and resource book*. Pretoria: JL Van Schaik.

Msimang, M. 2006. Universal access and universal service. In Thornton, L, Carrim, Y, Mtshaulana, P & Reyburn, P. (eds). 2006. *Telecommunications law in South Africa*, 216-245. http://thornton.co.za/resources/telelaw10.pdf (accessed 12 December 2013).

MTN. 2012a. Annual report, 2012. Johannesburg: MTN Group Limited. http://www.mtn-investor.com/mtn_ar2012/index.php (accessed 8 May 2013).

MTN. 2012b. Direct specials. Johannesburg: MTN Group Limited. http://www.mtnsp.co.za/shop/MTNDirect/Pages/TopDeals.aspx (accessed 18 October 2012).

MTN. 2011. Annual report, 2011. Johannesburg: MTN Group Limited. http://mtn-investor.com/mtn_ar2011/ (accessed 24 July 2012).

MTN. 2006a. Circular to MTN group shareholders, 2006. Johannesburg: MTN Group Limited. www.mtn.com/Investors/Circulars/Circulars/investcom_transaction.pdf (accessed 12 December 2006).

MTN. 2006b. YelloZone payphones. Johannesburg: MTN Group Limited. http://www.mtn.co.za/default.aspx?pid=246903 (accessed 12 December 2006).

MTN. 2006c. Phoneshop applications. Johannesburg: MTN Group Limited. http://www.mtn.co.za/pdfFiles/Phoneshop_Application.pdf (accessed 12 December 2006).

MTN. 2006d. Multimedia Centres. Johannesburg: MTN Group Limited. www.mtn,co.za/deafult.aspx?pid=9726 (accessed 12 December 2006).

MTN. 2004. Interim results presentation, 18 November 2004. Johannesburg: MTN Group Limited. http://www.mtn-investor.com/reporting/interims/interim_2004.pdf (accessed 9 December 2013).

MTN. 1997. Information memorandum for USD 123,000,000 5 year term loan for the network extension of Mobile Telephone Networks (Proprietary) Limited. London: Citigroup Inc., 1997.

Muaz Jalil, M. 2013. *Practical guidelines for conducting research: Summarising good research practice in line with the DCED standard*. London: United Nations, Donor Committee for Enterprise Development. http://www.enterprise-development.org/page/download?id=2133 (accessed 7 August 2013).

Mugabe, D. 2011. Low rates expected to drive Uganda teledensity by 20%. The *New Vision Newspaper*, 6 April 2011. http://www.africa-uganda-business-travel-guide.com/low-call-rates-expected-to-drive-uganda-teledensity-by-20.html (accessed 27 March 2012).

Muller, R. 2013. Telkom continues to bleed fixed line subscribers. *MyBroadband*, 14 June 2013. http://mybroadband.co.za/news/telecoms/80179-telkom-continues-to-bleed-fixed-line-subscribers.html (accessed 16 December 2013).

Muller, R. 2011. New national fibre links go live. *MyBroadband*, 31 May 2011. http://mybroadband.co.za/news/telecoms/25001-new-national-fibre-links-goes-live.html (accessed 27 March 2013).

Muller, R. 2010. ICASA Amendment Bill makes ICASA a tool of Government. *MyBroadband*, 24 July 2010. http://mybroadband.co.za/news/telecoms/14004-icasa-amendment-bill-makes-icasa-a-tool-of-government.html (accessed 27 March 2013).

Muller, R. 2009. SAT-3/SAFE bandwidth capacity tripled. *MyBroadband*, 21 July 2009. http://mybroadband.co.za/news/telecoms/8879-sat-3-safe-bandwidth-capacity-tripled.html (accessed 23 June 2010).

Mulligan, G. 2013. Cell C formally threatens ICASA with legal action. *HumanIPO*, 25 April 2013. http://www.humanipo.com/news/5497/Cell-C-formally-threatens-ICASA-with-legal-action (accessed 7 November 2013).

Mwanza, C. 2005. An end in sight. *Finance Week*, 27 July 2005, 76.

MyBroadband. 2013a. Cell C network problems and growth update. *MyBroadband*, 15 April 2013. http://mybroadband.co.za/news/cellular/74533-cell-c-network-problems-and-growth-update.html (accessed 7 November 2013).

MyBroadband. 2013b. ADSL prices from 2002 to 2013. *MyBroadband*, 22 August 2013. http://mybroadband.co.za/news/adsl/75427-adsl-prices-from-2002-to-2013.html (accessed 7 November 2013).

MyBroadband. 2013c. Census 2011: South Africa's Internet penetration poor. *MyBroadband*, 30 October 2012. http://mybroadband.co.za/news/internet/63444-census-2011-south-africas-internet-penetration-poor.html (accessed 16 December 2013).

MyBroadband. 2011a. Red Bull Mobile launches with aggressive pricing. *MyBroadband*, 8 February 2011. http://mybroadband.co.za/news/cellular/18339-red-bull-mobile-launches-with-aggressive-pricing.html (accessed 9 December 2012).

MyBroadband. 2011b. Red Bull mobile data products launched. *MyBroadband*, 5 September 2011. http://mybroadband.co.za/news/broadband/33274-red-bull-mobile-data-products-launched.html (accessed 7 November 2012).

Navarro, R. 2000. Modernizing the telecommunications sector in Brazil, 2000. www.connect-world.com (accessed 29 May 2006).

Navas-Sabater, J, Dymond, A & Juntunen, N. 2002. *Telecommunications and information services for the poor: Towards a strategy for universal access*. World Bank Discussion Papers Number 432. Washington: World Bank. http://siteresources.worldbank.org/EXTINFORMATIONANDCOMMUNICATIONANDTECHNOLOGIES/Resources/telecoms_for_the_poor.pdf (accessed 4 July 2013).

NBN. 2012. What is the NBN? http://www.nbn.gov.au/about-the-nbn/what-is-the-nbn/ (accessed 13 March 2012).

NBN Exchange. 2014. History. http://www.nbnexchange.com/nbn/index.php/national-broadband/history-bb-nat.html (accessed 18 September 2014).

Neotel. 2014. About us. Johannesburg: Neotel Proprietary Limited. http://www.neotel.co.za/ (accessed 18 September 2014).

NEPAD. 2005a. E-Schools project. Midrand: NEPAD Secretariat. www.nepad.org/2005/news (accessed 24 November 2005).

NEPAD. 2005b. E-school initiative. Midrand: NEPAD Secretariat www.eafricacommission.org/nepad_eschool-initiative.html (accessed 24 November 2005).

Net.work. 2009. MTN and Neotel kickstart collaborative fibre project. *Net.work*, January 2009. http://www.netdotwork.co.za/article.aspx?pklarticleid=5542 (accessed 3 October 2011).

New York Times. 2005. Money is there to aid rural Internet, but loans are hard to get. *New York Times*, 29 November 2005. http://www.nytimes.com/2005/11/29/technology/29broad.html?ei=5088&en=86b70cd8af0ab879&ex=1290920400&partner=rssnyt&emc=rss&pagewanted=all (accessed 25 March 2006).

News. 2005. www.ccng.co.za/news.php?article_type=&article_id=19 (accessed 29 December 2005).

Nkwi, P, Nyamongo, I & Ryan, G. 2001. *Field research into socio-cultural issues: Methodological guidelines.* Yaounde: International Center for Applied Social Sciences, Resarch and Training/UNFPA.

NTT. 2012. About the universal service system. Tokyo: NTT Communications. http://www.ntt.com/univ_e/ (accessed 12 December 2012).

O'Neil, S. 2010. Writing a literature review: A guide for MCom (HRM/IP) students. Pretoria: University of Pretoria, Department of Human Resources Management. http://web.up.ac.za/sitefiles/file/40/1111/2010_Writing%20a%20Lierature%20%20Review_SM%20ONeil.pdf (accessed 8 July 2013).

Ó Siochrú, S. 1996. Telecommunications and universal service: International experience in the context of South African policy reform. Ottawa: International Development Research Centre. http://web.idrc.ca/en/ev-30846-201-1-DO_TOPIC.html (accessed 5 December 2013).

Odendaal, N. 2013. First phase of national fibre-optic network goes live. *Engineering News*, 6 February 2013. http://www.engineeringnews.co.za/article/first-phase-of-national-fibre-optic-network-goes-live-2013-02-06 (accessed 20 March 2013).

Odendaal, N. 2012. Neotel doubles consumer subscribers to 100 000. *Engineering News*, 26 March 2012. http://www.engineeringnews.co.za/article/neotel-doubles-consumer-subscribers-to-100-000-2012-03-26 (accessed 20 March 2013).

OECD. 2012. *Developments in mobile termination*. OECD Digital Economy Papers, No. 193. Paris: OECD Publishing. 10.1787/5k9f97dxnd9r-en (accessed 20 December 2012).

Office of Communications. 2006. Review of the Universal Service Obligation, 14 March 2006. London: Office of Communications. http://www.ofcom.org.uk/consult/condocs/uso/uso_statement/statement.pdf (accessed 25 May 2006).

Oliver, P. 2006. Purposive sampling. In Jupp, V. (ed.). 2006. *Sage dictionary of social research methods.* Thousand Oaks: Sage Publications. http://srmo.sagepub.com/view/the-sage-dictionary-of-social-research-methods/n162.xml (accessed 11 August 2013).

Orb, A, Eisenhauer, L & Wynaden, D. 2000. Ethics in qualitative research. *Journal of Nursing Scholarship*, 33(1), 93-96. Maiden: John Wiley & Sons Inc. http://www.columbia.edu/~mvp19/RMC/M5/QualEthics.pdf (accessed 10 April 2014).

Osiptel. 2004. Presentation to APEC TEL in Singapore. Singapore: Unpublished.

Osiptel. 2006a. Rural telecommunications and universal access in Peru: Fund for Investment in Telecommunications (FITEL). Lima: Osiptel.

Osiptel. 2006b. FITEL strategy for the development of rural telecommunications and universal access in Peru: Fund for Investment in Telecommunications (FITEL). Lima: Osiptel.

Osiptel. 1996. Osiptel and living standards measurement survey. Lima: Osiptel.

Pandor, N. 2006. Address by the Minister of Education, Naledi Pandor, MP, at the opening of a multi-media centre at Langa High School, Cape Town, Monday, 13 March 2006. http://www.info.gov.za/speeches/2006/06031514451002.htm (accessed 5 May 2007).

Parker, F. 2013. Where to next for telecoms in South Africa? *Mail & Guardian*, 11 February 2013. http://mg.co.za/article/2013-02-11-where-to-for-telecoms-in-sa (accessed 6 March 2013).

Parkinson, G & Drislane, R. 2013a. Qualitative research. *Online dictionary of the social sciences*. http://bitbucket.icaap.org/dict.pl (accessed 7 August 2013).

Parkinson, G & Drislane, R. 2013b. Quantitative research. *Online dictionary of the social sciences.* http://bitbucket.icaap.org/dict.pl (accessed 7 August 2013).

Parle, T. 2013. USAL report. Johannesburg: BMI TechKnowledge.

Parsons, J. 1997. Key informant. In Lavrakas, P. (ed). 1997. *Encyclopedia of survey research methods*. Thousand Oaks: Sage Publications. http://srmo.sagepub.com/view/encyclopedia-of-survey-research-methods/n260.xml (accessed 11 August 2013).

Perry, S. 2010. The operators' missing millions. *Brainstorm*, 3 May 2010. http://www.brainstormmag.co.za/index.php?option=com_content&view=article&id=3855&Itemid=0 (accessed 8 May 2013).

Peru. 1994a. *Law 26285*, 12 January 1994. Lima: Republic of Peru.

Peru. 1994b. *Aprueban el Reglamento del Organismo Supervisor de Inversión Privada en Telecomunicaciones- Osiptel, Supreme Decree Number 62-94-PCM, El Eruanao No 5151.* Lima: Republic of Peru.

Petrazzini, B & Clark, T. 1996. Costs and benefits of telecommunications liberalization in developing countries. Paper presented at the *Institute for International Economics Conference on Liberalizing Telecommunications*, January 1996. Washington: Institute for International Economics.

Peyper, L. 2013. Mobile phone usage in SA. *Finweek*, 22 January 2013. http://finweek.com/2013/01/22/mobile-phone-usage-in-sa/ (accessed 9 December 2013).

Phakathi, B. 2013. Midrand is SA's fastest internet suburb. *Business Day*, 5 August 2013, 1.

Phelan, C & Wren, J. 2006. Exploring reliability in academic assessment. Cedar Falls: University of Northern Iowa. http://www.uni.edu/chfasoa/reliabilityandvalidity.htm (accessed 10 August 2013).

PostNet. 2013. About PostNet. Johannesburg: OneLogix Group Limited. http://www.postnet.co.za/index.php?option=com_content&view=article&id=48&Itemid=143 (accessed 8 May 2013).

Pressly, D. 2003. Telkom IPO raises R4.3bn. *Anzani News*, 5 May 2003. http://www.news24.com/AnanziArticle/0,,1518-25_1362700,00.html (accessed 4 March 2006).

Price, I. 2000. Standard deviation. Armidale: University of New England. http://www.une.edu.au/WebStat/unit_materials/c4_descriptive_statistics/standard_deviation.htm (accessed 26 August 2013).

Public Service Commission. 2003. *Evaluation of the national housing subsidy scheme prepared for the Public Service Commission*. Pretoria: Public Service Commission. http://www.wits.ac.za/files/5bfo5_695130001348061684.pdf (accessed 26 December 2013).

Pule, D. 2013. Address by the Honourable Minister of Communications, Ms Dina Pule, on the occasion of the budget vote speech, 21 May 2013. Cape Town: Republic of South Africa, Department of Communications. http://www.info.gov.za/speech/DynamicAction?pageid=461&sid=36607&tid=107525 (accessed 1 July 2013).

Pyramid Research. 2011. Trends for 2012: Africa & Middle East. Boston: Pyramid Research. http://www.lightreading.com/document.asp?doc_id=215576 (accessed 4 January 2013).

Rabkin, F. 2014a. Regulator got its sums wrong, say cellphone giants. *Business Day*, 26 March 2014, 3.

Rabkin, F. 2014a. Court case to shake up cellphone landscape. *Business Day*, 24 March 2014, 1-2.

Rajendran, N. 2001. Dealing with biases in qualitative research: A balancing act for researchers. Tanjong Malim: Universiti Pendidikan Sultan Idris. http://nsrajendran.tripod.com/Papers/Qualconfe2001.pdf (accessed 10 August 2013).

Rauchway, E. 2008. *The great depression and the new deal: A very short introduction.* London: Oxford University Press.

Reck, J & Wood, B. 2003. *What works: Vodacom's community services phones shops. Providing telecommunications to poor communities in South Africa.* Michigan: World Resources Institute. http://pdf.wri.org/dd_vodacom.pdf (accessed 15 December 2013).

Red Bull. 2013. Red Bull. Johannesburg: Red Bull Mobile. http://www.redbullmobile.co.za/ (accessed 4 July 2013).

Reowilaisuk, R, Jhandavimol, A, Prapinmongkolkarn, P & Tadthiemrom, N. 2005. USO in Asia Pacific countries: Case study of Thailand. Paper presented at *APT-World Bank Seminar on Leveraging Private Investment for Rural Development*, July 2005, Chiang Rai, Thailand. http://www.aptsec.org/meetings/2005/ICT-WB/docs/SEM-21-USO%20in%20Asia%20Pacific%20Countries.doc (accessed 2 June 2006).

Research ICT Africa. 2012. *Africa prepaid mobile price index 2012: South Africa*. Cape Town: Research ICT Africa Policy Brief No. 1. http://www.researchictafrica.net/docs/SA_Mobile_Prepaid_policy_brief.pdf (accessed 31 December 2013).

Richards, H & Schwartz, L. 2002. Ethics of qualitative research: are there special issues for health services research? *Family Practice*, 19(2), 135-139. Oxford: Oxford Journals. http://fampra.oxfordjournals.org/content/19/2/135.full (accessed 10 April 2014).

Richardson Jr, J. 2002. Open versus closed ended questions in the reference environment. Los Angeles: University of Southern California. http://polaris.gseis.ucla.edu/jrichardson/dis220/openclosed.htm (accessed 18 September 2014).

Richtel, M. 2009. Providing cellphones for the poor. *New York Times*, 15 June 2009. http://www.nytimes.com/2009/06/15/technology/15cell.html (accessed 16 May 2013).

Riordan, M. 2001. Universal residential telephone service. In Cave, M, Majumdar, S & Vogelsang, I. (eds). 2002. *Handbook of telecommunication economics, Volume 1: Structure, regulation and competition*, 424-470. Amsterdam: Elsevier. http://www.columbia.edu/~mhr21/papers/US-aug-29.pdf (accessed 9 December 2013).

Roetter, M & Parle, T. 2012. Spectrum agency: old wine in new skins? *TechCentral*, 2 August 2012. http://www.techcentral.co.za/spectrum-agency-old-wine-in-new-skins/33923/ (accessed 26 December 2013).

Romao, D. 2002. *Invigoration of rural communities in Brazil: A regional study*. Washington: United States Library of Congress. http://countrystudies.us (accessed 13 August 2005).

Rose, R. 2005. Unions bar PIC sale of Telkom shares. *Business Day*, 26 August 2005, 1. http://allafrica.com/stories/200508260053.html (accessed 2 September 2005).

Rossotto, C, Sekkrat, K & Varoudakis, A. 2003. *Opening up telecommunications to competition and MENA integration in the world economy*. Washington: World Bank. http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/2003/10/21/000090341_20031021133248/Rendered/INDEX/270240PAPER0MNA033.txt (accessed 8 June 2005).

SA History Online. 2013. South Africa constitution 1996. Pretoria: SA History Online. http://www.sahistory.org.za/codesa-negotiations (accessed 5 March 2013).

SabinetLaw. 2011. Draft Electronic Communications Amendment Bill withdrawn. Johannesburg: Centurion: SabinetLaw. http://www.sabinetlaw.co.za/economic-affairs/articles/draft-electronic-communications-amendment-bill-withdrawn (accessed 3 March 2012).

SACF. 2012. About us. Midrand: South Africa Communications Forum. http://www.sacomforum.org.za/index.php?option=com_content&view=article&id=72&Itemid=27 (accessed 3 March 2012).

SADC. 1996. *Protocol on transport, communications and meteorology in the Southern African Development Community*. Gaborone: Southern African Development Community. http://www.sadc.int/documents-publications/show/Protocol_on_Transport_Communications_and_Meteorology_1996.pdf (accessed 7 December 2013).

SAPA. 2013. USAASA corruption allegations to be probed. Johannesburg: South Africa Press Association. http://www.sabc.co.za/news/a/e7af9f80405ec9dd99e4bb1cdd67c642/USAASA-corruption-allegations-to-be-probed (accessed 27 December 2013).

SAT-3/WASC/SAFE. 2014. SAT-3/WASC/SAFE configuration. http://www.safe-sat3.co.za/Configuration/Configuration.asp (accessed 18 September 2014).

Saudi Oger. 2013. Saudi Oger. Riyadh: Saudi Oger Limited. http://www.saudioger.com/business_telecommunication.html (accessed 4 April 2013).

Sawhney, H. 1994. Universal service: Prosaic motives and great ideals. *Journal of Broadcasting and Electronic Media*, Fall 1994, 38(4), 375-395. http://www.tandfonline.com/toc/hbem20/38/4#.UaoAL2ZBsrk (accessed 11 August 2003).

Sawhney, H & Jayakar, K. 1999. Universal service: Migration of metaphors. In Cherry, B, Wildman, S & Hammond, A. (eds). 1999, 15-37. *Making universal service policy: Enhancing the process through multidisciplinary evaluation.* New Jersey: Lawrence Erlbaum Associates.

Schement, J & Forbes, S. 1999. The persistent gap in telecommunications: Toward hypothesis and answers. In Gillett, S & Vogelsang, I. (eds). 1999. *Competition, regulation and convergence: Current trends in telecommunications policy research,* 179-193. New Jersey: Lawrence Erlbaum.

Schement, J. 1998. Telephone penetration at the margins: An analysis of the period following the breakup of AT&T, 1984-1994. In Sawhney, H & Barnett, G. (eds). 1999. *Progress in Communications Sciences, Volume XV: Advances in telecommunications*, 187-215. Stamford: Ablex.

Schymura de Oliveira, L. 2003. Competitive markets required to bridge digital divide: Regulators map 'universal access' route to information and communication technology. ITU Press Release, 9 December 2003. Geneva: International Telecommunication Union. http://www.itu.int/newsarchive/press_releases/2003/33.html (accessed 8 May 2005).

Seacom. 2013. Seacom. Port Louis: Seacom Limited. http://www.seacom.mu/about-us/ownership-structure (accessed 3 March 2013).

Senne, D. 2006a. New beginnings for Gauteng Online. *IT Web*, 20 June 2006. http://www.itweb.co.za/sections/telecoms/2006/0606201200.asp?S=Business&A=BUS&O=FRGN (accessed 3 October 2006).

Senne, D. 2006b. USALs told to stop complaining. *IT Web*, 31 August 2006. http://www.itweb.co.za/sections/search/search.asp (accessed 3 October 2006).

Sentech. 2013. About us. Johannesburg: Sentech Limited. http://www.sentech.co.za/content/about-us (accessed 24 March 2013).

Sentech. 2011. Annual report for the year ended 31 March 2011. Johannesburg: Sentech Limited. https://secure.sentech.co.za/Annual%20Report%202011/2011%20Annual%20Report.pdf (accessed 9 December 2013).

Sentech. 2006. Sentech and provincial educators partner in Gauteng Online project. Johannesburg: Sentech Limited. http://www.sentech.co.za/ (accessed 4 March 2007).

Sentech. 2003. Annual report for the year ended 31 March 2003. Johannesburg: Sentech Limited.

Sharenet. 2013. Telkom. Johannesburg: Sharenet. http://www.sharenet.co.za/v3/chart.php?scode=TKG (accessed 3 March 2013).

Shawgo, K. 2010. Free cell phone service for low-income people doubles monthly minutes. *Grand Rapids Press*, 25 August 2010. http://www.mlive.com/news/grand-rapids/index.ssf/2010/08/free_cell_phone_service_for_lo.html (accessed 6 April 2013).

Shehadi, K. 2004. Competition in telecommunications and the information-based economy. Lebanon: Connexus Consulting. http://webcache.googleusercontent.com/search?q=cache:6IXhtm6D1gQJ:89.108.141.99/Planet_Lebanon_LIBC/presentation/Dr.%2520Kamal%2520Shehadi%2520-%2520Planet%2520Lebanon%2520IT.ppt+&cd=1&hl=en&ct=clnk&gl=ca (accessed 7 December 2013).

Shenton, A. Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information*, 22, 63-75. Amsterdam: IOS Press. http://www.crec.co.uk/docs/Trustworthypaper.pdf (accessed 9 April 2014).

Shinn, M. 2012. Universal service fund plundered to pay USAASA tax bill. Cape Town: The Democratic Alliance. http://www.da.org.za/newsroom.htm?action=view-news-item&id=11485 (accessed 27 December 2013).

Shuttleworth Foundation. 2006. tuXlabs programme. Cape Town: Shuttleworth Foundation. www.tsf.org.za (accessed 12 November 2007).

Sibinda, G. 2008. Regulatory environment analysis in the South African telecommunications industry. *South African Journal of Economics*, 76(2): 212-227.

Sidhu, B. 2010. Making effective use of USP fund. *The Star*, 29 January 2010. http://biz.thestar.com.my/news/story.asp?file=/2010/1/29/business/5572777&sec=business (accessed 4 November 2011).

Silber, M. 2004. Motivation for the establishment of a wireless content industry association. Johannesburg: Wireless Application Service Providers' Association. http://www.waspa.org.za/about/waspa_motivation.pdf (accessed 28 December 2013).

Singleton, R and & Straits, B. 2012. Survey interviewing. In Gubrium, J, Holstein, J, Marvasti, A & McKinney, K. (eds). 2012. *Sage handbook of interview research: The complexity of the craft*. 2nd ed. Thousand Oak: Sage Publications. http://dx.doi.org/10.4135/9781452218403.n6 (accessed 19 August 2013).

Skinner, K. 2010. New bill makes ICASA a tool of government. *Mail & Guardian*, 23 July 2010. http://mg.co.za/print/2010-07-23-nw-bill-makes-icasa-a-tool-of-government (accessed 14 November 2011).

Smit, P. 2011. Cell C sells 50% stake in Virgin Mobile. *Engineering News*, 9 February 2011. http://www.engineeringnews.co.za/article/cell-c-sells-50-virgin-mobile-stake-2011-02-09 (accessed 3 March 2012).

Smit, T. 2005. Confirmed verbally by Asanda Nitisana, an Amatole board member to Tertia Smit. Johannesburg: BMI TechKnowledge.

Smit, T. 2004. *The emerging under serviced areas license market*. Johannesburg: BMI TechKnowledge.

Smith, A. 1776. *Inquiry into the nature and causes of the wealth of nations*. 1st ed. 4 Volumes. London: Adam Smith Institute.

Smith, P & Staple, G. 1994. *Telecommunications sector reform in Asia: Toward a new pragmatism*. World Bank Discussion Papers Number 232. Washington: World Bank. http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/1999/08/15/000009265_3970716144601/Rendered/PDF/multi_page.pdf (accessed 28 March 2014).

Snead, A, Sousa, J & Whyman, T. 2010. South Africa telecoms 2010: High stakes for the big winners. Johannesburg: Delta Partners SIS Proprietary Limited.

Song, S. 2013. African undersea cables. http://manypossibilities.net/african-undersea-cables/ (accessed 26 December 2013).

South Africa. 2013a. Further consultation on the proposed Independent Communications Authority of South Africa Amendment Bill, 2012. General Notice 14/2003 *Government Gazette* 26065, 10 January 2013. Pretoria: Republic of South Africa, Department of Communications. http://www.info.gov.za/view/DownloadFileAction?id=181742 (accessed 4 April 2013).

South Africa. 2013b. *South Africa connect: Creating opportunities, ensuring inclusion. South Africa's broadband policy, 20 November 2013.* General Notice 953/2013 *Government Gazette* 37119, 6 December 2013. Pretoria: Republic of South Africa, Department of Communications. www.gov.za/documents/download.php?f=205142 (accessed 23 December 2013).

South Africa. 2012a. *Electronic Communications Amendment Bill, 2012*. General Notice 572/2012 *Government Gazette* 35525, 18 July 2012. Pretoria: Republic of South Africa, Department of Communications. http://www.doc.gov.za/index.php?option=com_docman&task=doc_view&gid=110 (accessed 14 April 2013).

South Africa. 2012b. Further consultation on the proposed Electronic Communications Amendment Bill, 2012. General Notice 705/2012 *Government Gazette* 35642, 30 August 2012. Pretoria: Republic of South Africa, Department of Communications. http://www.polity.org.za/article/electronic-communication-amendment-bill-2012-further-consultation-on-the-proposed-bill-gazette-no-35642-notice-705-2012-08-30 (accessed 3 April 2014).

South Africa. 2012c. *Independent Communications Authority of South Africa Amendment Bill, 2012.* General Notice 970/2012 *Government Gazette* 35901, 23 November 2012. Pretoria: Republic of South Africa, Department of Communications. http://www.info.gov.za/view/DownloadFileAction?id=179234 (accessed 4 March 2013).

South Africa. 2012d. Minister's media speaking notes: Annual general meeting of Infraco, 3 August 2012. Pretoria: Republic of South Africa, Department of Public Enterprises. http://www.dpe.gov.za/parliamentary-1202 (accessed 27 September 2013).

South Africa. 2012e. Electronic Communications Act (36/2005): Findings on review of universal service and access obligations (USAOs). General Notice 725/2012 *Government Gazette* 35674, 10 September 2012. Pretoria: Republic of South Africa, Department of Communications. http://www.ellipsis.co.za/wp-content/uploads/2011/04/Findings_USAO_Review_GG35674_20120910.pdf (accessed 4 March 2013).

South Africa. 2012f. ICT policy colloquium discussion document: Defining a new era in ICT for all South Africans. General Notice 308/2012 *Government Gazette* 35255, 13 April 2012. Pretoria: Republic of South Africa, Department of Communications. http://www.info.gov.za/view/DownloadFileAction?id=163465 (accessed 3 March 2013).

South Africa. 2011a. *Electronic Communications Amendment Bill.* General Notice 782/2011 *Government Gazette* 34730, 4 November 2011. Pretoria: Republic of South Africa, Department of Communications. http://www.info.gov.za/view/DownloadFileAction?id=154040 (accessed 8 April 2012).

South Africa. 2011b. Withdrawal of the proposed Electronic Communications Amendment Bill issued under the Electronic Communications Act, 2005 (Act Number 36 of 2005). General Notice 978/2011 *Government Gazette* 34774, 23 November 2011. Pretoria: Republic of South Africa, Department of Communications. http://www.info.gov.za/view/DownloadFileAction?id=155090/ (accessed 8 April 2012).

South Africa. 2011c. *National development plan 2030*. Pretoria: Republic of South Africa, Minister in the Presidency: National Planning. http://www.info.gov.za/issues/national-development-plan/index.html (accessed 8 April 2012).

South Africa. 2010a. Policies and policy directions drafted in terms of section 3(1) of the Electronic Communications Act, 2005 (Act Number 36 of 2005): Broadband policy for South Africa. General Notice 617/2010 *Government Gazette* 33377, 13 July 2010. Pretoria: Republic of South Africa, Department of Communications. http://www.info.gov.za/view/DownloadFileAction?id=127922 (accessed 11 November 2011).

South Africa. 2010b. Policies and policy directions drafted in terms of section 3(1) of the Electronic Communications Act, 2005 (Act Number 36 of 2005): Radio frequency spectrum policy for South Africa. General Notice 306/2010 *Government Gazette* 33116, 16 April 2010. Pretoria: Republic of South Africa, Department of Communications. http://www.scribd.com/doc/32278419/South-Africa-National-Radio-Frequency-Spectrum-Policy-2010 (accessed 31 December 2013).

South Africa. 2010c. Independent Communications Authority of South Africa Amendment Bill, 2010. General Notice 650/2010 *Government Gazette* 33324, 25 June 2010. Pretoria: Republic of South Africa, Department of Communications. http://www.info.gov.za/view/DownloadFileAction?id=128401 (accessed 11 November 2011).

South Africa. 2008. *Electronic Communications Amendment Act, 2007 (Number 37 of 2007).* Government Notice 41/2007 *Government Gazette* 30658, 8 January 2008. Pretoria: Republic of South Africa, Department of Communications. http://www.info.gov.za/view/DownloadFileAction?id=77875 (accessed 16 August 2009).

South Africa. 2007. *Broadband Infraco Act, 2007 (Number 33 of 2007). Government Gazette* 25721, 8 January 2008. Cape Town: Republic of South Africa, the Presidency. http://www.info.gov.za/view/DownloadFileAction?id=90062 (accessed 16 August 2009).

South Africa. 2006a. *Independent Communications Authority of South Africa Amendment Act, 2006 (Number 3 of 2006). Government Gazette* 28945, 22 June 2006. Cape Town: Republic of South Africa, the Presidency. http://www.info.gov.za/view/DownloadFileAction?id=67854 (accessed 3 February 2007).

South Africa. 2006b. Statement on publication of the Government's programme of action for 2006. Cape Town: Government Communication and Information System. http://www.info.gov.za/speeches/2006/06040414451002.htm (accessed 3 February 2007).

South Africa. 2006c. *Electronic Communications Act, 2005 (Number 36 of 2005). Government Gazette* 28743, 18 April 2006. Cape Town: Republic of South Africa, the Presidency. http://www.info.gov.za/view/DownloadFileAction?id=67890 (accessed 4 July 2006).

South Africa. 2005a. *Convergence Bill, Number 9 of 2005. Government Gazette* 27294, 16 February 2005. Cape Town: Republic of South Africa. http://www.info.gov.za/view/DownloadFileAction?id=66109 (accessed 4 July 2006).

South Africa. 2005b. Portfolio organisation. Johannesburg: Department of Communications. http://www.doc.gov.za/Sentech.htm (accessed 4 July 2006).

South Africa. 2005c. Statement on cabinet meeting and lekgotla, 21 January 2005. Cape Town: Government Communication and Information System. http://www.info.gov.za/speeches/2005/05012408151001.htm (accessed 4 July 2006).

South Africa. 2005d. *Independent Communications Authority of South Africa Amendment Bill, Number 32 of 2005. Government Gazette* 28050, 20 September 2005. Cape Town: Republic of South Africa. http://www.doc.gov.za/images/Amendment_Bill230905.pdf (accessed 20 December 2005).

South Africa. 2004a. Report of the Portfolio Committee on Communications on budget vote 27 – Communications, 24 August 2004. Cape Town: National Assembly of South Africa, Portfolio Committee on Communications. http://www.pmg.org.za/docs/2003/comreports/040824pccomreport1.htm (accessed 6 May 2005).

South Africa. 2004b. Draft white paper on e-education: Transforming learning and teaching through information and communication technologies (ICTs). General Notice 1869/2004 *Government Gazette* 26734, 26 August 2004. Pretoria: Republic of South Africa, Department of Education. http://www.info.gov.za/view/DownloadFileAction?id=68766 (accessed 6 May 2005).

South Africa. 2003a. Final report of the national convergence policy colloquium, 28 July 2003. Pretoria: Republic of South Africa, Department of Communications. http://www.info.gov.za/otherdocs/2003/convergence.pdf (accessed 5 May 2005).

South Africa. 2003b. Report of the Select Committee on Labour and Public Enterprises on oversight visit to Limpopo, 12 November 2003. Cape Town: National Assembly of South Africa, Select Committee on Labour and Public Enterprises. http://www.pmg.org.za/docs/2003/comreports/031121sclabourereport.htm (accessed 6 May 2005).

South Africa. 2003c. *Broad-Based Black Economic Empowerment Act, 2003 (Number 53 of 2003). Government Gazette* 35899, 9 January 2004. Cape Town: Republic of South Africa, the Presidency. https://www.environment.gov.za/sites/default/files/legislations/bbbee_act.pdf (accessed 6 May 2005).

South Africa. 2002a. *Electronic Communications and Transactions Act, 2002 (Number 25 of 2002). Government Gazette* 23708, 2 August 2001. Cape Town: Republic of South Africa, the Presidency. http://www.businessmasters.co.za/content.php/195-Electronic-Communications-Transactions-Act-25-2002 (accessed 6 May 2005).

South Africa. 2002b. *Regulation of Interception of Communications and Provision of Communication-Related Information Act 2002 (Number 70 of 2002).* Government Notice 122/2002 *Government Gazette* 24286, 22 January 2003. Cape Town: Republic of South Africa, the Presidency. http://www.info.gov.za/gazette/acts/2002/a70-02.pdf (accessed 8 May 2005).

South Africa. 2001a. Statement on cabinet meeting: 14 March 2011. Cape Town: Government Communication and Information System. http://www.info.gov.za/speeches/2001/010315945a1001.htm (accessed 6 May 2005).

South Africa. 2001b. *Telecommunications Amendment Act, 2001 (Number 64 of 2001).* Government Notice 1264/2001 *Government Gazette* 22889, 30 November 2001. Cape Town: Republic of South Africa, the Presidency. http://www.info.gov.za/view/DownloadFileAction?id=68166 (accessed 7 May 2005).

South Africa. 2000. *The Independent Communications Authority of South Africa Act, 2000 (Number 13 of 2000).* Government Notice 462/2000 *Government Gazette* 21154, 5 May 2000. Cape Town: Republic of South Africa, the Presidency. http://www.info.gov.za/view/DownloadFileAction?id=101146 (accessed 8 May 2005).

South Africa. 1999a. *Broadcasting Act, 1999 (Number 4 of 1999), 23 April 1999.* Cape Town: Republic of South Africa, the Presidency. http://www.info.gov.za/view/DownloadFileAction?id=70607 (accessed 8 May 2005).

South Africa. 1999b. *Public Finance Management Act, 1999 (Number 1 of 1999).* Government Notice 282/1999 *Government Gazette* 19814, 2 March 1999. Cape Town: Republic of South Africa, Office of the President. http://www.dod.mil.za/documents/acts/public%20finance%20management%20act.pdf (accessed on 3 March 2005).

South Africa. 1999c. Cabinet memorandum 15 of 1999 dated November 1999. Cited in: http://www.thusong.gov.za/documents/artic_pres/gov_dev_comm.htm (accessed 4 December 2012).

South Africa. 1998a. *Competition Act, 1998 (Number 89 of 1998).* Government Notice 1392/1998 *Government Gazette* 19412 30 October 1998. Cape Town: Republic of South Africa, Office of the President. http://www.info.gov.za/view/DownloadFileAction?id=70747 (accessed 8 May 2005).

South Africa. 1998b. *Postal Services Act, 1998 (Number 124 of 1998).* Government Notice 1554/1998 *Government Gazette* 19540, 2 December 1998. Cape Town: Republic of South Africa, Office of the President. http://www.info.gov.za/view/DownloadFileAction?id=70659 (accessed 7 May 2005).

South Africa. 1998c. *White paper on broadcasting policy*, 4 June 1998. Pretoria: Republic of South Africa, Department of Communications. http://www.polity.org.za/polity/govdocs/white_papers/broadcastingwp.html (accessed 8 May 2005).

South Africa. 1997a. License issued to Telkom SA Limited to provide telecommunication services under section 36 of the Telecommunications Act, 1986. General Notice 768/1997 *Government Gazette*, 7 May 1997. Pretoria: Republic of South Africa, Department of Communications. http://www.icasa.org.za/Repository/resources/Events&%20Publications/Publications/Government%20Gazzettes/G%20G%2017984%20Notice%20768%20of%201997%20.html (accessed 2 November 2005).

South Africa. 1997b. Issue of licence to Vodacom (Pty) Ltd in terms of Section 37(1) and as amended in terms of section 48 of the Telecommunications Act, 1996 (Number 103 of 1996). Pretoria: Independent Communications Authority of South Africa.

South Africa. 1997c. Issue of licence to Mobile Telephone Networks (Pty) Ltd in terms of Section 37(1) and as amended in terms of section 48 of the Telecommunications Act, 1996 (Number 103 of 1996). Pretoria: Independent Communications Authority of South Africa.

South Africa. 1997d. *White paper for social welfare.* Pretoria: Republic of South Africa, Department of Welfare. http://www.info.gov.za/view/DownloadFileAction?id=127937 (accessed 31 December 2013).

South Africa. 1996a. *Sentech Act, 1996 (Number 63 of 1996).* Government Notice1809/1996 *Government Gazette* 17558, 8 November 1996. Cape Town: Republic of South Africa, President's Office. http://www.info.gov.za/view/DownloadFileAction?id=187017 (accessed 2 November 2005).

South Africa. 1996b. *Telecommunications Act, 1996 (Number 103 of 1996*). Government Notice 1869/1996 *Government Gazette* 17581, 15 November 1996. Cape Town: Republic of South Africa, President's Office. http://www.info.gov.za/acts/1996/a103-96.pdf (accessed 6 May 2005).

South Africa. 1996c. *White paper on telecommunications policy.* General Notice 291/1996 *Government Gazette* 16995, 13 March 1996. Pretoria: Ministry of Posts, Telecommunications and Broadcasting. http://www.polity.org.za/polity/govdocs/white_papers/telewp.html (accessed 6 May 2005). (accessed 6 May 2005).

South Africa. 1996d. *Constitution of the Republic of South Africa, 1996 (Number 108 of 1996).* Cape Town: Republic of South Africa, Constitutional Court. http://www.info.gov.za/documents/constitution/index.htm (accessed 6 May 2005).

South Africa. 1996e. *Former States Posts and Telecommunications Reorganisation Act, 1996 (Number 5 of 1996).* Government Notice 488/1996 *Government Gazette* 17053, 22 March 1996. Cape Town: Republic of South Africa, President's Office. http://www.info.gov.za/view/DownloadFileAction?id=70889 (accessed 5 May 2005).

South Africa. 1995. *Green paper on telecommunications policy*. Johannesburg: Republic of South Africa, Ministry of Posts, Telecommunications and Broadcasting. http://www.polity.org.za/polity/govdocs/green_papers/telecomms.html (accessed 20 April 2014).

South Africa. 1993a. *Local Government Transition Act, 1993 (Number 209 of 1993).* Government Notice 187/1993 *Government Gazette* 15468, 2 February 1994. Cape Town: Republic of South Africa, State President's Office. http://www.info.gov.za/view/DownloadFileAction?id=71082 (accessed 5 May 2005).

South Africa. 1993b. Multiparty implementation agreement concluded on 30 September 1993 between the Government of the Republic, the Postmaster-General, Telkom, MTN and Vodacom. General Notice 1078/1993 *Government Gazette* 15232, 29 October 1993. Cape Town: Republic of South Africa.

South Africa. 1993c. *Independent Broadcasting Authority Act, 1993 (Number 153 of 1993).* Cape Town: Republic of South Africa. http://www.info.gov.za/acts/1993/a153-93.pdf (accessed 5 May 2005).

South Africa. 1991. *Post Office Amendment Act, 1991 (Number 85 of 1991).* Government Notice 1345/1991 *Government Gazette* 13310, 19 June 1991. Cape Town: Republic of South Africa, the Presidency. http://www.info.gov.za/view/DynamicAction?pageid=623&myID=256131 (accessed 9 August 2003).

South Africa. 1989. *Legal Succession to the South African Transport Services Act, 1989 (Number 9 of 1989).* Cape Town: Republic of South Africa. http://www.pmg.org.za/files/docs/080610succession.pdf (accessed 9 August 2003).

South Africa. 1987. *Eskom Act, Act Number 40 of 1987*. Cape Town: Republic of South Africa.

South Africa. 1977. *Criminal Procedure Act, 1977 (Number 51 of 1977).* Cape Town: Republic of South Africa. http://www.rtia.co.za/ruploads/criminal-procedure-act-458.pdf (accessed 9 August 2003).

South Africa. 1965. *Arbitration Act, Number 42 of 1965*. Cape Town: Republic of South Africa. http://www.wipo.int/edocs/lexdocs/laws/en/za/za062en.pdf (accessed 9 August 2003).

South Africa. 1958. *Post Office Act, 1958 (Number 44 of 1958).* Cape Town: Republic of South Africa.

South Africa. Department of Communications. 2013. South Africa is set to become connected. *Saturday Star,* 25 May 2013, 21.

South Africa. Department of Communications. 2012a. Broadband Presentation, 6 November 2012. Johannesburg: Republic of South Africa, Department of Communications. http://www.doc.gov.za/index.php?option=com_docman&task=doc_download&gid=173&Itemid=104 (accessed 2 August 2013).

South Africa. Department of Communications. 2012b. E-skills institute. Johannesburg: Republic of South Africa, Department of Communications. http://www.doc.gov.za/index.php?option=com_content&view=article&id=102&Itemid=121 (accessed 20 December 2012).

South Africa. Department of Communications. 2012c. Terms of reference of ICT policy review panel. Johannesburg: Republic of South Africa, Department of Communications. http://www.doc.gov.za/index.php?option=com_docman&task=doc_download&gid=98&Itemid=104 (accessed 13 May 2013).

South Africa. Department of Communications. 2012d. Minister of Communications Ms Dina Pule appoints the ICT policy review panel. Johannesburg: Republic of South Africa, Department of Communications. http://www.doc.gov.za/index.php?option=com_content&view=article&id=182:minister-of-communication-ms-dina-pule-appoints-the-ict-policy-review-panel&catid=41:press-realease&Itemid=66 (accessed 27 March 2013).

South Africa. Department of Communications. 2006a. Budget overview and analysis, 16 March 2006. Johannesburg: Republic of South Africa, Department of Communications.

South Africa. Department of Communications. 2006b. Launch of the Department of Communications (DoC) and Universal Services Agency (USA) INK community digital hub. Press release, 16 May 2006. Johannesburg: Republic of South Africa, Department of Communications. http://www.info.gov.za/speeches/2006/06051710151001.htm (accessed 16 December 2013).

South Africa. Department of Communications. 2005. Extension of a closing date for submission of applications for under serviced area licenses. General Notice 295/2005 *Government Gazette* 27304, 18 February 2005. Pretoria: Republic of South Africa, Department of Communications.

South Africa. Department of Communications. 2004. Media release: National launch of e-school cyberlabs, 24 March 2004. Pretoria: Republic of South Africa, Department of Communications. http://www.info.gov.za/speeches/2004/04032414461002.htm (accessed 30 October 2004).

South Africa. Department of Communications. 2003a. Department of Communications announces the approval of the Convergence Draft Bill by the Cabinet, 3 December 2003. Pretoria: Republic of South Africa, Department of Communications. http://www.info.gov.za/speeches/2003/03120409001003.htm (accessed 7 December 2013).

South Africa. Department of Communications. 2003b. Request for public comments or representations on the draft Convergence Bill. General Notice 3382/2003 *Government Gazette* 25806, 3 December 2003. Pretoria: Republic of South Africa, Department of Communications. http://www.info.gov.za/view/DownloadFileAction?id=66743 (accessed 7 May 2005).

South Africa. Department of Finance. 2000. Parliamentary budget vote no 26 of 2000. In South Africa, Department of Finance. 2000. National expenditure survey 2000. Pretoria: Republic of South Africa, Department of Finance.

South Africa. Department of Public Enterprises. 2005. Khulisa shareholders to reap good investment rewards: 22 February 2005. Pretoria: Republic of South Africa, Department of Public Enterprises. http://www.info.gov.za/speeches/2005/05022408451001.htm (accessed 17 November 2006).

South Africa. Statistics South Africa. 2013. Mid-year population estimates, 2013. Pretoria: Statistics South Africa. http://www.statssa.gov.za/publications/P0302/P03022013.pdf (accessed 19 August 2013).

South Africa. Statistics South Africa. 2011. *Census 2011 results*. Pretoria: Statistics South Africa. http://interactive.statssa.gov.za/superweb/login.doc (accessed 21 May 2013).

South Africa. Statistics South Africa. 2009. *Living conditions of households in South Africa, 2008/2009.* Pretoria: Statistics South Africa. http://www.statssa.gov.za/publications/P0310/P03102008.pdf (accessed 13 June 2010).

South Africa. Statistics South Africa. 1999. *Statistics SA October household surveys, November 1999*. Pretoria: Statistics South Africa.

South Africa. Statistics South Africa. 1996. *People of South Africa: population census 1996*. Pretoria: Statistics South Africa. http://www.statssa.gov.za/census01/Census96/HTML/default.htm (accessed 5 May 2005).

SouthAfrica.info. 2013. SA 5th in Africa for Internet access. SouthAfrica.info, 26 September 2013. http://www.southafrica.info/about/media/broadband-260913.htm#.UqXHnemIrmQ (accessed 9 December 2013).

Speckman, A. 2013a. 8ta brand migrating to Telkom Mobile. *Business Report*, 4 March 2013. http://www.iol.co.za/business/companies/8ta-brand-migrating-to-telkom-mobile-1.1479867#.UZd-AGZBsrk (accessed 27 March 2013).

Speckman, A. 2013b. LTE 'opens up African telecoms markets'. *Business Report*, 14 November 2013, 20.

Speckman, A. 2013c. Cell C holds talks over industry consolidation. *Business Report*, 29 November 2013, 17.

Spector, P. 2004. Response set. In Lewis-Black, M, Bryman, A & Liao, T. (eds.). 2004. *Sage encyclopedia of social science research methods.* Thousand Oaks: Sage Publications. http://srmo.sagepub.com/view/the-sage-encyclopedia-of-social-science-research-methods/n864.xml (accessed 23 December 2013).

St Clair, B. 2011. In Hoehler, J & McHenry, A. 2012. Insights into mobile telecoms in Africa. http://www.slideshare.net/jonhoehler/insights-into-mobile-telecoms-in-africa-by-jonhoehler-andrewmchenry (accessed 27 March 2013).

St Francis Chronicle. 2013. ICASA to be more transparent and accountable. *St Francis Chronicle*, 16 May 2013. http://stfrancischronicle.com/2013/05/16/icasa-to-be-be-more-transparent-and-accountable/ (accessed 1 June 2013).

Statgraphics Centurion. 2013. Exploratory data analysis. Warrington: Statpoint Technologies, Inc. http://www.statgraphics.com/eda.htm#polish (accessed 19 August 2013).

Stavrou, A, Whitehead, S, Wilson, M, Seloane M & Benjamin, P. 2001. Recommendations on the future of the Universal Service Agency. Submission to the Director General, Department of Communications, 6 February 2001. Johannesburg: Universal Service Agency.

Stavrou, A, Benjamin, P, Burton, P & McCarthy C. 2000. *Telecentres 2000 - The way forward.* Johannesburg: Link Centre, University of the Witwatersrand.

Stavrou, A & Mkhize, K. 1998. A telecommunications universal service policy framework for defining categories of needy people in South Africa, April 1998. Johannesburg: South African Telecommunications Regulatory Authority.

Steenkamp, W. 2005. Cellphone cost exorbitant – report. *Saturday Star*, 3 September 2005, 1.

Stout, M. 2013. Preparing public administration scholars for qualitative inquiry: A Status report. *Public Administration Research*, 2(1), 2013, 11-28. Ottawa: Canadian Centre of Science and Education. http://www.ccsenet.org/journal/index.php/par/article/download/26814/16353 (accessed 7 August 2013).

Straubhaar, J, McCormick, P, Bauer J & Campbell C. 1995. Telecommunications restructuring: The experience of eight countries. In Mody, B, Bauer, J & Straubhhar J. (eds). 1995. *Telecommunications politics: Ownership and control of the information highway in developing countries*, 225-244. New Jersey: Laurence Erlbaum Associates.

Submarine Cable Systems. 2014. List of proposed / planned submarine cable systems. Web Enterprise Group. http://www.submarinecablesystems.com/default.asp.pg-CableSystems (accessed 18 September 2014).

Summit Implementation Review Group. 1999. Report of Chile. *16th Meeting of the Summit Implementation Review Group*, Santo Domingo, Dominican Republic, March 8 and 9, 1999. Santo Domingo: Summit Implementation Review Group. http://www.summit-americas.org/SIRG/Telecommunications-XVISIRG.htm (accessed 2 June 2006).

Szabo, A. 2012. The value of free water: Analysing South Africa's free basic water policy. *Financial Systems, Industrial Organization and Economic Development Workshop*, April 2012. Chicago: Consortium on Financial Systems and Poverty. http://www.cfsp.org/publications/working-papers/value-free-water-analyzing-south-africas-free-basic-water-policy#.UJpsHpBBsq0 (accessed 8 May 2013).

Tapscott, D. 1998. *Growing up digital: The rise of the net generation*. New York: McGraw-Hill.

TCA. 2012. Association guide. Tokyo: Telecommunications Carriers Association. http://www.tca.or.jp/english/about_us/org.html (accessed 3 February 2012).

TechCentral. 2010. Cell C tower-deal billions to pay off debt. *TechCentral*, 5 November 2010. http://www.techcentral.co.za/cell-c-tower-deal-billions-to-pay-off-debt/18772/ (accessed 6 January 2011).

Telecommons Development Group. 2000. Rural access to information and communication technologies: The challenge of Africa. Prepared for *African Connection Initiative of the African Connection Secretariat. Department for International Development.* Midrand: African Connection. http://www/unbotswana.org.bw/undp/docs/bhdr2002/rural%20access%20to%20ICT%20the%20challenge%20of%20Africa.pdf (accessed 27 March 2006).

Telecompaper. 2006. ICASA awards underserved area licenses. *Telecompaper*, 15 August 2006. http://www.telecompaper.com/news/icasa-awards-underserved-area-licences (accessed 6 March 2007).

TeleGeography. 2014. Submarine cable landing directory. Washington: PriMetrica, Inc. http://www.telegeography.com/telecom-resources/submarine-cable-landing-directory/index.html#index_S (accessed 18 September 2014).

TeleGeography. 2011a. MTN to boost rural 3G coverage (South Africa). *TeleGeography*, 10 November 2011. Washington: PriMetrica, Inc. http://www.telegeography.com/products/commsupdate/articles/2011/11/10/mtn-to-boost-rural-3g-coverage/ (accessed 15 December 2011).

TeleGeography. 2011b. ACE cable still coming to South Africa; Sentech no longer landing partner. *TeleGeography*, 23 February 2011. Washington: PriMetrica, Inc.

http://www.telegeography.com/products/commsupdate/articles/2011/02/23/ace-cable-still-coming-to-south-africa-sentech-no-longer-landing-partner/ (accessed 22 December 2013).

Telkom. 2013a. Telkom. Johannesburg: Telkom SA Limited. www.telkomsa.net (accessed 4 June 2013)

Telkom. 2013b. Investor relations - business review. Johannesburg: Telkom SA Limited. https://secure1.telkom.co.za/ir/overview/business-review.html (accessed 4 June 2013)

Telkom. 2012a. Group integrated annual report 2012. Johannesburg: Telkom SA Limited. https://secure1.telkom.co.za/apps_static/ir/pdf/financial/pdf/Group%20Review%20of%20the%20Integrated%20report.pdf (accessed 4 June 2013).

Telkom. 2012b. Telkom business. Johannesburg: Telkom SA Limited. http://business.telkom.co.za/enterprise/index.html (accessed 11 November 2012).

Telkom. 2010. SA mobile landscape changes. Johannesburg: Telkom SA Limited. http://www.telkom.co.za/about_us/mediacentre/press_release/articles/2010/article_1027.html (accessed 1 July 2010).

Telkom. 2007. Group annual report 2007. Johannesburg: Telkom SA Limited. https://secure1.telkom.co.za/apps_static/ir/pdf/financial/pdf/telkom_ar_2007.pdf (accessed 9 December 2013).

Telkom. 2005a. Investor relations: company profile. Johannesburg: Telkom SA Limited. http://www.telkom.co.za (accessed 11 February 2005).

Telkom. 2005b. Investor relations. Johannesburg: Telkom SA Limited. http://www.telkom.co.za (accessed 11 February 2005).

Telkom. 2005c. Investor relations: Market context: Regulatory environment: Universal service obligations. Johannesburg: Telkom SA Limited. http://www.telkom.co.za (accessed 11 February 2005).

Telkom. 2004a. Group annual report 2004. Johannesburg: Telkom SA Limited. https://secure1.telkom.co.za/apps_static/ir/.../FINAL-VOD-AR-2004_0.pdf (accessed 13 December 2013).

Telkom. 2004b. Investor relations: Corporate responsibility: Risk factors. Johannesburg: Telkom SA Limited. http://www.telkom.co.za (accessed 6 December 2004).

Telkom. 2004c. Universal service obligations. Johannesburg: Telkom SA Limited. http://www.telkom.co.za (accessed 6 December 2004).

Telkom. 2002a. Europe-Africa-Asia submarine cable launched: Media release, 27 May 2002. Johannesburg: Telkom SA Limited. http://www.itweb.co.za/office/telkom/PressRelease.asp?StoryID=123097 (accessed 11 February 2005).

Telkom. 2002b. Telkom launches commercial trial of ADSL in Gauteng: Media release, 28 August 2002. Johannesburg: Telkom SA Limited. http://www.telkom.co.za/portal/page?_pageid=1460,70364&_dad=portal&_schemaPORTAL&paramURL=/pls/portal/docs/page/IR/news/article_485.jsp (accessed 11 February 2005).

Telkom. 2002c. Group annual report. Johannesburg: Telkom SA Limited. http://globaldocuments.morningstar.com/documentlibrary/document/b3bcb75b300d6420.msdoc (accessed 27 March 2004).

*Telkom South Africa Limited v ICASA, Mandla Langa NO, Wireless Business Solutions (Pty) Ltd and the Minister of Communications* (TPD, 19 March 2001, case no 109014/2000, unreported.

Templin, J. 2011. Introduction to multivariate analysis. Lincoln: University of Nebraska. Advanced multivariate statistical methods. ICPSR Summer Session #2, 18 July 2011. http://jonathantemplin.com/files/multivariate/mv11icpsr/mv11icpsr_lecture01.pdf (accessed 19 August 2013).

TENET. 2013a. The Cape Town TV white space trials. Johannesburg: Tertiary Education and Research Network of South Africa. http://www.tenet.ac.za/tvws (accessed 26 December 2013).

TENET. 2013b. Studies on the use of television white spaces in South Africa: Recommendations and learnings from the Cape Town television white space trial. Cape

Town: Cape Town Trial Partners. http://www.tenet.ac.za/tvws/recommendations-and-learnings-from-the-cape-town-tv-white-spaces-trial (accessed 26 December 2013).

The Star. 2013. South Africans look forward to being able to be connected wherever they are. *The Star*, 23 January 2013, 22.

Thorne, K. 1998. Legal struggles and access to policy open window network, South Africa. Johannesburg: Karen Thorne.

Thornton, L. 2011. Electronic Communications Amendment Bill, 2011. Johannesburg: Lisa Thornton Inc. http://thornton.co.za/ict-law-and-regulation-south-africa-blog/electronic-communications-amendment-bill-2011 (accessed 3 May 2012).

Thornton, L. 2009. Electronic communications regulatory review: Proposed amendments to the Electronic Communications Act. Cape Town: The Edge Institute, Shuttleworth Foundation. http://thornton.co.za/resources/edge-shuttleworth-eca%20reform%20Final.pdf (accessed 22 December 2013).

Thornton, L. 2006. Recommendations on how the USA and other stakeholders might assist USALS to ensure sustainability: A report prepared for the Universal Service Agency. Johannesburg: Universal Service and Access Agency of South Africa. http://thornton.co.za/resources/Lisa%20Thornton%20Final%20Report.pdf (accessed 31 December 2013).

Thusong. 2012. Brief background. Johannesburg: Thusong Service Centre. http://www.thusong.gov.za/about/history/index.html (accessed 11 November 2012).

Timm, S. 2012. Biometric cards to beat social grant fraud. *SouthAfrica.info*, 14 June 2012. http://www.southafrica.info/about/social/grants-140612.htm#.UPMAdmZBvDc (accessed 11 November 2012).

Tissington, K, Detterman, M, Langford M, Dugard, J & Conteh, S. 2008. *Water services fault lines: An assessment of South Africa's water and sanitation provisions across 15 municipalities.* Johannesburg: Centre for Applied Legal Studies. http://www.wits.ac.za/files/resfd5179ffe9b24ecfa4110e1ee24cbb20.pdf (accessed 26 December 2013).

Transtel. 2005a. Profile: History. Johannesburg: Transnet Limited. www.transtel.co.za/whois.shtml (accessed 1 July 2006).

Transtel. 2005b. Profile: Track record. Johannesburg: Transnet Limited. www.transtel.co.za/track_record.shtml (accessed 1 July 2006).

Transtel. 2005c. Profile: Who is Transtel? Johannesburg: Transnet Limited. www.transtel.co.za/transtel_role.shtml (accessed 1 July 2006).

Tukey, J. 1977. *Exploratory data analysis*. Reading, Massachusetts: Addison-Waverley.

Tuttle, B. 2012. How to get Government to cover your cell phone bill(s). *Bloomberg*, 8 February 2012. http://business.time.com/2012/02/08/how-to-get-the-government-to-cover-your-cell-phone-bills/ (accessed 27 March 2013).

UCC. 2005a. Recommendations on proposed review of the telecommunications sector policy, January 2005. Entebbe: Uganda Communications Commission.

UCC. 2005b. Speech by N. John Nasasira, Minister of Works, Transport and Communications, at the signing of the RCDF license agreement between the Government and MTN at the Ministry head offices on Friday, December 16, 2005. Entebbe: Uganda Communications Commission. http://www.ucc.co.ug/news/HON%5B1%5D._NASASIRAA_s_RCDF_SPEECH.doc (accessed 30 May 2006).

UCC. 2004a. *Uganda's approach to universal access and communications development funding: A guidebook for policy makers and regulators*. Ottawa: International Development Research Centre. http://www.idrc.ca/EN/Resources/Publications/Pages/IDRCBookDetails.aspx?PublicationID=331 (accessed 27 December 2013).

UCC. 2004b. *Rural communications development policy for Uganda*. Entebbe: Uganda Communications Commission.

Uganda. 1997. *Uganda Communications Act, 1997 (Number 8 of 1997). Government Gazette* 64. Entebbe: UPPC. http://www.itu.int/ITU-D/ict/webs/ucc/uca1997.pdf (accessed 31 December 2013).

UNECE. 2000. Glossary of terms on statistical data editing. *Conference of European Statisticians Methodological Material*. Geneva: Economic Commission for Europe of the United Nations, 2000.

UNEP. 2008. *Vital water graphics – An overview of the state of the world's fresh and marine waters.* 2nd ed. Nairobi: United Nations Environment Programme. http://www.unep.org/dewa/vitalwater/article138.html (accessed 2 August 2013).

UNISA. 2012. Policy on research ethics 1. Pretoria: University of South Africa. http://www.unisa.ac.za/contents/faculties/service_dept/ice/docs/Ethics%20and%20research_Policy_2012.pdf (accessed 10 April 2014).

United Kingdom. 1984. *Telecommunications Act 1984, Chapter 12 of 1984*. London: Queen's Printer of Acts of Parliament. http://www.legislation.gov.uk/ukpga/1984/12 (accessed 13 September 2008).

United Nations. 2005. *United Nations human development report*. New York: United Nations Development Programme. http://hdr.undp.org (accessed 26 May 2006).

United Nations. 2003. Target 8.F: In cooperation with the private sector, make available benefits of new technologies, especially information and communications. New York: United Nations Development Programme. http://www.un.org/millenniumgoals/global.shtml (accessed 24 January 2005).

United Nations. 2002. *Johannesburg declaration on sustainable development*. New York: United Nations. http://daccessdds.un.org/doc/ (accessed 25 January 2005).

United States of America. 1999. *The United States Senate Committee on Agriculture, Nutrition, and Forestry, 1825-1998*. United States Senate: S. Doc. 105-24. Washington: United States Government Printing Office. http://www.access.gpo.gov/congress/senate/sen_agriculture/ (accessed 22 May 2006).

United States of America. 1996. *Telecommunications Act of 1996, 110 Statute 56*. Washington: United States Government Printing Office. http://www.gpo.gov/fdsys/pkg/PLAW-104publ104/html/PLAW-104publ104.htm (accessed 22 May 2006).

United States of America. 1990. *Americans with Disabilities Act of 1990*, Pub. L. 101-336. Washington: United States Government Printing Office. http://www.usdoj.gov/crt/ada/pubs/ada.txt (accessed 26 May 2006).

United States of America. 1949. *The Telephone Amendment Act*, 63 Stat 948, 7 USC 901-914; 922-924. Washington: United States Government Printing Office.

United States of America. 1936. *1936 Rural Electrification Act, 7* United States Code § 901 et seq. Washington: United States Government Printing Office.

United States of America. 1934. *Communications Act of 1934*, 48 Statute 1064. Washington: United States Government Printing Office.

United States of America. Department of Agriculture. 1982. *A brief history of the rural electric and telephone programs.* Washington: Department of Agriculture, United States Rural Electrification Administration.

United States of America. Department of Commerce. 2006. *The new universal service: A user's guide*. Washington: Department of Commerce, National Telecommunications and Information Administration. http://www.ntia.doc.gov/opadhome/uniserve/univweb.htm (accessed 26 May 2006).

United States of America. Department of Commerce. 1999. *Falling through the net: A survey of the 'have nots' in rural and urban America, July 1999*. Washington: Department of Commerce, National Telecommunications and Information Administration. http://www.ntia.doc.gov/ntiahome/fallingthru.html (accessed 26 May 2006).

United States of America. Department of Commerce. 1997. *Falling through the net: A survey of the 'have nots' in rural and urban America, July 1997*. Washington: Department of Commerce, National Telecommunications and Information Administration. http://www.ntia.doc.gov/ntiahome/fallingthru.html (accessed 26 May 2006).

United States of America. Department of Commerce. 1995. *Falling through the net: A survey of the 'have nots' in rural and urban America, July 1995*. Washington: Department of Commerce, National Telecommunications and Information Administration. http://www.ntia.doc.gov/ntiahome/fallingthru.html (accessed 26 May 2006).

United States of America. National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research. 1979. *Ethical principles and guidelines for the protection of human subjects of research*. Washington: National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research. http://www.hhs.gov/ohrp/humansubjects/guidance/belmont.html (accessed 10 April 2014).

United States of America. Office of Science and Technology Policy. 1991. *Federal policy for the protection of human subjects (model policy).* Washington: Office of Science and Technology Policy. http://www.fda.gov/scienceresearch/specialtopics/runningclinicaltrials/ucm118862.htm (accessed 10 April 2014).

USA. 2007. Annual report 2006-2007. Johannesburg: Universal Service Agency. http://www.pmg.org.za/docs/2007/071109usaasarep.pdf (accessed 17 December 2013).

USA. 2006a. Annual report 2005-2006. Johannesburg: Universal Service Agency.

USA. 2006b. Research. Johannesburg: Universal Service Agency.

USA. 2006c. Universal Service Agency 2006–2009 corporate plan. Johannesburg: Universal Service Agency. www.pmg.org.za/docs/2006/060307usa.do (accessed 16 December 2013).

USA. 2006d. Report on the PC refurbishment centre of the Maluti community digital hub media briefing, 10 February 2006. Johannesburg: Universal Service Agency.

USA. 2006e. Research Department. Johannesburg: Universal Service Agency.

USA. 2006f. Community digital hubs. Johannesburg: Universal Service Agency.

USA. 2006g. Cyberlabs. Johannesburg: Universal Service Agency.

USA. 2006h. CST Study. Johannesburg: Universal Service Agency.

USA. 2005a. Programmes and activities (draft document), 1 November 2005. Johannesburg: Universal Service Agency.

USA. 2005b. Guidelines for applications and awarding of universal ICT access centres. Johannesburg: Universal Service Agency.

USA. 2005c. Budget and annual report presentation 2005/6. Johannesburg: Universal Service Agency.

USA. 2004a. Annual report 2003/2004. Johannesburg: Universal Service Agency.

USA. 2004b. 2004/2005 business plan presentation to the Select Committee, 23 June 2004. Cape Town: Universal Service Agency.

USA. 2004c. Overview of the Universal Service Agency: A discussion paper presented to the *Link Centre / USA Stakeholders Workshop*, 29-30 November 2004. Johannesburg: Universal Service Agency.

USA. 2003a. Notice of draft policy in respect of subsidisation of the under-serviced area licencees by the Universal Service Fund in terms of section 66(f) of the Telecommunications Act (Number 103 of 1996) as amended. General Notice 1570/2003 *Government Gazette* 24917, 27 May 2003. Pretoria: Universal Service Agency. http://www.info.gov.za/view/DownloadFileAction?id=64345 (accessed 4 May 2005).

USA. 2003b. USA report back 2003 presented by Mr Dennis Memela and Phemelo Baholo. Johannesburg: Universal Service Agency. http://www.usa.org.za/conference/presentation/report%20back%20-%20usf%20mandates.doc (accessed 4 May 2005).

USA. 2002. Tender DOC/06/2001/B: Appointment of a consultant to prepare economic and financial reports on the South African ICT markets and specifically the impact of the introduction of digital terrestrial and digital audio broadcasting (Department of Communications). *Government Tender Bulletin* Number 2052, 15 February 2002. Pretoria: Republic of South Africa. http://www.info.gov.za/view/DownloadFileAction?id=69210 (accessed 4 May 2005).

USA. 2001. The voice of telecentre. Official newsletter of the Universal Service Agency, May 2001, Volume 1. Johannesburg: Universal Service Agency.

USA. 1999. Universal access and universal service discussion paper. General Notice 1114/1999 *Government Gazette* 20129, 28 May 1999. Johannesburg: Universal Service Agency. http://www.info.gov.za/view/DownloadFileAction?id=70455 (accessed 3 September 2006).

USA. 1998. Discussion paper on definition of universal service and universal access in telecommunications in South Africa. General Notice 19297/1998 *Government Gazette* 19397, 22 October 1998. Johannesburg: South African Telecommunications Regulatory Authority. http://www.polity.org.za/polity/govdocs/discuss/usa.html (accessed 21 December 2004).

USAASA. 2013a. National strategy on universal service & access – consultative document. Johannesburg: Universal Service and Access Agency of South Africa. http://www.ellipsis.co.za/wp-content/uploads/2013/11/Consultative-Document-on-National-Strategy-signed-1.pdf (accessed 26 December 2013).

USAASA. 2013b. USAASA board resolves to investigate allegations. Johannesburg: Universal Service and Access Agency of South Africa. http://www.usaasa.org.za/export/sites/usaasa/resource-centre/download-centre/downloads/PRESS-RELEASE-June-20-2013.pdf (accessed 27 December 2013).

USAASA. 2013c. USAASA & USAF annual performance report: Presentation to the Portfolio Committee on Communications. Johannesburg: Universal Service and Access Agency of South Africa. http://www.pmg.org.za/files/131015usaasa.ppt (accessed 31 December 2013).

USAASA. 2012a. Annual report 2011-2012. Johannesburg: Universal Service and Access Agency of South Africa. http://www.usaasa.org.za/export/sites/usaasa/resource-centre/download-centre/downloads/USAASA_Annual_Report_2011-12.pdf (accessed 6 June 2013).

USAASA. 2012b. Strategic plan 2012-2105. Johannesburg: Universal Service and Access Agency of South Africa. http://www.usaasa.org.za/export/sites/usaasa/resource-centre/download-centre/downloads/USAASA_Strategic_Plan_2012-2015-_FINAL.pdf (accessed 6 June 2013).

USAASA. 2012c. Projects: Handover project. Johannesburg: Universal Service and Access Agency of South Africa. http://www.usaasa.org.za/usaif/projects.html (accessed 16 December 2013).

USAASA. 2012d. Terms of reference for the appointment of a consultancy firm to assist USAASA to develop the universal service and universal access national strategy. Johannesburg: Universal Service and Access Agency of South Africa. http://www.usaasa.org.za/export/sites/usaasa/tenders/2012/downloads/Development-Universal-Services-and-National-Strategy.pdf (accessed 6 June 2013).

USAASA. 2010. Annual report 2009-2010. Johannesburg: Universal Service and Access Agency of South Africa. http://www.usaasa.org.za/export/sites/usaasa/resource-centre/download-centre/downloads/USAASA_Annual_Report_2009-2010.pdf (accessed 6 June 2013).

USAASA. 2009a. Corporate plan 2009-2014. Johannesburg: Universal Service and Access Agency of South Africa. http://www.usaasa.org.za/export/sites/usaasa/resource-centre/download-centre/downloads/USAASA_Corporate_Plan_2009-2014.pdf/ (accessed 5 March 2012).

USAASA. 2009b. Position paper and recommendations to the Minister of Communications and the Independent Communications Authority of South Africa regarding definitions of universal service, universal access, under-serviced areas and needy persons, 30 April 2009. Johannesburg: Universal Service and Access Agency of South Africa. http://www.usaasa.org.za/export/sites/usaasa/resource-centre/download-centre/downloads/USAASA_Definitions_Position_Paper (accessed 15 December 2013).

USAASA. 2009c. Annual report 2008-2009. Johannesburg: Universal Service and Access Agency of South Africa. http://www.usaasa.org.za/export/sites/usaasa/resource-centre/download-centre/downloads/USAASA_Annual_Report_2008-2009.pdf (accessed 16 December 2013).

USAASAA. 2008. Annual report 2007/2008. Johannesburg: Universal Service and Access Agency of South Africa. http://www.usaasa.org.za/index.php?q=downloadfile,publicationsI20081001093923_usaasaar.pdf (accessed 4 March 2012).

USAC. 2012a. Annual report 2011. Washington: Universal Service Administrative Company. http://www.usac.org/_res/documents/about/pdf/annual-reports/usac-annual-report-2011.pdf (accessed 1 July 2013).

USAC. 2012b. Lifeline. Washington: Universal Service Administrative Company. http://www.usac.org/li/ (accessed 1 July 2013.

Vail, T. 1915. *Views on public questions: A collection of papers and addresses of Theodore Newton Vail, 1907-1917*. Richmond: University of California.

Van der Merwe, C. 2008. Neotel rolls out fibre optics to boost business network's efficiency. *Engineering News*, 4 April 2008. http://www.engineeringnews.co.za/article/neotel-rolls-out-fibre-optics-to-boost-business-network039s-efficiency-2008-04-04 (accessed 20 April 2014).

Vass, P. (ed). 2007. *Regulatory review 2006-2007*. 10th ed. Bath: Centre for the Study of Regulated Industries, University of Bath. http://www.bath.ac.uk/cri/publications/regulatory_reviews.html (accessed 7 December 2013).

Vecchiatto, P. 2006a. Naiveté compounds USALs' problems. *IT Web*, 14 March 2006. http://www.itweb.co.za/sections/telecoms/2006/0603141045.asp?S=IT%20in%20Government&A=ITG&O=S (accessed 3 October 2006).

Vecchiatto, P. 2006b. USALs in deep trouble. *IT Web,* 8 March 2006. http://www.itweb.co.za/sections/telecoms/2006/0603081050.asp?S=IT%20in%20Government&A=ITG&O=S#contacts (accessed 3 October 2006).

Vermeulen, J. 2013. Sentech to give back spectrum. *MyBroadband*, 9 April 2013. http://mybroadband.co.za/news/wireless/75081-sentech-to-give-back-spectrum.html (accessed 14 July 2013).

Vermeulen, J. 2012a. Telkom vs Neotel vs ICASA: 2012 termination rates. *MyBroadband*, 9 July 2012. http://mybroadband.co.za/news/telecoms/54257-telkom-vs-neotel-vs-icasa-2012-termination-rates.html (accessed 14 July 2013).

Vermeulen, J. 2012b. Govt needs to drive broadband penetration: MTN. *BusinessTech*, 15 October 2012. http://businesstech.co.za/news/telecommunications/24254/govt-needs-to-drive-broadband-penetration-mtn/ (accessed 14 July 2013).

Vermeulen, J. 2011. Sentech national wireless broadband plans to serve rural areas. *BusinessTech*, 13 April 2011. http://mybroadband.co.za/news/telecoms/19691-Sentech-rural-wireless-broadband-full-steam-ahead.html (accessed 14 February 2012).

Vodacom. 2013a. About us. Johannesburg: Vodacom Proprietary Limited. www.vodacom.com (accessed 8 May 2013).

Vodacom. 2013b. Consumer. Johannesburg: Vodacom Proprietary Limited. http://www.vodacom.com/com/aboutus/consumer (accessed 8 May 2013).

Vodacom. 2013c. Enterprise. Johannesburg: Vodacom Proprietary Limited. http://www.vodacom.com/com/aboutus/enterprise (accessed 8 May 2013).

Vodacom. 2012a. Vodacom integrated report for the year ended 31 March 2012. Johannesburg: Vodacom Proprietary Limited. http://www.vodacom.co.za/cs/groups/public/documents/document/pocm01-584680.pdf (accessed 8 May 2013).

Vodacom. 2012b. Contract price plans. Johannesburg: Vodacom Proprietary Limited. http://www.vodacom.co.za/personal/phonesandpackages/contractplans (accessed 8 May 2013).

Vodacom. 2012c. Smart plans. Johannesburg: Vodacom Proprietary Limited. http://www.vodacom.co.za/personal/phonesandpackages/smartplans (accessed 8 May 2013).

Vodacom. 2012d. My minutes. Johannesburg: Vodacom Proprietary Limited. http://www.vodacom.co.za/personal/services/stayintouch/stayintouchhomepage/?pageUrl=/personal/services/stayintouch/myminutes (accessed 8 May 2013).

Vodacom. 2010. Group annual report for the year ended 31 March 2010. Johannesburg: Vodacom Proprietary Limited. http://www.vodacom.co.za/cs/groups/public/documents/document/pocm01-584683.pdf (accessed 8 May 2013).

Vodacom. 2005a. About Vodacom: Company information. Johannesburg: Vodacom Proprietary Limited. http://www.vodacom.co.za/about/profile_overview.aspx (accessed 11 November 2005).

Vodacom. 2005b. About Vodacom: Service providers. Johannesburg: Vodacom Proprietary Limited. http://www.vodacom.co.za/outlets/service_providers/smartcall_about.aspx (accessed 11 November 2005).

Vodacom. 2004a. Group interim results for six months ended 30 September 2004. Johannesburg: Vodacom Proprietary Limited. http://www.vodacom.co.za/cs/groups/public/documents/document/pocm01-584855.pdf (accessed 9 December 2013).

Vodacom. 2004b. Vodacom group annual report 2004. Johannesburg: Vodacom Proprietary Limited. https://secure1.telkom.co.za/apps_static/ir/pdf/financial/pdf/FINAL-VOD-AR-2004_0.pdf (accessed 13 December 2013).

Vodafone. 2012. Vodafone Group plc: Backround presentation. London: Vodafone Group plc. http://www.vodafone.com/content/dam/vodafone/investors/factsheet/group_presentation.pdf (accessed 16 December 2013).

Vorster, G. 2012a. SAex cable finance discussions 'well advanced'. *BusinessTech*, 16 January 2012. http://businesstech.co.za/news/telecommunications/1613/saex-cable-finance-discussions-well-advanced/ (accessed 18 September 2014).

Vorster, G. 2012b. WASACE Africa cable set for operation in 2014. *BusinessTech*, 9 May 2012. http://businesstech.co.za/news/telecommunications/11982/wasace-africa-cable-set-for-operation-in-2014/ (accessed 18 September 2014).

Wakabi, W. 2009. Bringing affordable telecommunications services to Uganda: A policy narrative and analysis, September 2009. Melville: Association for Progressive Communications. www.apc.org/en/system/files/CICEWAUganda_20090908.pdf (accessed 15 January 2011).

Wall Street Journal. 2011. How much should people worry about the loss of online privacy? *Wall Street Journal*, 15 November 2011. http://online.wsj.com/article/SB10001424052970204190704577024262567105738.html (accessed 14 April 2012).

Wangchuk, T. 2004. Access and universal service in Bhutan. Paper presented at the *Symposium on Access and the USO*, Hanoi, Vietnam, 2004. Asia Pacific Telecommunity. http://www.aptsec.org/meetings/2004/USO/Session%204-Bhutan_Information%20Document%20on%20USO.doc (accessed 2 June 2006).

Wanjuku, R. 2009. Kenya seeks to learn from Uganda on universal service fund. *Computerworld Kenya*, 10 April 2009. http://www.computerworldzambia.com/articles/2009/04/10/kenya-seeks-learn-uganda-universal-service-fund (accessed 4 August 2011).

WASACE. 2014. This page under construction. http://www.wasace.com/WASACE_Submarine/WASACE_Submarine_Cable_Project.html (accessed 18 September 2014).

WASPA. 2013. About WASPA. Johannesburg: Wireless Application Service Providers' Association. http://www.waspa.org.za/about/index.shtml (accessed 28 December 2013).

Weavind, T. 2013. Telkom boss starts to make waves. *Business Times*, 22 September 2013, 4.

Wellenius, B. 2002. *Closing the gap in access to rural communications: Chile 1995-2002.* World Bank Discussion Papers Number 430. Washington: World Bank. http://siteresources.worldbank.org/EXTINFORMATIONANDCOMMUNICATIONANDTECHNOLOGIES/Resources/closing_the_gap.pdf (accessed 16 December 2013).

Wellenius, B. 2000. Extending telecommunications beyond the market: Toward universal service in competitive environments. In *Public Policy for the Private Sector*, Note No 206, March 2000, 1-12. Washington: World Bank. http://rru.worldbank.org/Documents/PublicPolicyJournal/206welle.pdf (accessed 15 December 2013).

Wellenius, B. 1997. *Extending telecommunications service to rural areas - The Chilean experience: Awarding subsidies through competitive bidding.* Washington: World Bank. https://openknowledge.worldbank.org/handle/10986/11593 (accessed 4 May 2005).

Werksmans. 2007. Electronic Communications Amendment Bill. Johannesburg: Werksmans Attorneys. http://www.werksmans.co.za/live/mobile-innerpage.php?Item_ID=104 (accessed 29 November 2011).

White, J. 2002. *An introduction to telecommunications liberalisation and regulation in South Africa.* Johannesburg: University of the Witwatersrand, Mandela Institute.

Wikipedia. 2013w. Minister of Communications (South Africa). San Francisco: Wikipedia Foundation. http://en.wikipedia.org/wiki/Minister_of_Communications_(South_Africa) (accessed 31 December 2013).

Wilson, C. 2013. Free fibre for businesses. *TechCentral*, 4 February 2013. http://www.techcentral.co.za/free-fibre-for-businesses/37988/ (accessed 16 April 2013).

Wilson, C & McLeod, D. 2011. Gov't under fire over EC Act amendments. *TechCentral*, 11 November 2011. http://www.techcentral.co.za/govt-under-fire-over-ec-act-amendments/27359/ (accessed 16 April 2013).

Wirzenius, A. 2008. Telecommunications universal service in Finland. *Info* 10(5): 107-112. Kotka: Teleplanning A. Wirzenius Limited. http://dx.doi.org/10.1108/14636690810904751 (accessed 8 May 2012).

World Bank. 2013a. Telephone lines (per 100 people). Washington: World Bank. http://data.worldbank.org/indicator/IT.MLT.MAIN.P2 (accessed 27 December 2013).

World Bank. 2013b. Mobile cellular subscriptions (per 100 people). Washington: World Bank. http://data.worldbank.org/indicator/IT.CEL.SETS.P2 (accessed 27 December 2013).

World Bank. 2003. *ICT at a glance, 2003*. Washington: World Bank.

World Population Statistics. 2014. Population of Africa 2014. http://www.worldpopulationstatistics.com/population-of-africa-2014/ (accessed 18 September 2014).

World Summit on Information Society. 2004. Draft WGIG issue paper on affordable and universal access. *World Summit on the Information Society* (WSIS) working group in Internet governance 2004. New York: Internet Governance Forum. http://www.wgig.org/ (accessed 5 May 2006).

World Wide Worx. 2010. Internet access in South Africa 2010. In Hoehler, J & McHenry, A. 2012. Insights into mobile telecoms in Africa. http://www.slideshare.net/jonhoehler/insights-into-mobile-telecoms-in-africa-by-jonhoehler-andrewmchenry (accessed 23 November 2012).

WTO. 1997. *Fourth protocol to the general agreement on trade in services*. Geneva: World Trade Organization: http://www.wto.org/english/tratop_e/serv_e/4prote_e.htm (accessed 4 May 2006).

WTO. 1996. *Negotiating group on basic telecommunications regulatory reference paper*. Geneva: World Trade Organization. http://www.wto.org/english/tratop_e/serv_e/telecom_e/tel23_e.htm (accessed 4 May 2006).

Zuma, J. 2011. State of the nation address by His Excellency Jacob G Zuma, President of the Republic of South Africa, at the joint sitting of Parliament, Cape Town, 9 February 2012. Cape Town: Republic of South Africa, the Presidency. http://www.info.gov.za/speech/DynamicAction?pageid=461&sid=24980&tid=55960 (accessed 17 March 2012).

Zuma, J. 2010. State of the nation address by His Excellency JG Zuma, President of the Republic of South Africa, at the joint sitting of Parliament, Cape Town, 11 February 2010. Cape Town: Republic of South Africa, the Presidency. http://www.info.gov.za/speeches/2010/10021119051001.html (accessed 17 March 2012).

Zuma, J. 2009. State of the nation address by His Excellency JG Zuma, President of the Republic of South Africa, at the joint sitting of Parliament, Cape Town, 3 June 2009. Cape Town: Republic of South Africa, the Presidency. http://www.info.gov.za/speeches/2010/10021119051001.html (accessed 17 March 2012).

# APPENDIX 1

## INTERVIEW QUESTIONNAIRE

### A. INTERVIEW INFORMATION

| | |
|---|---|
| **Date of Interview** | |
| **Time of Interview** | |
| **Location of Interview** | |

### B. INTERVIEWEE INFORMATION

| | |
|---|---|
| **Name of Organisation** | |
| **Name of Respondent** | |
| **Designation of Respondent** | |
| **Email Address** | |
| **Telephone Number** | |
| **Fax Number** | |
| **Cell Phone Number** | |

### C. BACKGROUND TO INTERVIEW

This interview relates to the realisation of universal service and universal access in the communications market in South Africa.

The term ‘universal service’ does not mean ‘one phone in every house in South Africa.’ For the purpose of this interview, the term ‘universal service’ comprises three principal elements:

(a) the *availability* of communications services;
(b) the *accessibility* of communications services; and
(c) the *affordability* of communications services.

The test of universal service is therefore the degree of the availability, accessibility and affordability of communications services in South Africa.

The term 'universal access' relates specifically to the ability of South Africans to access communications services. For the purposes of this interview, universal access is viewed as part of universal service.

## D. STRUCTURE OF INTERVIEW

The interview is divided into two parts.

The first part of the interview deals with the history and current standing of universal service in South Africa's communications market. It asks you to rate the performance of specific policies, programs and actors related to the realisation of universal service in the country. Some of the questions require you to give a rating at the beginning of a question and then explain your rating in subsequent questions.

The second part is an unstructured interview where we would like to exchange some ideas and get some feedback about new policies and programs that are being considered to help improve universal service and universal access to communications services in South Africa.

## E. QUESTIONS

### 1. General Views on Universal Service in South Africa

This section requires you to provide a rating before you provide a detailed answer. Please answer using a scale of 1 to 10 where 10 is highly successful and 1 is not successful at all.

1.1 Rate the success of the South African Government in realising universal service (1 to 10)?

1.2 Break down your answer into each of the three elements of universal service:

1.2.1 Availability (1 to 10)

1.2.2 Accessibility (1 to 10)

1.2.3 Affordability (1 to 10)

1.3 Explain your answer with general comments regarding the ratings:

1.3.1 Areas of clear success

1.3.2 Areas of partial success

1.3.3 Areas of clear failure

1.4 What were the major reasons for any successes or failures?

**2. Goals of Universal Service in South Africa**

This section requires you to provide a rating before you provide a detailed answer. Please answer using a scale of 1 to 10 where 10 is highly successful and 1 is not successful at all.

2.1 How well has the Government of South Africa defined the goals of universal service? (1 to 10)?

2.2 Explain your answer with general comments regarding the ratings:

2.2.1 Areas of clear success

2.2.2 Areas of partial success

2.2.3 Areas of clear failure

2.3 What were the major reasons for any successes or failures?

2.4 What should be South Africa’s universal service goals?

2.5 What kind of benchmarks, if any, should South Africa measure itself against in terms of realising universal service?

**3. Universal Service Policies**

This section requires you to provide a rating before you provide a detailed answer. Please answer using a scale of 1 to 10 where 10 is highly successful and 1 is not successful at all.

3.1 Rate the success of the Government of South Africa's policy of requiring operators to implement universal service and/or community service obligations (1 to 10)?

3.2 Break down your answer by key operator:

3.2.1 Telkom (1 to 10)

3.2.2 Vodacom (1 to 10)

3.2.3 MTN (1 to 10)

3.2.4 Cell C (1 to 10)

3.3 Explain your answer with general comments regarding the ratings:

3.3.1 Areas of clear success

3.3.2 Areas of partial success

3.3.3 Areas of clear failure

3.4 What were the major reasons for any successes or failures?

3.5 Do you see any continuing need for universal service obligations or community service obligations? If so, why and in what form?

**4. Universal Service and Access Fund**

This section requires you to provide a rating before you provide a detailed answer. Please answer using a scale of 1 to 10 where 10 is highly successful and 1 is not successful at all.

4.1 Rate the success of the Universal Service Fund / Universal Service and Access Fund in implementing its mandate (1 to 10)?

4.2 Break down your answer by key area:

4.2.1 Quantum of the levy (1 to 10)

4.2.2 Application of funds (1 to 10)

4.3. Explain your answer with general comments regarding the ratings:

4.3.1 Areas of clear success

4.3.2 Areas of partial success

4.3.3 Areas of clear failure

4.4 What were the major reasons for any successes or failures?

4.5 What do you think about the current structure of the Fund?

4.6 Do you see any continuing need for a separate Fund? If so, why and in what form?

**5. Universal Service and Access Agency of South Africa**

This section requires you to provide a rating before you provide a detailed answer. Please answer using a scale of 1 to 10 where 10 is highly successful and 1 is not successful at all.

5.1 Rate the success of the Universal Service Agency / Universal Service and Access Agency of South Africa in implementing its mandate (1 to 10)?

5.2 Break down your answer by key areas:

5.2.1 Enabling function (1 to 10)

5.2.2 Advisory function (1 to 10)

5.2.3 Monitoring function (1 to 10)

5.2.4 Administrative function (1 to 10)

5.3 Explain your answer with general comments regarding the ratings:

5.3.1 Areas of clear success

5.3.2 Areas of partial success

5.3.3 Areas of clear failure

5.4 What were the major reasons for any successes or failures?

5.5 What do you think about the current mandate of the USAASA?

5.6 What do you think about the current structure of the USAASA?

5.7 Do you see any continuing need for a separate Agency? If so, why and in what form?

**6. Universal Service Agency / Universal Service and Access Agency Programs**

**6.1 Telecentre Program**

6.1.1 Rate the success of the Telecentre Program (1 to 10)?

6.1.2 Explain your answer with general comments regarding the rating:

6.1.2.1 Areas of clear success

6.1.2.2 Areas of partial success

6.1.2.3 Areas of clear failure

6.1.3 What were the major reasons for any successes or failures?

6.1.4 Do you see any continuing need for such telecentres? If so, why and in what form?

**6.2 Multi-Purpose Community Centres**

6.2.1 Rate the success of the Multi-Purpose Community Centres (1 to 10)?

6.2.2 Explain your answer with general comments regarding the rating:

6.2.2.1 Areas of clear success

6.2.2.2 Areas of partial success

6.2.2.3 Areas of clear failure

6.2.3 What were the major reasons for any successes or failures?

6.2.4 Do you see any continuing need for such centres? If so, why and in what form?

**6.3 Cyberlab Program**

6.3.1 Rate the success of the Cyberlab Program (1 to 10)?

6.3.2 Explain your answer with general comments regarding the rating:

6.3.2.1 Areas of clear success

6.3.2.2 Areas of partial success

6.3.2.3 Areas of clear failure

6.3.3 What were the major reasons for any successes or failures?

6.3.4 Do you see any continuing need for such cyberlabs? If so, why and in what form?

**6.4 Public Information Terminal (PIT) Program**

6.4.1 Rate the success of the Public Information Terminal Program (1 to 10)?

6.4.2 Explain your answer with general comments regarding the rating:

6.4.2.1 Areas of clear success

6.4.2.2 Areas of partial success

6.4.2.3 Areas of clear failure

6.4.3 What were the major reasons for any successes or failures?

6.4.4 Do you see any continuing need for such terminals? If so, why and in what form?

**7. Under Serviced Area Licenses**

This section requires you to provide a rating before you provide a detailed answer. Please answer using a scale of 1 to 10 where 10 is highly successful and 1 is not successful at all.

7.1 Rate the success of the Under Serviced Area Licenses Program in implementing its mandate (1 to 10)?

7.2 Explain your answer with general comments regarding the ratings:

7.2.1 Areas of clear success

7.2.2 Areas of partial success

7.2.3 Areas of clear failure

7.3 What were the major reasons for any successes or failures?

7.4 What do you think about the current structure of the USAL regime?

7.5 Do you see any need to change any aspects of the USAL regime? If so, why and in what form?

**8. Roles of Key Policy Makers**

This section requires you to provide a rating before you provide a detailed answer. Please answer using a scale of 1 to 10 where 10 is highly successful and 1 is not successful at all.

**8.1 Minister of Communications**

8.1.1 Rate the success of the Minister of Communications in crafting universal service policy (1 to 10)?

8.1.2 Explain your answer with general comments regarding the rating:

8.1.2.1 Areas of clear success

8.1.2.2 Areas of partial success

8.1.2.3 Areas of clear failure

8.1.3 What were the major reasons for any successes or failures?

8.1.4 What should be the Minister of Communication's role be in realising universal service?

8.1.5 Does the Minister of Communications have too much influence over the USAASA in realising universal service? If so, how would you resolve this situation?

8.1.6 Does the Minister of Communications have too much influence over ICASA in realising universal service? If so, how would you resolve this situation?

## 8.2 ICASA

8.2.1 Rate the success of ICASA in implementing universal service (1 to 10)?

8.2.2 Explain your answer with general comments regarding the rating:

8.2.2.1 Areas of clear success

8.2.2.2 Areas of partial success

8.2.2.3 Areas of clear failure

8.2.3 What were the major reasons for any successes or failures?

8.2.4 What should be ICASA's ideal role in realising universal service?

8.2.5 Do you think there is any overlap between ICASA and the USAASA in realising universal service? If so, how would you resolve such overlap?

# APPENDIX 2

## COLLATION OF ANSWERS TO THE CLOSED-ENDED QUESTIONS OF THE INTERVIEW QUESTIONNAIRE

**Table A2.1: Answers to closed-ended questions of the questionnaire**

| **25 total questions in 8 key areas of interest<br>1 = not successful<br>10 = highly successful** | | | **ISPA** | **Vodacom** | **Telkom** | **ICASA** | **USAASA** | **DOC** |
|---|---|---|---|---|---|---|---|---|
| 1 | | **General views on universal service in South Africa** | | | | | | |
| 1.1 | | Rate the success of the South African Government in realising universal service? | | | | | | |
| | | Answers | 3.5 | 7.5 | 3 | 6 | 6 | 4 |
| 1.2 | | Break down your answer into each of the three elements of universal service: | | | | | | |
| 1.2.1 | | Availability | 3 | 8.5 | 3 | 5 | 5 | 6 |
| 1.2.2 | | Accessibility | 4 | 8 | 3 | 8 | 6 | 4 |
| 1.2.3 | | Affordability | 3.5 | 6 | 2 | 4 | 3 | 2 |
| 2 | | **Goals of universal service in South Africa** | | | | | | |
| 2.1 | | How well has the Government of South Africa defined the goals of universal service? | | | | | | |
| | | Answers | 7 | 4 | 4 | 7 | 5 | 9.5 |
| 3 | | **Universal service policies** | | | | | | |
| 3.1 | | Rate the success of the Government of South Africa's policy of requiring operators to implement universal service and/or community service obligations? | | | | | | |
| | | Answers | 3 | 8 | 1 | 9 | 3 | 9 |
| 3.2 | | Break down your answer by each key operator: | | | | | | |
| 3.2.1 | | Telkom | 2 | 7 | 10 | 4 | 3 | 7.5 |
| 3.2.2 | | Vodacom | 4.5 | 8.5 | 5 | 9 | 3 | 7.5 |
| 3.2.3 | | MTN | 4.5 | 8.5 | 5 | 9 | 3 | 7.5 |
| 3.2.4 | | Cell C | 4.5 | 8.5 | 5 | 9 | 3 | 7.5 |
| 4 | | **Universal Service / Universal Service and Access Fund** | | | | | | |
| 4.1 | | Rate the success of the USF / USAF in implementing its mandate? | | | | | | |
| | | Answers | 1 | 2 | 1 | 4 | 2 | 6 |
| 4.2 | | Break down your answer by key area: | | | | | | |
| 4.2.1 | | Quantum of USF / USAF levy | 1 | 2 | 1 | 4 | 2 | 6 |
| 4.2.2 | | Application of funds | 1 | 1 | 2 | 2 | 3 | 4 |

| Table A2.1, continued: Answers to closed-ended questions of the questionnaire | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **25 total questions in 8 key areas of interest<br>1 = not successful<br>10 = highly successful** | | | **ISPA** | **Vodacom** | **Telkom** | **ICASA** | **USAASA** | **DOC** |
| 5 | | **Universal Service Agency / Universal Service and Access Agency of South Africa** | | | | | | |
| 5.1 | | Rate the success of the USA / USAASA in implementing its mandate? | | | | | | |
| | | Answer | 1 | 4 | 2 | 5 | 4 | 4 |
| 5.2 | | Break down your answer by key area: | | | | | | |
| 5.2.1 | | Enabling function | 4 | 4 | 1 | 6 | 3 | 4 |
| 5.2.2 | | Advisory function | 4 | 4 | 1 | 5 | 4 | 4 |
| 5.2.3 | | Monitoring function | 1 | 4 | 1 | 3 | 3 | 4 |
| 5.2.4 | | Administration function | 1 | 4 | 2 | 5 | 3 | 4 |
| 6 | | **Universal Service Agency / Universal Service and Access Agency Programs** | | | | | | |
| 6.1 | | Rate the success of the Telecentre program? | | | | | | |
| | | Answer | 1 | 3 | 2 | 6 | 5 | 4 |
| 6.2 | | Rate the success of the Multi-Purpose Community Centres? | | | | | | |
| | | Answer | 2 | 4 | 4 | 5.5 | 5 | 6 |
| 6.3 | | Rate the success of the Cyberlab program? | | | | | | |
| | | Answer | 2 | 2 | 4 | 5 | 5 | 6 |
| 6.4 | | Rate the success of the Public Information Terminal program? | | | | | | |
| | | Answer | 4.5 | 4 | 2 | 4 | 5 | 3 |
| 7 | | **Under serviced area licenses** | | | | | | |
| 7.1 | | Rate the success of the under serviced area licenses program? | | | | | | |
| | | Answer | 1 | 3 | 1 | 5 | 3 | 5 |
| 8 | | **Roles of key policy makers** | | | | | | |
| 8.1 | | Rate the success of the Minister of Communication in crafting universal service policy? | | | | | | |
| | | Answer | 3.5 | 4 | 4 | 7 | 4 | 6 |
| 8.2 | | Rate the success of ICASA in implementing its mandate? | | | | | | |
| | | Answer | 2.5 | 4 | 4 | 7 | 4 | 6 |

| **Legend** | |
|---|---|
| ISPA | Internet Service Providers' Association |
| ICASA | Independent Communications Authority of South Africa |
| Vodacom | Vodacom Proprietary Limited |
| USA / USAASA | Universal Service Agency / Universal Service and Access Agency of South Africa |
| USF / USAF | Universal Service Fund / Universal Service and Access Fund |
| DoC | Department of Communications, Government of South Africa |
| Telkom | Telkom SA Limited |

Source: Author.

## APPENDIX 3

## REDACTED INTERVIEW NOTES AND TRANSCRIPT OF INTERVIEW WITH A SENIOR REPRESENTATIVE OF THE DEPARTMENT OF COMMUNICATIONS

**Bate** Thank you for meeting with us. The purpose of this interview is to explore universal service and universal access in South Africa.

For the purpose of this interview, the term 'universal service' does not mean 'one phone in every house in South Africa.' For the purpose of this interview, the term 'universal service' comprises three principal elements:

- The availability of communications services;
- The accessibility of communications services; and
- The affordability of communications services.

The test of universal service is therefore the degree of availability, accessibility and affordability of communications services in South Africa. The term 'universal access' relates specifically to the ability of South Africans to access communications services. For the purposes of this interview, universal access is viewed as one of the three elements of universal service. Do you understand?

**Senior Representative** Yes.

**Bate** The interview is divided into two parts. The first part deals with the history and current standing of universal service in South Africa's communications market. The second part deals with some ideas about new universal service policies and programs that are being considered in respect of universal service to communications services in South Africa.

There are two types of questions. The first type of questions requires you to give a specific rating at the beginning of a question. The second type of questions is a more open-ended inquiry that asks for your views on the subject matter of the question.

At all times, I want to make sure you are comfortable with your answers. If you want to stop at any time, just let me know. If you want to take back or rephrase any answer based on any further reflection, just let me know. If you don't want to answer any specific question, just let me know. Is this okay?

**Senior Representative** Yes.

**Bate** I will be using this interview to complete my doctorate in public administration at the University of South Africa. It will be a public document. I also expect to publish a book which will include excerpts from the interview. Are you okay with this?

**Senior Representative** Yes.

**Bate** By participating in this interview, do I have your consent to use your name and anything attributable to you during this interview in my thesis and potentially my book?

**Senior Representative** Yes.

**Bate** Okay, then. To start off the interview, let's get some general views on universal service in South Africa. I am going to ask you a series of questions and ask you to provide a rating as your answer. Please answer using a scale of 0 to 10 where 10 is highly successful and 0 is not successful at all.

Are we okay?

**Senior Representative** Yes.

**Bate** So let's begin with the first question. Rate the success of the South African Government in realising universal service?

**Senior Representative** The South African Government. Maybe 4.

**Bate** Could you briefly explain why you gave them that ranking?

**Senior Representative** With respect to the Government, we don't as yet have a clear and measurable investment of this policy.

We have legislation that talks about the intent, but I think for us to be effective we need to have something that is very clear. Clear roles for people. A clear program with respect to implementation and also with respect to milestones, when you want to reach the target and the instrument you are going to use. So for that reason I think the intent has been there but I don't think that with respect to the establishment of the strategy.

**Bate** Could you please breakdown that answer again into the three main elements of universal services. Availability is a phone in every home either fixed or mobile. Accessibility is access to a phone within 5km. Affordability is self-explanatory. Could you rate each of these elements on the 0 to 10 scale?

**Senior Representative** On availability, I would say 6. Maybe it's thanks to Government policies and other policies, not universal service policy. I think with respect to mobile telephoning there has been quite an explosion in areas that we did not think there would be because of the cost of communications.

For accessibility, I would say 4 overall. But I would like to discuss a little broader than what you have said because there is the issue of distance but also in terms of accessibility there is the issue of accessibility for people with disabilities and so on I would say 2, especially with respect to that. As you know we have quite a large population, especially in the rural and poor areas, where literacy is an issue so accessibility on that point has not been good and again on those two points we have not had policies that address those specific issues. So there I don't think we have done well at all.

**Bate** And affordability?

**Senior Representative** We have not done very well in this area at all. I would say 2.

**Bate** How well would you rank the Government of South African in general on defining the goals of Universal Service on a scale of 0 to 10?

**Senior Representative** On defining goals, I would say 9 or 10. As a country we have very good policies broadly speaking. I think that there is passion and clarity in terms of that we do want universal services and it is something we feel strongly about.

But whether we have put in place mechanisms for achieving it, I think this is where we have fallen short. So moving from defining goals and policies to actually implementation which I believe is what we have not done.

**Bate** Why did the Government of South Africa struggle so much to actually come up with a concrete definition for universal service and universal access?

**Senior Representative** It's not just South Africa. I think it's a global debate. It is still a debate now because I think within the ITU when we have discussed the issue you often find that it is developing countries that suffer because the current definition of universal service is based on household penetration. I think it is much more appropriate for countries that are more westernised because we say in most developing countries and South Africa is a case in point that you cannot really define it by household because with us one telephone is used by many people than in more westernised countries.

So to find a definition that reflects this reality of most developing countries is what has been the challenge. It is still part of the International debate. So although when defining our goals and achievement and the ranking I have given you, I am using the 10 that is not appropriate for developing countries. We still use them but they are very harsh terms for us and this is the reason why there is an issue of debate. How do you account for the fact that in a community where you have 10 telephones per household, the phone is used by a 1,000 people? So that is really the issue. We have tried to find ways of making it as appropriate to the conditions of developing countries.

I also think that part of the reason why we have struggled is that we have not had resources that are fully developed to finalising the issue.

I would not say that the ITU knowingly has located a person or people to say that for the next six months you will come up with a definition. I think that, with most countries like ourselves, if we have to spend time, if I have to choose between putting staff to define universal service and do something else, I would chose them to do something else.

**Bate** What about this emerging concept of lumping ICT into the definition of universal service so that it becomes Internet connectivity as well as telephoning? How do you feel about that? Making it a much broader definition? Is that a good thing or bad thing?

**Senior Representative** No, we are clear among the advocates that feel that it should be broadened beyond telephoning. In today's world when we talk about ICTs as a tool for social economic development, we don't mean only telephoning. We actually think that radio, television, the Internet are very important tools for social economic development and therefore actually we think that is now the appropriate measure we need to use in the definition.

**Bate** It's very different challenges. You talk about computer literacy, training, capital equipment. Do you think there is a danger if we expand it and we leave the focus on basic telephoning behind it is going to get lost in this rush? Will we forget that some people still don't have telephones or do you think it can be balanced?

**Senior Representative** No, I don't think we have a choice in this case. I think it is something we have to do. It's like saying when we look at this will we forget that people don't have radio when we talk about telephoning. I think these are different technologies and services, all of which are important, but the fact that some are associated with more development of more worlds than others does not make it less important. It is also true that perhaps the computer is more important, maybe the Internet is more important than the telephone, because you can see things, also moving, in colour. You can also communicate. So I think it is just a different way of looking at the tools and how you relate them to social economic development.

I think the challenge is usually, and the nervousness on the part of many governments would then be, if you used in the definition something that is more expensive to provide then it is daunting. You are setting yourself up for failure. But I don't think that is how we should look at things. I think that we should still be objective in terms of the definition of what the universal service is, in terms of its accessibility and availability, but recognise that it is more difficult to provide, it is more expensive to provide but not shy away from the will and commitment to provide.

**Bate** What we are going to do now is look at some of the specific policies that have been used to realise universal service in South Africa. We will start with the Universal Service obligations and community service obligations put on the network operators. On a scale of 0-10 with 0 being unsuccessful and 10 being highly successful, how would you rate the success of that universal service obligations and community service obligation policy? How effective was it in realising its intended goals? Looking at Telkom in terms of their fixed line roll out and the three mobile operators, mostly MTN and Vodacom, in terms of their community service obligations?

**Senior Representative** The implementation I would think 10. But the policy I think I would say around 8, between 7 and 8, so somewhere between 9 and 10 overall.

**Bate** Would you differentiate between Telkom and the mobile operators? Would you differentiate between mobile operators?

**Senior Representative** I think you could use the average. Telkom did not complete its obligations, but it did roll out a lot of lines and it faced a lot of special challenges. MTN, Vodacom and to a lesser extent Cell C have performed well and, for different reasons and based on different circumstances and challenges, I would give them the same score. For mobile, I think that the policies, and especially the actual obligations, that the assumptions underestimated the growth of telecommunications, both in terms of revenue for the companies and the demand.

Had we known that it was not going to be terribly onerous for the companies to do it, we probably would have made them a little bit more difficult. I think many companies did not find it too difficult.

**Bate** Maybe give them proportionate targets instead of fixed targets?

**Senior Representative** Exactly.

**Bate** The USAF. As a financing body, how would you rate its performance since its inception with 0 being unsuccessful and 10 being highly successful, how would you rate its performance?

**Senior Representative** Maybe around 6. I think the Fund is a good thing and it has made certain things possible. However, the way the fund functions is a little bit tricky because, as you know, the Fund is taken to Treasury and then we have to ask for the money from Treasury to do something and, of course, you always need a good plan and a business plan and so on and so forth. From that point of view, that is an issue that has to do with accountability and the money must be spent properly. But it puts the responsibility on the Department and the USAASA to do things that they are not experts or hired for - business plans etc. The funds are needed, but their use is diminished by the onerous . . . .

**Bate** Bureaucracy?

**Senior Representative** Yes. Well, it is difficult to say it is a bad bureaucracy. It's a good bureaucracy because it has to do with accountability of funds, but I think that either we need to employ people whose task in the USAASA is to do that so that if we say we need that within 2 or 3 days they have done a business plan that Treasury will be happy with so relieving the time and using them. But we have been unable to use this fund for the licensing and so forth. But it's a big job.

**Bate** There's a lot of money.

**Senior Representative** Yes, there is a lot of money building up. That is why they are saying we can think more strategically and that in itself is not the problem.

But when you have to think about we need to use this fund for this creates an additional headache to a thousand headaches that you already have. So if there was a way of perfecting that I think that's what I would like.

**Bate** How would you rate the Fund in terms of the quantum of the levy and the application of funds?

**Senior Representative** As I said, the application of the funds has been difficult in the environment that we have, so I would say a 4.

**Bate** And the amount of the levy?

**Senior Representative** The amount of the levy is not an issue, particularly when we have all this money building up. But I think it is linked to how you use the money, how you spend the funds. So I would give it a 4 as well.

**Bate** The USAASA. It has 4 major functions – the enabling function, the monitoring function, advisory to you and the Minister and its administration function. Where would you rate their performance on a scale of 0 to 10 with 0 being unsuccessful and 10 being highly successful?

**Senior Representative** Maybe around 4. I think here is one place where you have a lot of things but perhaps not in a very co-ordinated manner, not with a very clear program and the impact of what they have done is not clearly visible. It's difficult to say there has been a big impact, but there hasn't because it is not something that you can very easily say "This is what has happened, and this is how it has impacted". But again, I think that there are other factors that I have mentioned as well as the fact that there are not many of these agencies in the world. So it is something we thought up when we were establishing it. A lot of debate, maybe we should do this, maybe we should do that. So it's also on the clarity of an institution on that one, what it needs to do.

**Bate** If we were to break down the performance of the Agency in implementing its mandate by each of its four core functions. How would you rate the enabling function?

**Senior Representative** I would rate each function around a 4. Each function has realised certain achievements but each function has faced different challenges. It is difficult to break them down in isolation, so I would give each of them a 4 but for different reasons.

**Bate** Would you change the mandate at all? There has been some suggestion to narrow the scope, making it more focused? They kind of bit of this big pie and they haven't been doing a good job of any of the little pieces because instead of having one piece to focus on they are all over the place. For example, some people suggest it should be part of ICASA or they should give up part of their job for monitoring to ICASA and focus on policy or enabling, co-ordinating all the different programs, or be in charge of the USAF more directly. Be responsible for writing reports.

What are your ideas on the USAASA where it sits right now between the Department of Communications and ICASA?

**Senior Representative**

We had very passionate discussions when establishing the USAASA. The task that we assigned the USAASA actually was a core task for any regulator in a developing country. But anyway, with discussions we were convinced that maybe it should be done separately. So for me, either way, I don't have any strong views about whether it should be part of ICASA or it shouldn't. I just think you need clarity of task, coordination because they have to coordinate with Government as a regulator. Narrowing their tasks, I don't think so. If you take the Department of Communications, we could use the same argument that maybe tasks should be narrowed and then you perform better, but that is not the issue. I think the issue is clarity of strategy – what is it you want to achieve and then how do you narrow your program for particular people to do that kind of thing. So I think that sometimes you might find that there is something you want them to do and you think 'Okay, maybe this is an Agency that can do this' but then the law does not allow them to. So I don't really believe in really narrowing it but I do believe you need a very clear vision of where you want to go to and start milestones and targets and time frames.

**Bate**

What do you think about giving the USAASA, either explicitly or implicitly, greater autonomy? It's supposed to be an independent agency but the Department of Communications has a lot of influence over the USAASA in terms of the Board and the Chairman historically. Do you think about it being more independent, more autonomous or do you think its relationship with the Department of Communication is okay?

**Senior Representative**

The one issue is that I don't think we give USAASA enough latitude. For example, Government requires state owned enterprises and other organs of the state to align their strategy plan with that of Government. It is the Department of Communications' responsibility to ensure that they are validated to do it; they are enabled to do it. And part of the poor performance on the part of the USAASA comes back to the Department.

With respect to autonomy, well I am not sure. What is their job? Their job is to do what Government is supposed to do.

So I'm not quite sure how. They have a board. Sure, you have to make sure you have the people. Someone has to be accountable for that.

For Telkom, we do send information to Cabinet because you want to make sure that what you have is supported and so. But I actually think they have more independence than they think they do, and if they feel they don't have it because we don't call them every time, and I frankly think if there had been more direction or leadership from the investors and the Board included they would have looked more independent because there is nothing we do to restrain them. The only thing we say to them is that: 'Look, universal service is a policy objective of Government. The priorities of Government are poor areas and so on, go and do your job.'

**Bate** In the next section, if you could rank and briefly discuss your rankings on some of the specific programs of the USAASA, with 0 being unsuccessful and 10 being highly successful. How would you rate that Telecentre Program?

**Senior Representative** Maybe around 4 and I'm being kind really. I think that the challenges to the telecentres were accessibility. It's not a unique thing in South Africa. I think one recognises the concept of telecentres is a global challenge in terms of making them sustainable and those kinds of things. Again, I don't think it's just the USAASA, I think it's been the Department as well.

**Bate** And the Multi-Purpose Community Centres. How would you rate the success of the Multi-Purpose Community Centres?

**Senior Representative** A bit higher than the telecentres, maybe 6 because they offer more integrated services, more access to government services.

**Bate** Cyberlabs. How would you rate this program?

**Senior Representative** Also a little bit better, maybe 6. Perhaps it has something to do with the fact that they are in schools and so on, it's a much friendlier environment. But at the end of the day I think we could do much better with moderate resources to looking at the challenges we face.

**Bate** The public information terminal program in the post offices. How would you rate this program?

**Senior Representative** 3. Basically for the same reasons as the telecentres but perhaps this time in respect of the South African Post Office where they are based. But again, it's a little unfair on the Post Office because it's not their job to make sure these things are working. They just have to make sure they are accessible to the public and, again, I think we should have provided dedicated personnel to support these terminals because when you put such equipment in a post office it is additional work to the already overstretched staff that is there.

**Bate** And the USAL program? 0 being an unsuccessful program and 10 being a highly successful program?

**Senior Representative** I would say around 5 because I think this is an incredibly difficult thing to do. They are expected to run a business in a place that has no market according to companies and that is why we have them and, again, not too many experiences to look at in terms of following the development to South Africa.

You do have places that have that but economies there are much bigger and so on. So I think that it was been managed well to mobilise it. They are passionate but some of them are doing quite well and some are not doing so well. I think here, much more than the USAASA, it's much more the individuals concerned. But again, there are areas that are fairly impoverished and therefore levels of expectancy are not there. So it's a bit of a challenge.

**Bate** And if we look at ICASA? How would you rate the success of ICASA in implementing its mandate?

**Senior Representative** We have talked a lot about ICASA. I think it is doing a lot. I think it has a lot of challenges. A lot of unfinished business. So I would rate it a 6 only because it has come through a lot and has a long way to go in a very challenging environment.

**Bate** And the Minister of Communications? How would you rate the success of the Minister in crafting universal service policy?

**Senior Representative** As I said, I think the Government has done a very good job of defining universal service goals but we need to do a better job of implementing the strategy. A lot of that falls on the Department, and we can do a better job

of what we are doing. We also depend on other agencies such as the USAASA and ICASA, and I have already talked about the challenges that they face. So part of our effectiveness relies on other parties as well. And like other players in the space, I think we have done well in some areas and I think we can do more, much more, in other areas. So I would also give us a 6.

**Bate** Now we are going to look at some ideas. Some new ideas but also some ideas based on what we see as some of the challenges that we have faced in the past.

One of the things we have identified is that the Government of South Africa, in particular the USAASA, has been implementing their own programs rather than just enabling the market to fulfil the policy. They have not used the private sector to implement the programs.

For example, internationally one of the things that you might do is hold a reverse auction where the Government tells the private sector: Here is what I want to achieve as a government. How much do I have to pay you to do that?' And then you would have competition for the lowest subsidy and then you sit on top of them and watch to make sure they do their job. For some reason, the USAASA has not used that model with its programs, particularly the telecentres and cyberlabs. Firstly, why do you think there is a reluctance to use the private sector? And secondly, what do you think of the idea of being more of an enabler and less an implementer?

**Senior Representative** I don't think it's a South African phenomenon. There is a challenge anyway even in other countries. There must be a reason why. I don't know any place that is 100% covered.

**Bate** Chile and Malaysia use reverse auctions: we need phone service in this area, we kind of figured out what we think it costs, but now you tell us. Interestingly, what happens is that the market tells them that it costs about half to achieve that, so then they just give the money to the operator to do it. So the operator says: 'I can't make money here. I'm going to lose 10% and relative to my urban market I'm making my margin so I need a 30% subsidy to make a 10% loss plus my 20% profit and here's the number.' Government says 'fine'. Then you have an auction.

And another operator says 'I don't need my 20%. I am prepared to do it for 10%.' So they only need a 20% subsidy. So they create that market competition which is actually tied in with the Government's whole managed liberalisation and accelerated liberalisation program. Someone suggested they were very suspicious of the private market and therefore they were reluctant to hand over or use the private sector and maybe that's why they didn't do it?

**Senior Representative**

The point I am trying to make is this: often it is quite easy to follow what someone has done, but globally the issue of universal service is still a challenge for all governments, those who have experience of the private sector and those who haven't, even in developed countries.

So maybe there is something there and I'm quite sure that globally we will find a solution somewhere, but it is not uniquely a South African thing. But having said that, I think in South Africa, yes we are getting more comfortable with the private sector, but not only because of the private sector. It is also because the private sector in South Africa was only white so the issue in addition to private sector was the issue of transformation, which we have to deal with. Between the two things you put attention on the issues of transformation. I think it is a very complex situation that you had to get out of, the issue of trust. It's not a private sector that was democratic and non-racial, so there is the broader issue of transformation that is linked to that.

I think that the ECA enables people to come up with all kinds of ideas for the private sector everywhere so there is no shortage of things for the private sector to do. But I think I also need to say that out of the different government departments and sectors we probably have the best relationship with our private sector. We have meetings. We prepare and submit presentations for Cabinet together. Sometimes we won't agree on this but there is the commonality when our Cabinet meets twice a year, I meet with the CEO's of the companies to let them know what is likely to be discussed. The point I'm trying to make is that I'm not ruling out some of the proposals they have made, I think they are quite possible but you also need to look at the context of the environment.

But even more importantly I just think that the one thing that we did was learn from others. We have had lots of discussions. We have learnt that the Malaysians, and I think also in Mexico, have been discussing this issue of the definition of universal service. I am saying that there is lots of engagement and we are trying to find the best way to do so.

**Bate** I will give you an example. The cyberlab program. The USAASA rolled out some 200 cyberlabs. MTN, Sentech, the Telkom Foundation and the Shuttleworth Foundation - they collectively have 3,000. Why is the USAASA in the cyberlab business? The private sector can do cyberlabs. Why don't' they approach the private sector and say 'Tell us how much it is going to cost? You can bid on them.' The public sector doesn't need to run them. Is that something you think is viable? Should they get out of the business of running cyberlabs and just focus on enabling? Tell the private sector: 'Here's the map. We need cyberlabs here and here. Give out a coordinated strategy to roll out a national cyberlab network.' Is that better for them than actually getting bogged down in running a couple 100 cyberlabs?

**Senior Representative** Assuming the private sector will cover all the cyberlabs?

**Bate** With a subsidy for some of them. There's a subsidy now. The cost to the USAASA to run the cyberlabs is coming out of the USAF.

**Senior Representative** Yes, but what I am saying is that the approach you are putting forward is something that has not been looked at. So it's very difficult for me to say this is the best way. We are involved in some programs with the private sector, working with the private sector. But what you are doing is saying that it would even be faster, the point you are making. But we have to look carefully at the issue is of sustainability and this is why we are working with several countries at the same time because then that will help inform the economic state. So a similar approach with much more private sector involvement may work.

**Bate** Exactly. You have the Department of Education and the different departments rolling out their own programs for computers. Why isn't the USAASA coordinating all these dozens of players into a cohesive national rollout?

**Senior Representative** We are going to have a coordinated roll in South Africa but, like all things, you will need a plan to say how it is going to be done and that is something we are working on. We are doing something, not just for education but for the whole country in terms of the usage by Government and have national timelines.

**Bate** Should you allow municipalities to offer, or force, their backbone at cost to the market to reduce the cost of services or encourage it? Is that something you would favour?

**Senior Representative** Actually, in the long term we are trying to work towards where all infrastructures are provided at cost, not just municipalities, so it is in line with that.

**Bate** So you would favour giving ICASA the power to enforce the cost base tariff policy?

**Senior Representative** Yes.

**Bate** What about the concept of encouraging or forcing operators, through light handed or heavy handed regulation, to give away a bundle of minutes per month to every South African with a cell phone, similar to giving away the first litre of water, the first 1,000 watts of electricity? It would really benefit the poorest areas and poorest people. The operators are surprisingly receptive to the idea. The operators are saying that they are kind of doing that already with prepaid packages where they give, for example, R75 or something like that a month free to every user. So it would not be that much of a stretch and if they can get part of the subsidy back from the USAF, which is not being used anyway, they would be very interested in taking a look at that. For us, we are saying that's a good idea because it takes away the problem with universal service programs destroying the market. It is an intervention, and it is intended to affect the market in a very positive way, but South Africans being very entrepreneurial and smart they always try to find a way to get around it or create new ways of affecting the market in unintended ways. So to give everyone R100 to R200 free minutes then they could not do anything about it. What do you think about that as a concept, about giving everyone the first minutes free and everything after that is tariff based?

**Senior Representative** It is something that we already raised in Cabinet because it is linked to the ICT service.

**Bate** Someone said that the Government is averse to giving away free things to the population because of a history of telling people not to pay their rent. So there should be at least a nominal fee like a R50 sign-up fee so people appreciate the value of the free minutes. Do you think that's a necessary component of that kind of policy?

**Senior Representative** I don't think so, because we don't have that with electricity and water. Once you define that what you do with it is the same as water and electricity, I don't think we will have that problem. Of course you will always have people like a grandmother who qualifies and the grandchild abuses it. These are normal things, but I think families would have to play a role. I think it's an issue of culture that has to be recognised because in South Africa you come from a history, a particular kind of history because things were not done with people and so on so. They will try to go around it or defy it but I think it's something that is improving.

**Bate** One of the questions raised is that this suggestion would involve the private sector providing the free service whereas water and electricity is free from a government agency. Does that not complicate the situation? How do you enforce it? Whether it is something that can be worked out, would it be more enforced or encouraged?

**Senior Representative** No, I think that is true. That's why it's still at discussion in Cabinet precisely for that reason. You then have to look at how do you equate it to that? How do you equate the private sector providing it to Government providing it? It's one of those things that need to be worked out.

**Bate** If municipalities provided it would they provide it at cost and allow every marketer to buy it at cost? Is that the vision or would they be able to make a profit on their public funding infrastructure?

**Senior Representative** Remember, I said we are trying to enforce this. It's our vision that this happens in the country. It takes a bit longer because we have less infrastructure, so you have to look at how you balance those kinds of things. But we think it is something that should be done by the municipalities to make a bit of money but not huge amounts.

**Bate** Is there anything you would like to leave with us, your personal thoughts on universal service? Any ideas we have overlooked? What do you think is needed to pick up the game, so to speak?

**Senior Representative** Perhaps in summary what I would say is that we work well with the private sector and often we push them hard which they don't like but we continue to cooperate. I think the idea is to try to help people to cooperate.

**Bate** Anything else you want to leave us with? Any gaps we have not covered that you feel need to be put on the record?

**Senior Representative** Not really. I think that the main thing is this issue about the provision of ICT. I think beyond universal service, it's the declaration as an essential service that is critical. We try to do it at a global level with the ITU but before 1997 we had lots of discussions about those. There are a lot of countries who have difficulties and they are westernised countries. I think to get something as an essential service you have to provide it and governments get very worried to promise something they think they might not deliver on. I would like Cabinet to declare this as an essential service because I think people in South Africa have understood if government says something is an essential service it does not mean you will get it tomorrow, but it does mean there is a commitment to get it delivered. It is a right, so for me the issue of communicating it as a right and not a privilege would be met by that. So it's a combination of universal service as well as an essential service.

**Bate** How do the operators feel about that, universal service being an essential service?

**Senior Representative** I don't think we have engaged operators too much because within Government we have to discuss it and convince different colleagues it's the right way to go. How would we implement it and then we can start it before we have a process for policy making and then formally consult them.

**Bate** Thank you for your time.

**Senior Representative** You're welcome.

# APPENDIX 4

## EDITOR'S LETTER

**JENNY DE WET**
**P O Box 781510**
**SANDTON**
**2146**

**5 April 2014**

**TO WHOM IT MAY CONCERN**

This letter serves to confirm that I have completed a language edit of the doctoral thesis entitled, "Connecting People: Accelerating Universal Service and Access to Communications Services in South Africa" by David John Bate.

J E de Wet

Full Member: Professional Editors' Group

---

**Tel. 011 802-3548**
**Cell 083 451 4529**
**E-mail** jen.dewet@yahoo.com
BA, Hons BA (English), H.Dip.Lib.,
MA (Information Science (Indexing),
Basic Principles of Public Relations (Distinction)
Public Relations Management (Distinction)(PRISA)
English Honours module Editing: Principles
and Practice (distinction)(Pretoria)

# APPENDIX 5

## CERTIFICATE OF COMPLIANCE

UNISA university of south africa

**REF:** PAM/2014/004 (Bate)

**COLLEGE OF ECONOMIC AND MANAGEMENT SCIENCES**
**DEPARTMENT OF PUBLIC ADMINISTRATION AND MANAGEMENT**
**RESEARCH ETHICS REVIEW COMMITTEE**

**Certificate of Compliance**

This is to certify that the researcher

**Mr David John Bate**
student number 33180741

has notified the Department of Public Administration and Management's Research Ethics Review Committee that he has complied with the ethical requirements, as stipulated in the **Unisa Policy on Research Ethics**, during the conduct and reporting of the following doctoral study:

**Connecting people: Accelerating universal service and access to communications services in South Africa**

The PAM RERC takes cognisance of the research conducted and that the researcher has included in the reporting of the study that -

- the study complies with the requirements of the Policy on Research Ethics of the University of South Africa (section 6.6.3 in the thesis);
- to protect the privacy of the interview participants involved, the actual names of participants are withheld and each participant is referred to as a "senior representative" of the particular institution or organisation (section 6.4.2.3 in the thesis); and
- in the absence of institutional consent to conduct interviews, all comments provided by interview participants should be regarded as their personal views which may or may not reflect the views of the particular institution or organisation that they represented at the time of the interview (section 6.6.1 in the thesis).

A copy of this certificate will be sent to the CEMS Research Ethics Committee for notification.

Best wishes

Prof Mike van Heerden
**Chairperson:**
**PAM Research Ethics Review Committee**
vheerm@unisa.ac.za

**cc: Prof Valiant Clapper**
**Executive Dean: CEMS**

20 May 2014

Open Rubric

University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za