

AN EXPLORATIVE STUDY OF ELECTRICITY THEFT IN LIMPOPO PROVINCE

by

KATE IKETSI MASANGO

Student Number: 32706405

Submitted in accordance with the requirements for the degree of

DOCTOR OF PHILOSOPHY IN CRIMINAL JUSTICE

In the subject

POLICE SCIENCE, FORENSIC SCIENCE & TECHNOLOGY

at the

UNIVERSITY OF SOUTH AFRICA

PROMOTER: PROF J.S. HORNE

FEBRUARY 2024

DECLARATION OF AUTHENTICITY

STUDENT NUMBER: 32706405

DEGREE: Doctor of Philosophy in Criminal Justice

I, Kate Masango declare that “**An explorative study of electricity theft in Limpopo Province**” 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.

I further declare that I submitted the dissertation to originality checking software and that it falls within the accepted requirements for originality.

I further declare that I have not previously submitted this work, or part of it, for examination at UNISA or at any other higher education institution.

K Masango

Signature:

26 February 2024

Date:

DEDICATION

I am profoundly grateful to God Almighty who guided my steps from the inception to the end of this study as wisely indicated in Proverbs 16:9: “Many plans are in a person’s heart and mind, but the will of the Lord shall prevail”. My special appreciation extends to the following individuals:

- My supervisor, Professor J.S. Horne who has shown faith in me even when the journey of my study seemed unattainable. Your patience, gentleness, tenacity, knowledge, insight and experience sustained me until the completion of this study.
- The University of South Africa (UNISA) for offering me a study opportunity and also financing the entire research process.
- The South African Police Service (SAPS), for permitting me to conduct the requested interviews in their working environment.
- To the individual SAPS participants, for willingly sharing their invaluable insights and viewpoints with me.
- The National Prosecuting Authority (NPA), for allowing me to conduct the requested interviews in their work environment.
- To the individual NPA participants, for willingly sharing their invaluable knowledge and experiences with me.
- The Eskom management, for granting me permission to conduct the requested interviews at the Limpopo Province Operating Unit.
- My appreciation to the Eskom participants at the Limpopo Province Operating Unit, for contributing to this study’s interview-based empirical data.
- To Ba-Phalaborwa, Greater Giyani, Greater Tzaneen, Greater Letaba and Maruleng, all situated in Mopani District for providing the opportunity to conduct my study within their territorial jurisdictions.
- To the community leaders, local councillors and ward committees in Mopani District, for selflessly providing information that is useful to this study.
- A special woman in my life, my mother, Maria Mashego Nkadimeng for being my pillar of strength.
- Another special woman in my life, my late grandmother, Martha Mabatho Nkadimeng who was not formally educated but laid a strong will in me to

outcompete myself through her love for her generation and constant encouragement.

- To my husband, Godrich Mphiqwa, my children Katlego Nobuhle, Salabakhile Sibusiso and Zanokuhle Emily for being my source of strength and courage throughout this study.
- To the editor, Dr T.J. Mkhonto, for the professional presentation of my work.

ABSTRACT

Electricity theft has reached the proportions of a national security threat in the country, with ongoing incalculable losses to the economy and society as a whole. Similar to other crimes, the law of evidence and other evidential aspects are applicable to dealing with electricity theft. However, despite electricity conforming to elements of a crime, the legality of electricity theft is a subject of disputes within the legal fraternity, which is perpetuated by the absence of a statute that explicitly defines and prohibits the crime of electricity theft. It is concerning that South Africa does not have specific legislation to address electricity theft and depends on alternative statutes such as the Criminal Matters Amendment Act (CMAA) (No. 18 of 2015) and the Prevention of Organised Crime Act (POCA) (No. 121 of 1998).

It is against the above-stated backdrop that the aim of this study was to explore and establish the extent to which adequate application of South African laws governing crime could assist in curbing electricity theft, rather than relying on engineering technology alone to enforce compliance. The Mopani district of Limpopo Province, South Africa was selected as the fundamental focus area of the study due to its very high number of electricity theft incidents recorded by Eskom's Customer Care & Interaction report, with 12 521 cases between 2013 and 2017. Time, logistical, and other resource limitations rendered it impractical to target all five Limpopo Province districts. This qualitative study adopted a convergent parallel research design approach encompassing both exploratory and descriptive elements in order to examine and explain the various aspects of the daunting reality of electricity theft.

Despite the qualitative nature of the study, quantitative aspects were incorporated to describe, analyse and interpret the data acquired through semi structured interviews with Eskom employees, SAPS detectives, NPA prosecutors and community leaders who were believed to be knowledgeable in matters of electricity theft. This range of participants enabled the researcher to objectively explore, describe, and analyse the nature and extent of electricity theft; determining and evaluating the interpretation of electricity theft in relation to laws governing crime; exploring the dynamics of reporting, investigating and prosecuting perpetrators of electricity theft; determining and evaluating the current practices of curbing electricity theft by electricity utilities; and

determining and developing practical measures for curbing electricity theft successfully by applying laws governing crime in South Africa.

Thematic data analysis and interpretation was utilised to facilitate the convergence of the information obtained from the study's above-mentioned multiple sample categories. This process enabled the researcher's conceptualisation and operationalisation of 'electricity theft', as well as development of a conceptual model accrued from the findings. The study found that electricity is an important but complicated concept to understand due to factors such as its commercialisation, which is based on continuous supply for development of society. However, the sustainability of electricity supply is threatened by electricity theft as one of non-technical losses.

The study also found that 'conduct' was a relevant aspect of electricity theft because it emanates from human thoughts and volition for its execution. The study further found, amongst others, that there was a notable underreporting of electricity theft, despite widespread awareness of the prevalence of this offence. Furthermore, it was found that the overloading of Eskom's electricity equipment was induced by the use of various technical methods, such as switching off the energy supply at different intervals in areas prone to severe threat of illegal connections. However, the contractual and technical obligations between utilities and some of the customers within the overloaded areas may restrict intentional load reduction by utilities.

The study's main recommendation premises on the need to explore the potential integration of private prosecution as a strategy for addressing incidents of electricity theft, including the practicality and complexities associated with public prosecution in cases of electricity theft.

KEY TERMS

Criminal conviction; criminal investigation; criminal justice system; criminal offence; criminal prosecution; electricity; electricity theft; engineering technology; stakeholders; tampering; utilities.

ISIRHUNYEZORHUBHULULO

Ubulelesi bokwetjiwa kwegezi sebufikelele eengcenyeni zokusabisa ivikeleko lelizwe loke enarheni, ngeragelo phambili lobunengi bezinto ezilotjwa yinarha emnothweni nemphakathini wokana. Ngokufanako nobunye ubulelesi, ubufakazi bomthetho namanye amahlangothi abufakazi akhona ekuqalaneni nobulelesi bokwetjiwa kwegezi. Yeke, ngaphandle kwalokha igezi ihlangabezana neendingo zama-elemente namkha amatshwayo wobulelesi, ukuba semthethweni kuyindaba yepikiswano ngaphakathi kwephiko lezomthetho, elirhagaliswa kungabi khona komthetho ohlathulula tihatjhalazi nokhandela ubulelesi bokwetjiwa kwegezi. Kuzwisa ubuhlungu ukubona bonyana iSewula Afrika ayinawo umthetho onqophileko wokulungisa ubulelesi bokwetjiwa kwegezi begodu iyame kweminye imithetho efana ne-Matters Amendment Act (CMAA) (oyinomboro. 18 wee-2015) kunye nomthetho i-Prevention of Organised Crime Act (POCA) (oyinomboro 121 wee-1998).

Kungebanga lesendlalelo esivezwa ngehla ukobana umnqopho werhubhululweli kube kuhlola nokuthola ubukhulu bokusetjenziswa ngokwaneleko kwemithetho yeSewula Afrika elawula ubulelesi engasiza ngakhona ekukhandeleni ubulelesi bokwetjiwa kwegezi, kunokobana iyame kubunjiniyera bethekholoji bubodwa ekukateleleni ukwenza izinto ngokufaneleko. Isiyingi seMopani esiFundeni seLimpopo, eSewula Afrika sikhethwe njengendawo eqakathekileko yerhubhululo ngesimanga samanani aphezulu khulu wezehlakalo zobulelesi bokwetjiwa kwegezi eburekhodwe mbiko i-Eskom's Customer Care & Interaction report, isiyingesi sibe nemilandu ezii-12 521 phakathi komnyaka wee-2013 newee-2017. Isikhathi, amahlelo neminye imibandela yeensetjenziswa kwenze ukobana sibhalelwe kunqopha eeyingini ezihlanu zesiFunda seLimpopo. Isifundo serhubhululo esikhwalthethivesi samukele indlela yedizayini yerhubhululo elenzeka ngesikhathi sinye ngokulinganisana lifake kokubili amatshwayo ahlathululako ukuze likhona ukuhlola nokuhlathulula amanye amaphuzu ahlukahlukeneko aqedana amandla ngobuqiniso bobulelesi bokwetjiwa kwegezi.

Ngaphandle komhlobo wobukhwalithethivu besifundo serhubhululwesi, amaphuzu akhwanthithethivu nawo afakiwe ukuhlathulula, ukuhlaziya nokutjhugulula idatha efunekako ngokwendlela yokuhlunga engakahleleki ngokupheleleko nabasebenzi be-

Eskom, nabafokisi be-SAPS, abatjuthjisi be-NPA kanye nabadosiphambili bomphakathi abakholwa bona banelwazi ngeendaba zobulelesi bokwetjiwa kwegezi. Lemihlobo yabahlanganyeli yenze ukobana umrhubhululi akghone kuhle ukuhlola, ukuhlathulula, begodu nokuhlaziya umhlobo nobukhulu bobulelesi bokwetjiwa kwegezi; ukuqunta nokuhlola ukuhlathululwa kobulelesi bokwetjiwa kwegezi ngokukhambisana nemithetho elawula ubulelesi; ukuhlola iindlela ezihlukeneko zokubika, zokuphenya nokuthuthukisa iindlela ezibonakalako zokukhandela ubulelesi bokwetjiwa kwegezi ngepumelelo ngokusebenzisa imithetho elawula ubulelesi eSewula Afrika.

Idatha ehlaziya imimongo neenhlathululo zasetjenziswa ukukghonakalisa ukuhlanganisa ilwazi elitholakele kilelirhubhululo elivezwe ngehla ngemikhakha eminengi yeembonelo. Ikambiso le ikghonakalise ukuzwisisa kuhle komrhubhululi nendlela ubulelesi bokwetjiwa kwegezi obenziwa ngakhona, kunye nokuthuthukiswa kwendlela yokuzwisisa etholakele kumiphumela. Isifundo serhubhululo sithole bona igezi iqakathekile kodwana imqondo namkha iligama elihlangahlangeneko ukobana umuntu alizwisise ngesimanga samaphuzu afana nerhwebo, elinzinze eragelweni phambili lokuyithumela mayelana nokuthuthukisa umphakathi. Yeke, ukuphumelela kokusabalalisa igezi kusatjiswa bulelesi bokwetjiwa kwegezi njengenye into engasikho ukulotjwa kobutekhnikhi.

Isifundo sithole godu nokobana 'ukudlulisa' bekulihlangothi elifaneleko lobulelesi bokwetjiwa kwegezi ngombana kusukela emicabangweni yomuntu nokwepulwa mayelana nokusetjenziswa kwayo. Okhunye godu irhubhululo lithole bona, hlangana nokhunye kube khona ukubonakala kokungabikwa kobulelesi bokwetjiwa kwegezi, nalokha abantu balemukiswa kizo zoke iindawo ngokubonakala kunobulelesi obunje. Okhunye godu, kutholakele bona ukudisibezwa kweensetjenziswa zezezi ye-Eskom kwaphungulwa kusetjenziswa kwezinye iindlela ezihlukahlukeneko zobutekhini, ezifana nokucima ukusabalaliswa kwegezi ngeenkhathe ezithileko eendaweni ezivane zitjengise ukuzifakela igezi ngokungasisemthethweni. Yeke, iimbopho zamakontraga nezobutekhnikhi hlangana nemisebenzi nabanye babathengi hlangana neendawo ezidisibezwa khulu zingakhandlela ukuphungulwa komthwalo wokudisibezeka ngokusebenziseka.

Isitjhukumiso esikhulu esiqakathekileko serhubhululo sinzinze kusidingo sokuhlola ikghonakalo yokuhlangana kokutjhutjhiswa kwangeqadi njengeqhinga lokulungisa izehlakalo zobulelesi bokwetjiwa kwegezi, kufakwe hlangana ukukghoneka nobudisi obukhambisana nokutjhutjhiswa komphakathi emilandwini yokwetjiwa kwegezi.

AMATHEMU AQAKATHEKILEKO

Ikambiso yobulelesi; iphenyo lobulelesi, ihlelo lobulungiswa bobulelesi, umlandu wobulelesi; ukutjhutjhiselwa ubulelesi; igezi, ukwetjiwa kwegezi, itheknoloji yobunjiniyera; abahlanganyeli; ukuqabhela; ukusetjenziselwa.

SETSOPOLWA

Bohodu bja mohlagase bo fihlile maemong a tšhošetšo ya tšhireletšo ya naga ka mo nageng, fao go tšwelago pele go ba le ditahlegelo tša go se balege go ekonomi le go setšhaba ka bophara. Go swana le bosenyi bjo bongwe, molao wa bohlatse le dilo tše dingwe tše di fago bohlatse di a šomišwa go lwantšha bohodu bja mohlagase. Le ge go le bjale, ka ntle le gore bohodu bja mohlagase bo sepelelana le dikarolo tša bosenyi, go amogela ke molao gore bohodu bja mohlagase ga go molaong e sa le tabakgolo ya dithulano ka lefapheng la molao, gomme se se hlohleletšwa ke go hlokega ga molao wo o ngwadilwego wo o hlalošago ka botlalo le go iletša bosenyi bja bohodu bja mohlagase. Ke tlhobaboroko gore Afrika Borwa ga e na le melao ye itšego go rarolla bothata bja bohodu bja mohlagase ebile e botile melao ye mengwe ya go swana le Molaophetošwa wa Merero ya Bosenyi (CMAA) (wa Nomoro ya bo 18 wa 2015) le Molao wa Thibelo ya Bosenyi bjo bo Rulaganšwego (POCA) (wa Nomoro ya bo 121 wa 1998).

Ke ka lebaka la tshedimošo ye e filwego ka mo godimo fao e lego gore maikemišetšo a dinyakišišo tše e bile go utolla le go tseba bogolo bjo ka bjona tirišo ya maleba ya melao ya Afrika Borwa ye e laolago bosenyi e ka thušago go lwantšha bohodu bja mohlagase, sebakeng sa go tshepa theknolotši ya boentšeneere e nnoši go gapeletša go obamela molao. Selete sa Mopani sa Phrobentshe ya Limpopo, ka Afrika Borwa se kgethilwe bjalo ka lekala la nepišo ya motheo la dinyakišišo tše ka lebaka la palo ya lona ya godimo kudu ya ditiragalo tša bohodu bja mohlagase bjo bo begilwego ke

Lekala la Tlhokomelo ya Badiriši la Eskom le pego ya Ditherišano le setšhaba, leo le nago le melao ye 12 521 magareng ga ngwaga wa 2013 le wa 2017. Nako, dikgokagano, le mellwane ye mengwe methopo e dirile gore go se kgonagale go nepiša dilete ka moka tše hlano tša ka Phrobentsheng ya Limpopo. Dinyakišišo tše tša boleng di dirišitše mokgwa wa dinyakišišo wa go kgoboketša tshedimošo ya boleng le ya bontši ka nako e tee yeo e akaretšago bobedi dikarolo tša tekodišišo le tša tlhalošo ka nepo ya go lekola le go hlaloša dikokwane tša mehutahuta tša seemo sa tlhobaboroko sa bohodu bja mohlagase.

Ka ntle le gore dinyakišišo ke tša sebopego sa boleng, qdintlha tša bontši le tšona di tsentšwe go hlaloša, go sekaseka le go hlatholla tshedimošo ye e hweditšwego ka go diriša dipoledišano tša go nyaka diphetolo tša go fa mabaka le bašomi ba Eskom, baemedi ba Tirelo ya Maphodisa ya Afrika Borwa (SAPS), basekiši ba NPA le baetapele ba setšhaba bao go dumelwago gore ba na le tsebo ka mererong ya bohodu bja mohlagase. Mehutahuta ye ya bakgathatema e kgontšhitše monyakišišo go lekola ka ntle le go tšea lehlakore, go hlaloša, le go sekaseka bogolo bja bohodu bja mohlagase; go realo e le go tseba le go sekaseka tlhathollo ya bohodu bja mohlagase ge go bapetšwa le melao ye e laolago bosenyi; go lekola seemo sa go bega bosenyi, go nyakišiša le go sekiša basenyi bao ba dirago bohodu bja mohlagase; e le go tseba le go sekaseka ditiro tša bjale tša go lwantšha bohodu bja mohlagase ka dihlongwa tša go aba mohlagase; le go tseba le go hloma magato ao a kwagalago a go lwantšha bohodu bja mohlagase ka katlego ka go diriša melao ye e laolago bosenyi ka Afrika Borwa.

Tshekatsheko ya tshedimošo go ya ka merero e dirišitšwe go nolofatša kopanyo ya tshedimošo ye e hweditšwego go tšwa go magoro a disampole tše ntši a dinyakišišo. Tshepedišo ye e kgontšhitše gore monyakišišo a kwešiše le go diriša lesolo la twantšho ya 'bohodu bja mohlagase', gammogo le go hlama mokgwakgopodišišo wo o tšweletšego go dikutollo. Dinyakišišo di hweditše gore mohlagase ke selo se bohlokwa eupša seo se hlakahlakanego go ka se kwešiša ka lebaka la mabaka a boima a go swana le go o rekiša, e lego seo se theilwego go kabo ye e tšwelago pele go hlabolla setšhaba. Le ge go le bjale, tirišo ya go tšwela pele go ya go ile ya kabo ya mohlagase e tšhošetšwa ke bohodu bja mohlagase bjalo ka ye nngwe ya ditahlegelo tše e sego tša sethekniki.

Dinyakišišo di hweditše gore 'maitshwaro' e bile selo sa maleba seo se bakago bohodu bja mohlagase ka ge bo hlokwa ke dikgopolo tša batho le maikemišetšo a go bo dira. Dinyakišišo di tšwetše pele go hwetša gore, gareng ga tše dingwe, go na le go bega ditiro tša bohodu bja mohlagase ka fao go sa lekanego, ka ntle le temogo ye e phatlaletšego ya go tlala ga bosenyi bjo. Godimo ga fao, go hweditšwe gore go imelwa ga didirišwa tša go fehla mohlagase tša Eskom go bakilwe ke tšhomišo ya mekgwa ya mehutahuta ya sethekniki, go swana le go tima kabo ya mohlagase ka dinako tše di fapafapanego ka mafelong ao a tletšego ka tšhošetšo ye kgolo kudu ya dikgokaganyo tša mohlagase tše di sego molaong. Le ge go le bjale, ditlamego tša dikonteraka le tša sethekniki magareng ga baabi ba mohlagase le badiriši ka mafelong ao a imelwago ke tšhomišo ya mohlagase di ka iletša go wešwa ga mohlagase ka maikemišetšo ka baabi ba mohlagase.

Tšhišinyokgolo ya dinyakišišo e mabapi le tlhokego ya go lekola kgonagalo ya kopanyo ya bosekiši bja phraebete bjalo ka leano la go rarolla ditiragalo tša bohodu bja mohlagase, go akaretšwa kgonagalo le go hlakahlakana fao go amanago le bosekiši bja setšhaba ka melatong ya bohodu bja mohlagase.

MAREO A BOHLOKWA

Go bonwa molato wa bosenyi; dinyakišišo tša bosenyi; tshepedišo ya toka go bosenyi; molato wa bosenyi; tshekišo ya bosenyi; mohlagase; bohodu bja mohlagase; theknolotši ya tša boentšeneere; batšeakarolo; go šitiša kabo ya mohlagase; baabi ba mohlagase.

TABLE OF CONTENTS

DECLARATION OF AUTHENTICITY	I
DEDICATION	II
ABSTRACT	IV
KEY TERMS	V
TABLE OF CONTENTS.....	XI
LIST OF FIGURES.....	XXI
LIST OF TABLES	XXII
LIST OF IMAGES	XXIII
ABBREVIATIONS AND ACRONYMS USED	XXIV
1. CHAPTER 1: GENERAL ORIENTATION TO ELECTRICITY THEFT IN SOUTH AFRICA.....	1
1.1 INTRODUCTION.....	1
1.2 RATIONALE OF RESEARCH (PROBLEM STATEMENT).....	4
1.3 DEMARCATION OF THE STUDY	8
1.4 RESEARCH AIM	9
1.5 RESEARCH OBJECTIVES	9
1.6 RESEARCH QUESTIONS.....	10
1.7 RESEARCH PURPOSE	11
1.7.1 Exploration	11
1.7.2 Description	11
1.7.3 Evaluation of the current situation	12
1.7.4 Developing good practice.....	12
1.7.5 Empowerment of those being researched.....	13
1.8 DEFINITION OF KEY TERMS.....	13
1.8.1 Criminal conviction	14
1.8.2 Criminal investigation	14
1.8.3 Criminal Justice System.....	14
1.8.3.1 South African Police Service (SAPS)	15
1.8.3.2 Department of Justice and Constitutional Development (DoJ & CD)	15
1.8.3.3 Department of Correctional Service (DCS)	15
1.8.3.4 Department of Social Development (DSD).....	15
1.8.4 Criminal offence	16
1.8.5 Criminal prosecution	16

1.8.6	Electricity.....	16
1.8.7	Electricity theft.....	17
1.8.8	Engineering technology.....	17
1.8.9	Stakeholders	17
1.8.10	Tampering.....	18
1.8.11	Utilities	18
1.9	RESEARCH STRUCTURE.....	18
2.	CHAPTER 2: METHODOLOGICAL FRAMEWORK OF THE STUDY	21
2.1	INTRODUCTION.....	21
2.2	PHILOSOPHICAL WORLDVIEW	21
2.2.1	Pragmatic Worldview	21
2.3	RESEARCH APPROACH AND DESIGN	22
2.3.1	Qualitative research approach	23
2.3.2	Convergent Parallel research design	24
2.4	POPULATION AND SAMPLING	25
2.4.1	Population	26
2.4.1.1	Eskom personnel	27
2.4.1.2	Local Municipal personnel.....	27
2.4.1.3	Police investigators	27
2.4.1.4	Prosecutors.....	27
2.4.1.5	Community leaders	27
2.4.2	Target population	28
2.4.3	Sampling	29
2.4.3.1	Probability sampling methods	30
2.4.3.2	Non-probability sampling methods.....	30
2.4.3.3	Sample.....	32
2.5	DATA COLLECTION.....	40
2.5.1	Literature sources	41
2.5.2	Documentary sources	49
2.5.3	Interviews.....	50
2.5.4	Personal experience	52
2.6	DATA ANALYSIS	54

2.6.1	Sample A1 (6): Security and criminal investigations within Eskom	55
2.6.2	Sample A2 (6): Eskom personnel from Customer Services (CS) and Operations and Maintenance (O&M).....	55
2.6.3	Sample A3 (6): Eskom personnel from Energy Trading and Energy Protection.....	56
2.6.4	Sample B (4): Local municipality personnel	56
2.6.5	Sample C (10): Electricity investigators.....	56
2.6.6	Sample D (3) Legal Team	57
2.6.7	Sample E (3): First line of contact	57
2.7	DATA INTERPRETATION.....	57
2.8	TRUSTWORTHINESS OF STUDY.....	58
2.8.1	Credibility	60
2.8.2	Transferability	60
2.8.3	Dependability	60
2.8.4	Confirmability	60
2.9	ETHICAL CONSIDERATIONS	61
2.9.1	Respect for human dignity and confidentiality	61
2.9.2	Informed consent	61
2.9.3	Conflict of interest	61
2.9.4	Legal issues	62
2.9.5	Plagiarism	62
3.	CHAPTER 3: DESCRIPTION OF THE NATURE AND EXTENT OF ELECTRICITY THEFT.....	63
3.1	INTRODUCTION.....	63
3.2	EXPLICATION OF ELECTRICITY.....	63
3.2.1	Definition of electricity	64
3.2.2	The sources of electricity	67
3.2.3	The types of electricity	70
3.2.3.1	Dynamic electricity	70
3.2.3.2	Static electricity	71
3.2.4	The importance of electricity	74
3.2.4.1	The value chain of electricity from generation to distribution.....	74
3.2.4.2	Commercialisation of electricity production	79

3.2.4.3	The impact of lacking electricity supply	83
3.2.5	The rationale of regulating the generation, transmission and distribution of electricity	86
3.3	EXPLICATION OF ELECTRICITY THEFT	95
3.3.1	Defining the phenomenon of ‘Electricity Theft’	96
3.3.2	Methods of stealing electricity	99
3.3.2.1	Tampering with electrical infrastructure.....	101
3.3.2.2	Billing irregularities to abate payment of electricity consumption	106
3.3.2.3	Vendor fraud	107
3.3.3	Methods of detecting electricity theft.....	111
3.3.3.1	Data oriented detection methods	111
3.3.3.2	Network oriented detection methods.....	112
3.3.3.3	Hybrid oriented detection methods	113
3.3.4	The impact of electricity theft on utilities and communities.....	117
3.3.5	The motives of electricity theft.....	122
3.3.6	Measuring electricity theft	127
3.4	SUMMARY	130
4.	CHAPTER 4: THE INTERPRETATION OF ELECTRICITY THEFT IN RELATION TO LAWS GOVERNING CRIME IN SOUTH AFRICA	133
4.1	INTRODUCTION.....	133
4.2	CRIMINAL ELEMENTS OF ELECTRICITY THEFT	134
4.2.1	Conduct.....	134
4.2.2	Legality.....	137
4.2.3	Unlawfulness.....	143
4.2.4	Culpability	145
4.2.4.1	Intention	147
4.2.4.2	Negligence	149
4.2.4.3	Recklessness.....	151
4.2.5	Fulfilment of the definitional elements of electricity theft	152
4.3	COMMONLY REPORTED ELECTRICITY THEFT INCIDENTS FOR CRIMINAL INVESTIGATION AND PROSECUTION.....	154
4.3.1	Outline reporting of electricity theft incidents.....	155
4.3.2	Disposition of electricity theft incidents.....	156

4.4	STATUTES RELEVANT TO ELECTRICITY THEFT	159
4.4.1	Electricity Regulation Act 4 of 2006 (ERA).....	160
4.4.2	National Energy Act 34 of 2008 (NEA).....	161
4.4.3	Criminal Matters Amendment Act 18 of 2015 (CMA)	161
4.4.4	Criminal Procedure Act 51 of 1977 (CPA).....	162
4.4.5	Prevention of Organized Crime Act 121 of 1998 (POCA)	163
4.4.6	Municipal by-laws.....	164
4.5	GUIDELINES FOR INVESTIGATING AND PROSECUTING ELECTRICITY THEFT	167
4.6	EVIDENCE FOR INVESTIGATING AND PROSECUTING ELECTRICITY THEFT	172
4.6.1	Real evidence	174
4.6.2	Documentary evidence	175
4.6.3	Testimonial evidence	176
4.6.4	Demonstrative evidence.....	177
4.7	STAKEHOLDERS IN THE INVESTIGATION AND PROSECUTION OF ELECTRICITY THEFT.....	181
4.7.1	Law Enforcement (Police)	183
4.7.2	Prosecutors.....	184
4.7.3	Electricity Utilities	186
4.7.3.1	Eskom.....	186
4.7.3.2	Municipalities	187
4.7.4	Community members.....	188
4.8	SUMMARY	191
5.	CHAPTER 5: DYNAMICS OF REPORTING, INVESTIGATING AND PROSECUTING ELECTRICITY THEFT	194
5.1	INTRODUCTION.....	194
5.2	THE EXTENT OF ELECTRICITY THEFT IN LIMPOPO PROVINCE	194
5.2.1	Hotspot areas of electricity theft incidents in Limpopo Province	197
5.2.2	Reporting trends of electricity theft incidents in Limpopo Province	202
5.2.3	Reporting system of electricity theft incidents in Limpopo Province.....	206
5.2.3.1	Reporting system of electricity theft by electricity utilities.....	207
5.2.3.2	Reporting system of electricity theft by law enforcement	211

5.3	DYNAMICS OF INVESTIGATING AND PROSECUTING ELECTRICITY THEFT	215
5.3.1	Understanding the investigation of electricity theft	216
5.3.1.1	The dynamics of quantifying electricity theft reports for investigation	221
5.3.1.2	Approaches and practices to electricity theft investigations	226
5.3.1.3	Challenges and possible solutions to investigation of electricity theft	231
5.3.1.4	Lessons from investigations of electricity theft	238
5.3.2	Understanding the prosecution of electricity theft	243
5.3.2.1	The dynamics of quantifying electricity theft cases for prosecution.....	247
5.3.2.2	Approaches and practices to prosecution of electricity theft	251
5.3.2.3	Challenges and possible solutions to prosecution of electricity theft.....	254
5.3.2.4	Lessons from prosecuting electricity theft	256
5.3.3	Partnership in investigations and prosecutions of electricity theft	258
5.4	SUMMARY	262
6.	CHAPTER 6: PRACTICES TO CURB ELECTRICITY THEFT BY ELECTRICITY UTILITIES.....	264
6.1	INTRODUCTION.....	264
6.2	CURRENT PRACTICES OF CURBING ELECTRICITY THEFT AS A RESPONSE TO CHALLENGES ASSOCIATED WITH ELECTRICITY THEFT	265
6.2.1	Overloading of electricity equipment	265
6.2.2	Dishonest workforce.....	267
6.2.3	Legal implications and compliance issues	268
6.2.4	Loss of revenue and tariff increases	269
6.2.5	Various interests of civil society	271
6.2.5.1	Political organizations or individuals	272
6.2.5.2	Labour unions	273
6.2.5.3	Economic actors	275
6.2.5.4	Non-Governmental Organisations (NGOs)	277
6.3	THE RULES, PROCEDURES AND GUIDELINES APPLIED BY UTILITIES TO CURB ELECTRICITY THEFT.....	292
6.3.1	Conducting public awareness on ways to curb electricity theft	293
6.3.2	Removing illegal connections and/or normalizing the infrastructure	294
6.3.3	Audits and inspections	295
6.3.4	Issue tamper fines or notice	295

6.3.5	Replacement of damaged or tampered energy equipment found during the audits	296
6.4	CONTRIBUTION OF LAW ENFORCEMENT AND JUDICIAL SYSTEM IN THE PRACTICES OF CURBING ELECTRICITY THEFT.....	304
6.4.1	The role of law enforcement in curbing electricity theft	304
6.4.2	The role of judicial system in curbing electricity theft	306
6.5	RESEARCHER'S CONTRIBUTION TO THE STUDY	318
6.5.1	First report made to utilities.....	321
6.5.2	First report made to police station	322
6.6	SUMMARY	323
7.	CHAPTER 7: FINDINGS AND RECOMMENDATIONS	325
7.1	INTRODUCTION.....	325
7.2	RESEARCH AIM AND OBJECTIVES	325
7.3	RESEARCH QUESTIONS.....	325
7.4	RESEARCH FINDINGS.....	326
7.4.1	The nature and extent of electricity theft	326
7.4.1.1	Explication of electricity	326
7.4.1.2	Explication of electricity theft.....	330
7.4.2	The interpretation of electricity theft in relation to laws governing crime in South Africa	340
7.4.2.1	Criminal elements of electricity theft	340
7.4.2.2	Commonly reported electricity theft incidents for criminal investigation and prosecution	342
7.4.2.3	Statutes relevant to electricity theft	343
7.4.2.4	Guidelines for investigating and prosecuting electricity theft.....	343
7.4.2.5	Evidence for investigating and prosecuting electricity theft.....	344
7.4.2.6	Stakeholders in the investigation and prosecution of electricity theft	344
7.4.3	The dynamics of reporting, investigating and prosecuting electricity theft	345
7.4.3.1	The extent of electricity theft in Limpopo Province	345
7.4.3.2	Hotspot areas of electricity theft incidents in Limpopo Province	345
7.4.3.3	Reporting trends of electricity theft incidents in Limpopo Province	346
7.4.3.4	Reporting system of electricity theft incidents in Limpopo Province	346

7.4.3.5	Dynamics of investigating and prosecuting electricity theft	347
7.4.3.6	Understanding the investigation of electricity theft	347
7.4.3.7	Understanding the prosecution of electricity theft	348
7.4.4	The practices to curb electricity theft by utilities	350
7.4.4.1	Current practices of curbing electricity theft as a response to challenges associated with electricity theft.....	350
7.4.4.2	The rules, procedures and guidelines applied by utilities to curb electricity theft.....	351
7.4.4.3	Contribution of law enforcement and judicial system to the practices of curbing electricity theft	352
7.5	RECOMMENDATIONS.....	352
7.5.1	The nature and extent of electricity theft	353
7.5.1.1	Explication of electricity	353
7.5.1.2	Explication of electricity theft.....	354
7.5.2	The interpretation of electricity theft in relation to laws governing crime in South Africa	354
7.5.2.1	Criminal elements of electricity theft	354
7.5.2.2	Commonly reported electricity theft incidents for criminal investigation and prosecution	355
7.5.2.3	Relevant electricity theft statutes	355
7.5.2.4	Guidelines for investigating and prosecuting electricity theft.....	355
7.5.2.5	Evidence for investigating and prosecuting electricity theft.....	355
7.5.2.6	Stakeholders in the investigation and prosecution of electricity theft	355
7.5.3	The Dynamics of reporting, investigating and prosecuting electricity theft	356
7.5.3.1	The extent of electricity theft in Limpopo Province.....	356
7.5.3.2	Dynamics of investigating and prosecuting electricity theft	356
7.5.4	The practices to curb electricity theft by utilities	357
7.5.4.1	Current practices of curbing electricity theft as a response to challenges associated with electricity theft.....	357
7.5.4.2	The rules, procedures and guidelines applied by utilities to curb electricity theft.....	358

7.5.4.3	Contribution of law enforcement and judicial system to the practices of curbing electricity theft	358
7.5.5	Additional research	358
7.6	CONCLUSIONS	359
8.	LIST OF REFERENCES.....	366
9.	ANNEXURES	408
9.1	ANNEXURE A (1): SAMPLE A1 INTERVIEW SCHEDULE (ESKOM SECURITY AND INVESTIGATIONS PERSONNEL).....	408
9.2	ANNEXURE A (2): SAMPLE A2 INTERVIEW SCHEDULE (ESKOM CUSTOMER SERVICES, OPERATIONS AND MAINTENANCE PERSONNEL)	419
9.3	ANNEXURE A (3): SAMPLE A3 INTERVIEW SCHEDULE (ESKOM ENERGY TRADING AND ENERGY PROTECTION PERSONNEL).....	426
9.4	ANNEXURE B: SAMPLE B INTERVIEW SCHEDULE (LOCAL MUNICIPALITY PERSONNEL RESPONSIBLE FOR ELECTRICITY MATTERS)	433
9.5	ANNEXURE C: SAMPLE C INTERVIEW SCHEDULE (SAPS DETECTIVES)	440
9.6	ANNEXURE D: SAMPLE D INTERVIEW SCHEDULE (NPA PROSECUTORS).....	449
9.7	ANNEXURE E: SAMPLE E INTERVIEW SCHEDULE (COMMUNITY LEADERS/ REPRESENTATIVES).....	457
9.8	ANNEXURE F: UNISA ETHICAL CLEARANCE.....	464
9.9	ANNEXURE G (1): REQUEST TO CONDUCT RESEARCH: SAPS RESEARCH HEAD OFFICE.....	466
9.10	ANNEXURE G (2): PERMISSION TO CONDUCT RESEARCH: SAPS RESEARCH HEAD OFFICE.....	468
9.11	ANNEXURE G (3): SAPS PERMISSION TO CONDUCT RESEARCH: LIMPOPO PROVINCE RESEARCH OFFICE.....	469
9.12	ANNEXURE G (4): RESEARCHER'S INDEMNITY UNDERTAKING IN RESPECT OF SAPS APPROVAL TO CONDUCT RESEARCH IN LIMPOPO PROVINCE.....	472
9.13	ANNEXURE G (5): SAPS APPROVAL TO CONDUCT RESEARCH: LIMPOPO PROVINCIAL COMMISSIONER	473
9.14	ANNEXURE G (6): SAPS EMAIL CONFIRMATION TO CONDUCT RESEARCH: SAPS NATIONAL HEAD OFFICE	475
9.15	ANNEXURE H (1): REQUEST TO CONDUCT RESEARCH: GREATER TZANEEN MUNICIPALITY.....	476
9.16	ANNEXURE H (2): PERMISSION TO CONDUCT RESEARCH: GREATER TZANEEN MUNICIPALITY.....	478

9.17	ANNEXURE I (1): REQUEST TO CONDUCT RESEARCH: ESKOM	479
9.18	ANNEXURE I (2): PERMISSION TO CONDUCT RESEARCH: ESKOM	481
9.19	ANNEXURE J (1): REQUEST TO CONDUCT RESEARCH: BAPHALABORWA MUNICIPALITY	485
9.20	ANNEXURE J (2): PERMISSION TO CONDUCT RESEARCH: BAPHALABORWA MUNICIPALITY	487
9.21	ANNEXURE K (1): REQUEST TO CONDUCT RESEARCH: GREATER LETABA MUNICIPALITY	488
9.22	ANNEXURE K (2): PERMISSION TO CONDUCT RESEARCH: GREATER LETABA MUNICIPALITY	490
9.23	ANNEXURE L (1): REQUEST TO CONDUCT RESEARCH: NATIONAL PROSECUTING AUTHORITY	491
9.24	ANNEXURE L (2): PERMISSION TO CONDUCT RESEARCH: NATIONAL PROSECUTING AUTHORITY	493
9.25	ANNEXURE M: TURNITIN DIGITAL REPORT	496
9.26	ANNEXURE N: EDITOR'S LETTER	497

LIST OF FIGURES

Figure 1.1: Eskom electricity distribution ratio to customers	3
Figure 2.1: Convergent parallel research design.....	25
Figure 2.2: The map of South Africa depicting the position of Limpopo	26
Figure 2.3: The map of Limpopo Province depicting the position of Mopani district	29
Figure 2.4: The map of Mopani district depicting the positions of five local municipalities	36
Figure 2.5: The population and sampling breakdown.....	39
Figure 2.6: Literature mind map showing the main and sub-headings of the study	43
Figure 2.7: Qualitative data collection for this study	52
Figure 3.1: The difference between dynamic and static electricity	72
Figure 3.2: The value chain of traditional electricity grid	77
Figure 3.3: The value chain of a two-way smart electricity grid.....	78
Figure 3.4: Participants' experiences of electricity theft incidents in their work place	129
Figure 4.1: The stakeholders in the investigation and prosecution of electricity theft	189
Figure 5.1: Aspects depicting the extent of electricity theft	196
Figure 5.2: Hot spot areas, reporting trends and reporting system of electricity theft.....	197
Figure 5.3: Representation of Hotspot areas in Mopani region (Limpopo Province)	201
Figure 5.4: Number of electricity theft incidents reported to SAPS in Mopani region	205
Figure 5.5: Electricity theft reporting mechanism by utilities (Eskom)	210
Figure 5.6: Electricity theft reporting mechanism by Law enforcement (SAPS).....	215
Figure 5.7: Summary of the participants' answers to challenges and solutions of electricity theft...	234
Figure 5.8: Police, NPA prosecutors and utilities partnership in criminal processes	260
Figure 6.1: The societal stakeholders who are influential to the practices of curbing electricity theft	271
Figure 6.2: The involvement of law enforcement and judicial system in criminal processes	308
Figure 6.3: Conceptual framework of reporting, investigating and prosecuting electricity theft	320

LIST OF TABLES

Table 2.1:	Qualitative and quantitative relations to trustworthiness, validity and reliability	59
Table 3.1:	Breakdown of electricity regulating reasons as identified from participants answers	91
Table 3.2:	Participants answers in relation to reasons for electricity non- generation, non-transmission and non-distribution	94
Table 3.3:	Modes of electricity meter tampering	104
Table 4.1:	Participants' understanding of electricity theft legislation	166
Table 4.2:	Participants' answers on evidential information to believe that electricity theft has occurred and necessary to prosecute the crime	179
Table 5.1:	Participant's' answers indicating areas or villages or suburbs or towns from which high number of "electricity theft" cases are received.....	200
Table 5.2:	Practical guidelines to investigation and prosecution of electricity theft.....	220
Table 5.3:	Participants' answers on investigation practices grouped into themes.....	229
Table 5.4:	Participants' answers on experiences of prosecuting electricity theft	245
Table 5.5:	Practical guidelines to prosecution of electricity theft.....	247
Table 5.6:	Participants' answers on prosecution practices to electricity theft	253
Table 5.7:	Participants' answers on lessons learnt from the prosecution of electricity theft.....	258
Table 5.8:	Participants elaboration on responses to ineffectiveness of working partnership between electricity utilities, SAPS detectives and NPA prosecutors	260
Table 6.1:	Participants' answers on challenges related to illegal consumption of electricity experienced on networks.....	279
Table 6.2:	Participants' answers indicating ways to overcome challenges relating to illegal consumption of electricity theft	280
Table 6.3:	The participants' answers on what they think can be done by utilities to improve the practices of curbing electricity theft	288
Table 6.4:	Participants' answers on rules and procedures applied by Eskom to curb electricity theft	297
Table 6.5:	Participants' answers on the role of police and courts to electricity theft.....	309
Table 6.6:	Participants answers on practical guidelines, procedures and recommendations to curb electricity theft.....	312
Table 6.7:	Participants' answers indicating additional views on curbing electricity theft using laws governing crime	315
Table 7.1:	Renewable and non-renewable sources of electricity.....	327

LIST OF IMAGES

Image 3.1: Pole mounted transformer stolen	99
Image 3.2: Example of a tampered electricity meter	103
Image 3.3: Example of a tampered grid	105

ABBREVIATIONS AND ACRONYMS USED

CC&I	Eskom Customer Care and Interaction
CJS	Criminal Justice System
CMAA	Criminal Matters Amendment Act 18 of 2015
DCS	Department of Correctional Service
DLP	Detective Learning Programme
DoJ & CD	Department of Justice and Constitutional Development
DSD	Department of Social Development
ESCOM	Electricity Supply Commission
IPP	Independent Power Producers
MYPD	Multi Year Price Determination
NEP	National Electrification Programme
NERSA	National Energy Regulator of South Africa
NTL	Non-Technical Loss
POCA	Prevention of Organised Crime Act 121 of 1998
ROC	Resolution of crime
SADEC	South African Development Community
SAPS	South African Police Service
TL	Technical Loss
UN	United Nations

CHAPTER 1: GENERAL ORIENTATION TO ELECTRICITY THEFT IN SOUTH AFRICA

1.1 INTRODUCTION

The use of electrical energy has increased since 1879, when Thomas Edison made his pioneering discovery of electrical energy use through a light bulb. In South Africa, electrical energy was used predominantly in economic sectors such as mining as early as 1882 (Masatoshi, 2017:880; Moshoeu, 2017:1). Paradoxically, only a third of South Africa's population had access to electricity in 1990. Prompted by post-apartheid reforms in the political sphere, the National Electrification Programme (NEP) aimed at addressing the imbalances of the past by electrifying residential areas, particularly in the predominantly rural areas (Okafor, Uzoamaka & Iloanya; 2015:149-150).

The United Nations (UN, 2013:iv) indicates that challenges are common to all forms of development, including the expansion of electricity supply services to every South African. The inability to provide continuous access to electricity due to technical or non-technical reasons was part of the challenges faced by South African citizens. Technical losses (TL) are induced by challenges emanating from within the electricity infrastructure used to generate and distribute electricity. On the other hand, non-technical losses (NTL) are attributed to factors such as inadequate or faulty meters, common forms of electricity theft, unauthorised bypassing of electricity meters, and/or tampering with any electrical equipment.

Both technical losses and non-technical losses of electricity have a negative effect in the sustainable supply of electricity. On a global scale, theft related to non-technical electricity losses incurred by utilities amount to more than R350 billion annually (Bihl & Hajjar, 2017:276; Khan, Adil, Javaid, Saqib, Shafiq & Choi, 2020:2). Notwithstanding their negative effects, technically induced electricity losses are tolerated, provided they are within acceptable levels not exceeding 6% (Khonjelwayo & Nthakheni, 2021:47). The tolerance levels of technical losses are better managed and estimable by segmenting the distribution network compared to the non-technical variants of electricity losses that are difficult to manage (Khonjelwayo & Nthakheni, 2021:47).

More than a decade ago, electricity theft was regarded as a relatively unknown offence (Steadman, 2011:3). However, the progression of time and significant body of knowledge reveal a significant awareness of electricity theft as a crime (Saini, 2017:126-128; Moshoeu, 2017:13). Electricity theft manifests in various complex forms, such as electrical infrastructure tampering (e.g. electricity usage and supply meters), billing irregularities and unpaid bills, as well as illegal connections (e.g. tapping of the overhead feeder lines by hooking onto the wires with the collusion of some of the utility employees (Saini, 2017:27; Mujuzi, 2020:80).

South Africa is among developing countries with massive capacity to grow their economy. However, such potential economic growth is hamstrung by, among other critical factors, electricity utilities annually experiencing high economic costs and substantial losses of more than 20% of generated electricity through theft (Yurtseven, 2015:70). Regrettably, electricity theft is one of the most serious but under-reported criminal offences in South Africa, despite annual losses of at least R20 billion due to electricity theft, three quarters of which translates into R15.4 billion per annum suffered by municipalities (Eskom, 2016c:1; Baker & Phillips, 2019:182; Dileep, 2016:6). Contrastingly, Kambule (2018:181-182) estimates Eskom's (Electricity Supply Commission's) theft-induced losses to more than R2 billion a year.

South Africa is moving towards an energy diversification strategy to reduce fossil energy reliance such as coal, which is a primary source of electrical energy (Luthra, Kumar, Garg & Haleem, 2015:769). Such a multi-pronged strategy involves sources such as wind, solar, biomass and geothermal energy that continually replenish by their nature (i.e. renewable and sustainable). Uranium has also been considered as a reliable and sustainable source of nuclear-powered energy. However, Luthra et al. (2015:769), argue that no evidence exists to corroborate the reduction of electricity theft as a direct consequence of using renewable and sustainable sources of energy.

The Electricity Supply Commission (Eskom) generates more than 90% of electricity used within and beyond the borders of South Africa in the South African Development Community (SADEC) region (Eskom, 2021a:13). Furthermore, Eskom is the biggest and main utility generating electricity in the African continent that supplies more than 5.9 million customers with electricity (Eskom, 2017c:7). Moreover, the Independent Power Producers (IPPs) and municipalities who in turn redistribute electricity under

licence to customers within their areas of supply and South African neighbouring countries combined, contribute to the remaining figure 10% of generated electricity that is used and sold by South Africa (Eskom, 2021b:5).

Approximately 60% of Eskom’s generated electricity is sold directly to customers and the remainder of 40% is sold to municipalities (Eskom, 2017b:23). Figure: 1.1 below depicts Eskom’s electricity distribution ratio to its customers in South Africa.

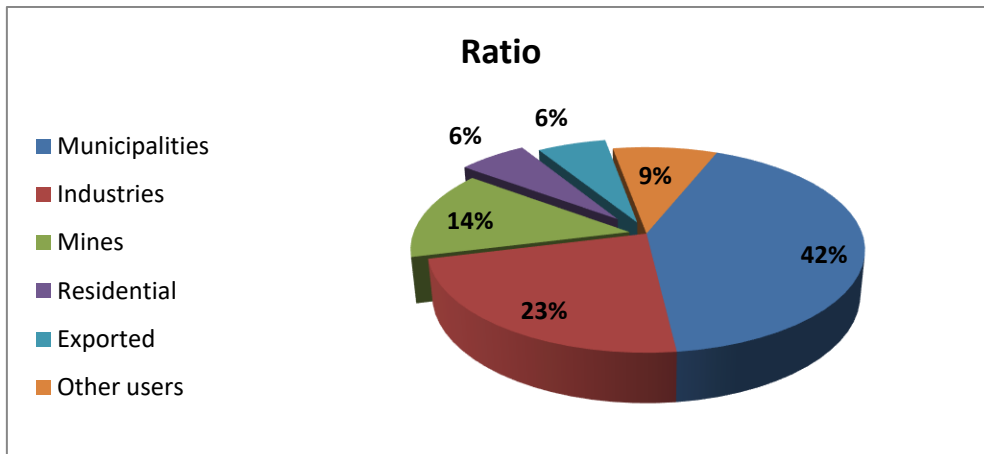


Figure 1.1: Eskom electricity distribution ratio to customers
(Compiled by the researcher)

During the 2015/2016 financial year, municipalities (the largest consumers) sold the majority of about 42% of the electricity generated by Eskom to their customers (Statistics South Africa, 2017:1). Furthermore, industries sold 23% of electricity generated by Eskom during the same period, followed by 14% utilised by mines of electricity generated by Eskom. On the other hand, about 6% for residential areas supplied by municipalities, as well as another 6% sold to neighbouring countries and 9% for other users in South Africa (Statistics South Africa, 2017:1).

Moshoeu (2017:36-37) points out that there is a serious deficiency by the South African government in developing an appropriate legislative framework to eliminate electricity theft. There seems to have been no improvement for almost two decades since Smith (2004:2072) conducted an electricity theft comparative analysis study of 102 countries and found that South Africa was among the list of countries with the highest levels of poor implementation of rules and regulations in their judicial systems. The Electricity Regulation Act (No. 4 of 2006) enables the National Energy Regulator

of South Africa to carry out its mandate of regulating, licensing and determining tariffs in the electricity industry, but does not cover electricity (South Africa, 2006:1).

Meanwhile, the National Energy Act (No. 32 of 2008) aims at securing a diverse, sustainable, renewable and affordable energy such as reducing carbon emissions (South Africa, 2008:1). Notwithstanding that some of South Africa's municipalities have by-laws to address electricity theft incidents in their areas, these by-laws cannot be utilised by other electricity utilities. These by-laws exclusive to the concerned municipalities who in some instances have awarded tenders to incompetent and unvetted service providers (Moshoeu, 2017:37). On the other hand, Section 205 of the Constitution (Act No. 108 of 1996) lists the duties and functions of the police to prevent, combat, and investigate crime and enforce the law (South Africa, 1996).

However, the implementation of by-laws may not yield the desired results when the very police as law enforcers are underutilised and overwhelmed by cases opened regarding electricity theft. Unless the nature and extent of electricity theft is known in greater detail, any attempt to address the problem of electricity theft is prone to fragmented and limited actions (Jiyane-Tshikomba, 2019:40).

1.2 RATIONALE OF RESEARCH (PROBLEM STATEMENT)

Kumar (2014:64) avers that a research problem to be the basis of every research project and has both an input and output effect that should withstand scrutiny in terms of the procedures required to undertake a given field of research. A research problem is also construed as the fundamental issue that justifies the need for the study's undertaking (Creswell, 2014:108). Pardede (2018:2) indicates that research should be devoid of any assumption that the reader might know the premise of the problem. Instead, the problem should be explicitly stated in order to enable readers to understand the rationale of the study. Theft is hardly a disregarded variable in electricity supply initiatives across the globe. In the context of this study, the core of the investigated problem is premised on electricity theft in Mopani District, Limpopo Province.

Limpopo Province comprises 5 (five) district municipalities, ranked in this study in order of the number of households. The districts are as follows: Vhembe (382 346), Capricorn (378 272), Mopani (338 385), Greater Sekhukhune (290 489), and

Waterberg (211 452) (Statistics South Africa, 2017:1). The population in Limpopo Province has grown from 5.4 to 5.8 million people in the years 2011 to 2016, while the number of households increased from 1.4 to 1.6 million respectively (Statistics South Africa, 2017:1). The number of households with access to electricity in the province has grown from 39.2% in 1996 to 93% in 2016 excluding undocumented informal settlement mushrooming in the area and benefitting from electricity by bridging from other households (Statistics South Africa, 2017:1).

In the 5 (five) district municipalities, only 15 local municipalities are licensed to distribute electricity bought in bulk from Eskom for supply to their 180 701 customers (NERSA, 2012:54). As such, Eskom supplies not less than 80% households and directly to more than 903 505 customers in Limpopo Province despite that electricity distribution in South Africa is a functional responsibility of municipalities. This huge Eskom customer base is due to limited or absence of electricity generation capacity by some of the municipalities (Statistics South Africa, 2017:1). The researcher explored the incidents of electricity theft reported through Eskom Customer Care and Interaction (CC&I), which reported that electricity theft in Limpopo Province was at an average of 590 incidents monthly from 2013 to 2017.

The incidents exclude those discovered during audits conducted by Eskom employees and contractors. The latter category of incidents could be more than the average figures of incidents reported through the CC&I. There is a probability of more than 90% for identifying the perpetrators involved in the commission of the electricity theft for each incident reported or audited. This is due to the fact that the reports include either the addresses, Eskom pole numbers, names of the perpetrators or users of electricity who might have colluded with the perpetrators, and customer accounts details. The problem is compounded further by the fact that there is no empirical data and protracted statistical literature indicating the electricity theft incidents incurred by Independent Power Producers (IPPs) and municipalities in Limpopo Province (Swanepoel, 2017:1).

Only hypothetical data abounds about municipalities conducting audits to curb electrical losses and increasing tariffs to compensate the loss, which is found mainly in news articles (Tandwa, 2017:1). On the other hand, the South African Police Service (SAPS) 2016/2017 statistics released in 2018 is devoid of any specific category for

electricity theft offences, which are separately categorised under other theft, commercial theft and shoplifting (SAPS, 2018:87). In this regard, electricity theft would be sub-categorised as 'other theft', which does not specify the nature of the thefts covered. Therefore, the unclear definition of 'electricity theft' constitutes a crucial aspect of the research problem.

Electricity theft issues have a massive impact on the country's economy, which affects the business sector both directly and indirectly. This might be due to the increased load experienced by the power generating stations, which in turn affects the quality of the electricity supplied to the affected business and residential areas. Due to theft issues, the power suppliers incur a significant financial loss, which they in turn pass on to the legitimate consumers who are expected to pay for additional generation capacity and primary energy costs through increased electricity tariffs (National Treasury of South Africa, 2011:155). Consequently, the economy's growth slows down due to the instability of the national grid (Moshoeu, 2017:37; Mutambo, Kawimbe, Meki-Kombe & Mwange, 2023:62).

In its Multi Year Price Determination (MYPD), Eskom (2017b:97) attributes the tariff increases to security expenditure resulting from increased initiatives to safeguard assets, combat theft incidents and mitigate other related risks. 'Operation Khanyisa', a nationally established Eskom initiative aimed at promoting the legal, safe and efficient use of electricity, reported that the Limpopo Province was one of the top 4 (four) provinces with high levels of electricity theft in South Africa (Eskom, 2017a:1). There were only 26 convictions and 50 arrests reported for electricity theft cases across the targeted four (4) provinces (i.e. Mpumalanga, North-West, Limpopo and Free State) since the inception of Operation Khanyisa from 2010 to 2016.

The researcher believes that the number of arrests and convictions are not proportional to the alarming spate of electricity theft reported monthly by the CC&I in Limpopo Province for the five-year period (2010-2016) of the operation across four (4) provinces (Eskom, 2016b:1). The causes are still to be established for the remarkably low number of arrests and convictions in proportion to the incidents detected during the audits, in addition to those reported through the CC&I. The main concern in the Limpopo Province is the less effective remedial efforts of electricity utilities to enforce the legal use of electricity by consumers. The perpetrators of electricity theft do not

pay their electricity usage accounts, and ignore fines issued to them by municipalities. Furthermore, most perpetrators of electricity theft are unknown in the electricity billing system because they are either illegal immigrants or illegal tenants.

They continue with illegal reconnections and do not follow legal channels to re-install the electricity supply even after it has been disconnected. When the perpetual illegal use of electricity is assessed against the number of arrests reported by Operation Khanyisa, the impression that emerges is that utilities continue to refine the use of engineering technology than applying the laws governing crime in South Africa to curb the crime of electricity theft. It is against this backdrop that governance, political and social issues are in some instances, prompted by the use of seemingly preferred engineering methods by utilities to restrain electricity theft, which may not be an exception in the South African context (Smith, 2004:73-74; Yurtseven, 2015:70; Eskom, 2017a:2).

Limited understanding of the nature and extent of electricity theft hampers the required effectiveness of addressing the problem (Khonjelwayo & Nthakeni, 2021:46-47). Accordingly, the power utilities are encouraged to conduct an analysis that would explain the factors contributing to electricity theft, which should extend beyond traditional engineering and managerial frameworks. Until the study by Parbhoo, Pillai and Madhoo (2011), South Africa did not have any prior research studies addressing the problem of electricity theft, with particular focus on the laws governing crime in South Africa. In their conclusion, the above-cited researchers recommended the need for further research work. In that regard, the current study is necessary insofar as it addresses the very literature gap identified by Parbhoo, Pillai and Madhoo (2011). In this regard, the rationale of the study premises on its escalation of the electricity theft problem in the context of laws governing theft in South Africa.

The researcher contends that concerted focus on the definitions and causes of this problem does not necessarily yield the desired solutions. As such, protracted and systematic investigation of existing laws within the criminal justice system would provide a cogent framework for an objective determination of whether or not the existing laws were adequate to effectively thwart the alarming trends of electricity theft in Limpopo Province and the country as a whole. Failure to resolve the problem of electricity theft robustly and successfully, increases the potential for the continuation

of illegal electricity usage and non-compliance to remedial actions by utilities, government and municipalities. Inevitably, the latter situation might further contribute to tariff increases, poor economic recovery, substantial meltdown and extant debt that is mostly felt by taxpayers and the poor.

1.3 DEMARCATION OF THE STUDY

Theofanidis and Fountouki (2018:157) noted that demarcation in research involves a well-defined research outcome that contributes significantly to the research project and is free from unnecessary extension of a research problem. These authors further noted that a demarcation of the study is achievable by isolating a manageable content and context of the research project to allocate more clarity on what a researcher should look for in literature to address the research problem. Furthermore, the authors illuminate that the content and context of the study are determined by the way the research objectives and research questions are defined.

The definition of concepts does not only include an accurate description, but also demarcates the components and dimensions that are to be included or omitted in the definition (Theofanidis & Fountouki, 2018:157). In the context of the present study, the main activity is based on the available data and information that explored the offence of electricity theft in Mopani District, Limpopo Province. Accordingly, the engineering and technological methods are not a focal point of this research but serve as an explanation of the phenomenon of electricity theft. In addition to this conceptual demarcation of the study, a geographic factor also delineated the focus of the study, which is the Mopani region in Limpopo Province.

Due to limited time and other resources, it was not feasible to target all the five regions in Limpopo Province. The most important consideration to identify the most suitable region was based on the following factor:

- Highest number of electricity theft incidents as obtained from Eskom's Customer Care & Interaction report (12 521 cases from 2013 to 2017).

The study is also methodologically demarcated in terms of its qualitative approach encompassing both exploratory and descriptive orientations. Therefore, quantitative aspects are not the focus of this study. According to Reiter (2017:141-142),

exploratory research is most helpful in examining and explaining “segments of reality” in cases of generalisability limitations. Therefore, the possible generalisability limitations posed by the selection of only a single district (Mopani District) has been mediated with the comprehensive detailing of content and context by means of explorative and descriptive orientations throughout the study (Lopez & Whitehead, 2013:1; Reiter, 2017:142). In the following section, the researcher presents details of the research aim, objectives and questions.

1.4 RESEARCH AIM

A research aim is the depiction of the broader goal or intentions of the researcher in undertaking a study (Halcomb, 2016:6). A research aim also projects the ‘direction’ of the research in terms of the scale and scope adopted and undertaken by the researcher. Furthermore, the research aim also guides the reader’s expectations about the nature of the matter under investigation and provides a clear picture of the overall purpose of the research (Doody & Bailey, 2016:19). Accordingly, the aim/goal/purpose of this study is: To explore and establish the extent to which adequate application of South African laws governing crime could assist in curbing electricity theft, rather than relying on engineering technology alone to enforce compliance.

1.5 RESEARCH OBJECTIVES

Doody and Bailey (2016:19) aver that research objectives are active statements whose response to specific research questions often result in measurable outcomes that define the specific aims of the study and play a role in sample size calculations as well as determining the power of the study. In that regard, the following research objectives enabled the study to define its specific aims and answer its specific research questions:

- To explore and describe the nature and extent of electricity theft in South Africa;
- To determine and evaluate the interpretation of electricity theft in relation to laws governing crime in South Africa;
- To explore the dynamics of reporting, investigating and prosecuting perpetrators of electricity theft;
- To determine and evaluate current practices of curbing electricity theft by utilities in South Africa; and

- To determine and develop practical measures for curbing electricity theft successfully by applying laws governing crime in South Africa.

The researcher firmly upholds that the afore-mentioned research objectives have the potential to usher-in innovative measures to constrain electricity theft to low levels that may have less negative impact on the lives of citizens, economic growth and financial stability of the country (Eskom, 2017a:1; National Treasury, 2011:147). To that effect, the study then presents knowledge and practice opportunities in electricity theft outcomes that may be of benefit to the local, regional and international communities.

1.6 RESEARCH QUESTIONS

It is imperative to have research questions which address the main concerns of the study. These research questions would provide an indication of how the research will be actualised and point out exactly what the researcher needs to find out to add value to the topic studied (Doody & Bailey, 2016:19). Therefore, the research questions should be relevant, precise and specific, give a clear vision about the kind of data to be collected, and address the aims of the research (Muszynski, 2023:1). Moreover, the research questions should justify and demonstrate their significance to the problem and the literature relating to them (Bryman, 2016:83). Therefore, the research questions should indicate the factors and relationships that will be part of a research enquiry in order for the research questions to provide useful data that would be necessary to address the aims of the research (Bryman, 2016:83).

However, the research questions (intended to guide the researcher throughout the study) should not be confused with the data collection questions as appearing in the interview schedule (Banda, Mpolomoka, Dube & Sampa, 2017:17895-17898). The latter category of questions strictly relates to those that are actively responded to by the selected participants during the empirical data collection process by means of the semi-structured interviews. In terms of the definitive explanations above, the researcher articulated the following research questions so as to clearly address both the study aim and its attendant research objectives:

- What is the nature and extent of electricity theft in South Africa?
- How is electricity theft interpreted in relation to laws governing crime in South Africa?

- What are the current practices of curbing electricity theft by utilities in South Africa?
- What are the dynamics associated with reporting, investigating and prosecuting the perpetrators of electricity theft?
- Which practical measures could be applied to curb electricity theft successfully within the framework of laws governing crime in South Africa?

1.7 RESEARCH PURPOSE

It is not peculiar to have more than one research purpose for the study (Depoy & Gitlin, 2016:53). Broadly, research purposes used to determine an appropriate approach for a particular study include forecasting an outcome, explaining the causes or consequences of something, and criticising or evaluating a belief (Sage Publications, 2018:8-9). Singh (2019:44) further explains that a research purpose influences the decision to engage in a research task, and is instrumental in selecting the designs suitable for the particular research being conducted. In this regard, the researcher applied the most useful purposes in the research project to also explore, describe and explain the crime of electricity theft (Banda et al., 2017:17896). Following is the research purpose's exploration of the current situation.

1.7.1 Exploration

In this study, the researcher explored the dynamics of electricity theft in Limpopo Province within the context and framework of the laws governing crime in South Africa. Moreover, the researcher explored potential strategies to mitigate electricity theft, aiming to establish guidelines. As such, this endeavour involved a comprehensive consideration of South African crime laws as a foundational element, with the ultimate goal of effectively addressing and preventing electricity theft in Limpopo Province. This researcher conducted this study to further explore electricity theft as a crime, thereby gaining more knowledge and understanding of the nature and extent of this category of theft as a crime. In addition to the literature, the researcher also used the information obtained from participants to develop practical guidelines referred to in the last research objective in Section 1.6 (Mozersky, Parsons, Walsh, Baldwin, McIntosh & Du Bois, 2020:13).

1.7.2 Description

In the above-mentioned discussion concerning the process of exploration, the researcher formulated extensive descriptions of the relevant concepts, factors and

aspects obtained from both the literature (secondary data) and participants (primary/empirical data) in order to gain better understanding of the research problem (Banda et al., 2017:17895). Multiple scholarship perspectives derived from the reviewed literature, legal and policy prescripts provided clearer descriptions and understanding of the crime of electricity theft and laws within the criminal justice system that govern theft.

Furthermore, lived experiences and feedback of the research participants and various stakeholders were elaborated in the context of both the research topic and problem being investigated (Rahl, 2017:1). Thus, this descriptive aspect of the study provided the researcher with the background information relevant to electricity theft and measures to curb it successfully with the application of laws governing crime in South Africa. Furthermore, the researcher described the reasons ascribed to the challenges posed by the theft of electricity in the presence of both engineering technology and laws governing crime in South Africa.

1.7.3 Evaluation of the current situation

In this regard, the researcher evaluated the current status and situation of measures to curb the theft of electricity having explored and described the theft of electricity in the presence of both engineering technology and laws governing crime in South Africa (Gomes de Pinho & Pires da Rosa, 2017:92). Such evaluation entailed a comparison of data obtained from the literature and the participants as providing a cogent basis to determine the inherent areas of strength and weakness in the laws governing crime in South Africa. The purpose of such evaluation was to determine the areas that need improvements for the successful curbing of electricity theft as well (Kivunja & Kuyini, 2017:33).

1.7.4 Developing good practice

It is the desire of the researcher to solve the problems outlined in the problem statement and to frame concomitant conclusions and recommendations that will assist utilities and law enforcement to successfully curb the theft of electricity (Halcomb, 2016:6). On that note, the researcher's intention is to apply new knowledge and develop good practices that will provide new guidelines and procedures for the utilities, police investigators and prosecutors (Depoy & Gitlin, 2016:53; Gomes de Pinho & Pires da Rosa, 2017:93). Furthermore, the researcher explored, described and

evaluated the current practices of curbing electricity theft to gain a better understanding of this offence, as well as to establish and develop guidelines, procedures and recommendations for the practical implementation to curb electricity theft in a successful manner.

1.7.5 Empowerment of those being researched

Empowerment of those being researched entails the degree to which the research study becomes instrumental in enhancing or improving the research participants', colleagues' and other stakeholders' understanding of their responsibilities and subsequently performing to the expected levels and standards (Weidenstedt, 2017:24). In the nature of this study, 'those being researched' are principally represented by prosecutors, community members police investigators, and utility employees. In this regard, the researcher firmly believes that the results of this study, in conjunction with the proposed guidelines mentioned in the final objective of the study (see Section 1.6) will empower the police investigators, prosecutors, community members and utility employees with relevant and innovative knowledge, skills and strategies to combat the theft of electricity effectively. These stakeholders will be in a better position to understand the factors associated with the stealing of electricity, and draw from the study's findings, recommendations and proposed guidelines on how they can improve on their current efforts of curbing this crime (Saini, 2017:26).

1.8 DEFINITION OF KEY TERMS

Defining key concepts (conceptualisation) in research is helpful for purposes of enabling readers to comprehend both the applied and implied terminological meanings of the concepts or terms in their theoretical, disciplinary and methodological contexts (Saputra, 2021:92). According to Aramide, Jacob and Pillay (2023:16), conceptualisation occurs when there is no proper definition suitable to address a particular research problem.

Such absence allows the researcher to review existing theories and their concepts to develop relevant terms that pivotally bear reference to the purpose of the research investigation. To avoid the attendant anxiety that comes with the process of conceptualisation, researchers should focus on the main or thematic concepts and explain their inter-relatedness (Aramide, Jacob & Pillay, 2023:14). Accordingly, the researcher regards the below-cited key concepts as pertinent and thematically linked

to the study's core variables; that is, the research problem, goal, objectives and questions.

1.8.1 Criminal conviction

Criminal conviction occurs when the judge, magistrate or presiding officer of the court in criminal proceedings determines or makes a ruling regarding the guilt or innocence of an accused person or suspect beyond any reasonable doubt (Cameron, 2020:3; Picinali, 2022:97). The evidence presented before court provides the required framework to prove officially and legally that the accused person is declared guilty as charged within the parameters of the law. Picinali (2022:97) posits that a criminal conviction is the opposite act of an acquittal (legal declaration of innocence). In the context of this study, a criminal conviction pertains to the court's presiding officer's declaration of guilt beyond any reasonable of a person accused of involvement in electricity theft.

1.8.2 Criminal investigation

Osterburg and Ward (2015:5) define a criminal investigation as a process involving the systematic collection of information and evidence to search, identify, arrest and ultimately secure a conviction of the perpetrator through prosecution. In the context of this study, the researcher applied the concept of criminal investigation because it is relevant to the implementation of laws governing the crime of electricity theft in particular, and other theft matters generally.

1.8.3 Criminal Justice System

Joubert (2018:32) and Santos (2014:149-150) describe the criminal justice system (CJS) as the aggregation of all the institutions/organisations and their personnel, services, systems and procedures that are involved in the processes of investigation, identification, apprehension, prosecution and sentencing or penal measures for perpetrators of crime. In the context of this study, the criminal justice system encompasses the South African Police Service, which is responsible for crime investigation and arrest of offenders/suspects; the Department of Justice and Constitutional Development (DoJ & CD), for court administrations; the Department of Correctional Service (DCS), responsible for prisons and correctional facilitators for offenders; as well as the Department of Social Development (DSD), to assist in the

rehabilitation of offenders to prevent recidivism. All these institutions play different roles as discussed below.

1.8.3.1 South African Police Service (SAPS)

In terms of Section 13 of the SAPS Act (No. 68 of 1995, as amended), it is the primary duty of the police to prevent crime and investigate it when it has occurred. The police are further mandated to arrest the suspects of crime and prepare legally valid documents (case dockets) for submission as evidence to the courts.

1.8.3.2 Department of Justice and Constitutional Development (DoJ & CD)

The DoJ & CD is the government institution exercising its fiat in all prosecutorial matters on cases already investigated by the police and submitted to the courts for prosecution. Presiding court officers (i.e. magistrates and judges) decide whether the reported offence is prosecutable or has a reasonable chance to stand an enquiry in court (Department of Justice & Constitutional Development, 2020:14-16). Prosecutors present the reported case on behalf of the State, whereas the accused person is represented by his/ her defence attorneys and the presiding officer (magistrate or judge) takes a neutral stance until they decide on the innocence or otherwise of the accused person (Brandl, 2014:466). In the event of a “guilty” verdict on the accused person, the presiding officer also decides on the nature and effect of sentencing of the case.

1.8.3.3 Department of Correctional Service (DCS)

The DCS could be viewed as the ‘end product’ that commenced with the investigation of a crime or alleged crime. The guilty perpetrator is then sentenced by the courts and convicted in the custody of the prisons or correctional facilities, which are administered and managed entirely by the Department of Correctional Services. The role of the Department of Correctional Services is mainly to implement the sentencing as decided by courts, and facilitates the rehabilitation programmes of prisoners (Joubert, 2018:33).

1.8.3.4 Department of Social Development (DSD)

The DSD is known for providing social services through social workers, probation officers and community development workers. Its role in the CJS is evident when the court requires various services such as, investigation reports about certain social

circumstances pertinent to either the victims or the accused perpetrators of crime (Diko, Olofinbiyi, Steyn, 2019:2). Often, the social workers are required to investigate and compile a circumstance report that might be presented in the courts, prisons and police environments.

1.8.4 Criminal offence

Chapter 1 of the Criminal Procedure Act 51 of 1977 defines a criminal offence as an unlawful act, an omission or commission of which is punishable by law (South Africa, 1977:5). The term, 'offence' is utilised interchangeably (synonymously) with 'crime' (South Africa, 1996; Van der Linde, 2020:4-8). In the context of this study, the researcher uses the terms, *offence*, *crime* and *criminal offence* interchangeably (*ergo*, synonymously) in reference to a criminal conduct that is either committed or omitted and is punishable by law.

1.8.5 Criminal prosecution

Criminal prosecution refers to a court process of leading criminal proceedings, which is emblematic of the act of seeking justice, ensuring the attainment of justice and protecting the innocent (Department of Justice & Constitutional Development, 2020:14). A criminal procedure involves a qualified and competent prosecutor performing the function of prosecution, the purpose of which is not to ensure a conviction, but ensuring that justice is served fairly, transparently and equitably (Department of Justice & Constitutional Development, 2020:14-16). In the context of this study, the researcher has adopted the definition applied by the above-cited author.

1.8.6 Electricity

Electricity is described in terms of the force and energy that propels electrons, and that a utility chooses to produce and sell to its customers (Woodford, 2018:12). Additionally, electricity is a source of energy usually generated in power stations, and is transmissible from one place to another through underground cables or above ground to residential, industrial or commercial users (Woodford, 2018:12). As a source of power or energy, electricity is versatile in that any type of fuel can be converted into electricity. In the context of this study, the terms, *energy*, *power* and *electrical power* are used interchangeably in reference to *electricity*. Such an orientation is influenced by the fact that some authors refer to electricity as power, electric power or energy (Jamil, 2013:267; Yurtseven, 2015:70).

1.8.7 Electricity theft

A general understanding of theft has evolved from a traditional definition limited to an unlawful and intentional appropriation of a movable corporeal property, to include the incorporeal (Njontini, 2016:29). Therefore, it is difficult to prosecute a person on theft of electricity because such theft is not corporeal, and falls out of Snyman's (2008:181-183) definition. The landmark judgement in the case of *S v Ndebele and Another* (SS16/2010) [2011] ZAGPHC 41 found the three (3) accused persons guilty of electricity theft under the Prevention of Organised Crime Act 121 of 1998. For this study, the researcher relied on the afore-mentioned judgement (*S v Ndebele and Another* (SS16/2010) [2011] ZAGPHC 41) because it recognises electricity theft as an eligible and prosecutable offence.

To date, the researcher is not aware of any other judgement that nullified the *S v Ndebele and Another* (SS16/2010) [2011] ZAGPHC 41 case, in which Judge Lamont furnishes the court with an exposition of theft beyond appropriation of corporeal and moveable property. In the context of this study, electricity theft is conceptualised and operationalised as an unlawful and intentional appropriation of any property or characteristic in the electricity supply value chain which consequently deprives both the owners, producers and consumers/users of the beneficial use/consumption accruing from the stolen product (i.e. electricity).

1.8.8 Engineering technology

Engineering technology refers to the use or practical application of scientific principles, systems and physical design processes for conversion into tools, machines, instruments/ appliances and structures to solve a range of real-world problems (Tembely, 2015:82). The conversion itself is incumbent on the technologist's/ engineer's performance of a series of tasks relating to the testing, evaluation, production and technical analysis of the developed instrument, appliance or product. In the context of this study, the definition provided by Tembely (2015:82) above, has been adopted.

1.8.9 Stakeholders

Stakeholders are affected private or public role players or parties involved in the partnership of any endeavour (Nederhand & Klijn, 2017:2). Each stakeholder category usually has its own priorities, which may result in a conflict of interest due to differing

priorities. Such a scenario dramatically increases the complexity of a situation (Nederhand & Klijn, 2017:4). Therefore, while the roles of stakeholders are critical in various situations, not all stakeholders have the same level of commitment to the cause of the partnership. In the context of this study, stakeholders include the community/residents, the local traditional and municipal authorities, politicians and professionals, the criminal justice system, as well as Eskom as the major power utility in the electricity supply value chain. Necessarily, all these stakeholders represent parties that collectively have the potential to contribute effectively to a functional partnership against the crime of electricity theft.

1.8.10 Tampering

Tampering refers (but not limited) to an unlawful act of altering, cutting, disturbing, interfering with, interrupting, manipulating, obstructing, removing or uprooting by any means, method or device (South Africa, 2015). As such, this definition emanates from the preamble of the Criminal Matters Amendment, Act 18 of 2015, which was propelled by the unacceptably high incidence of crimes relating to essential infrastructure in South Africa. These crimes posed a risk to (among others) public safety, *electricity supply*, communications and transportation systems (South Africa, 2015). In the context of this study, this definition of ‘tampering’ is very relevant in that it includes interrupting electricity supply as one of the country’s essential infrastructure support systems.

1.8.11 Utilities

Section 5.7 in Chapter 5 of the Council for Scientific and Industrial Research (2000:1-2) defines ‘utilities’ as engineering services including water, sanitation, roads, storm water drainage, energy supply, solid waste removal, communications in the form of telephones, and postal collection and delivery. The utilities can be operated and maintained by either individuals or corporate agency, private or public non-governmental organisations, or communities. This study adopts the usage of utilities with specific focus on energy, which is electricity (CSIR, 2000:1-2). In that regard, Eskom is the major utility in respect of power supply to its residential, commercial and industrial customers/users throughout the country.

1.9 Research structure

The study is demarcated into seven chapters as indicated below.

Chapter 1

General orientation of electricity theft in South Africa. The chapter provides a broad description of the core variables in the study and elaborates on the problem statement and its rationale; the research aim, objectives and related questions; as well as the research purpose and definition of key concepts.

Chapter 2

Methodological framework of the study. This chapter incorporates the philosophical worldview of the study; the research approach; data collection; sampling; data analysis and interpretation; as well as issues of trustworthiness and ethical considerations.

Chapter 3

Description of the nature and extent of electricity theft. In its description of the nature and extent of electricity theft, the chapter is conceptually steeped, and explicates pivotal issues such as electricity; sources and types of electricity; and the importance and rationale for regulating the supply of electricity. Furthermore, the researcher discusses the concept 'electricity theft'; electricity theft methods; methods of detecting electricity theft; impact of electricity theft on customers and utilities; motives of electricity theft; as well as estimates of electricity theft in Limpopo Province in this chapter.

Chapter 4

Evaluation of the interpretation of electricity theft in relation to laws governing crime in South Africa. This chapter discusses the adaptation of crime elements to electricity theft and fulfilment of the definitional elements of electricity theft; commonly reported electricity theft incidents; modes of operation preferred in electricity theft; statutes relevant to electricity theft; guidelines, evidence and stakeholders in the investigation and prosecution of electricity theft.

Chapter 5

Exploration of the dynamics associated with reporting, investigating and prosecuting the electricity theft perpetrators. This chapter discusses practical experiences relating to the reporting, investigation and prosecution of electricity theft; as well as the nature and effect of the partnerships between the energy utilities, the police and prosecutors in the context of the criminal justice system.

Chapter 6

An overview of the current practices to curb electricity theft in South Africa. This chapter addresses the existing practices of curbing electricity theft as reciprocal to the challenges associated with such theft; rules and procedures applied to curb electricity theft; and the role played by the law enforcement (police) and judicial (courts) in curbing electricity theft.

Chapter 7

Main findings, conclusions and recommendations. The chapter premises on the analysis and interpretation of the findings; formulation of the recommendations and practical guidelines to improve practices to curb electricity theft; as well as the conclusion derived from the analysis and interpretation of this study.

CHAPTER 2: METHODOLOGICAL FRAMEWORK OF THE STUDY

2.1 INTRODUCTION

Kumar (2014:39) regards as extremely important to use appropriate research methods. Eriksson and Kovalainen (2016:3) describe methodology as a way researchers seek answers to the problem. Comprehending the major advantages and possible limitations associated with different methods, position the researcher to stand a chance of choosing the most suitable methodology that will appropriately determine what should be included or left out in the research. The choice of the methodology is based on a combination of theoretical and practical considerations (Eriksson & Kovalainen, 2016:6).

2.2 PHILOSOPHICAL WORLDVIEW

Philosophical worldview is the fundamental knowledge or theory that constitutes the abstract beliefs and principles guiding and influencing the behaviour of the researchers in determining the methodological aspects of their research project. Some different authors know the philosophical worldview as epistemology or paradigm, which describes how people come to know about something (Creswell, 2014; Kivunja & Kuyini, 2017:26-27). Ajayi, Ebohon & Ganiyu (2021:1) delineate paradigm to consist of ontology that seeks to find out what constitute reality; epistemology which is concerned with the nature and forms of knowledge; methodology which is a plan that enables the choice of a particular research method; and methods that are specific techniques and procedures used to collect and analyse data. The theoretical perspective to this research is informed by pragmatic philosophical worldview.

2.2.1 Pragmatic Worldview

Creswell (2014:10) outlines that pragmatism worldview emanates from actions, situations and consequences; and it forms a focal point around the research problem and all applicable approaches to understand the problem than directing focus on methods. The aim of this paradigm is to determine the weaknesses in the study and to strengthen it by utilising a variety of research methods that enable the understanding of the problem than focusing on the research methods (Rahl, 2017:1).

Pragmatism worldview is relevant for this study because its strength is effective in that it offers neutral stance in philosophical and methodological preferences that are

immediate, practical and useful to yield productive research outcomes. The employment of pragmatic method of inquiry has a potential to eliminate doubt in research in that it allows the researcher to apply various research methods that may serve as an enabler to respond to the research questions (Ajayi, Ebohon and Ganiyu (2021:1). Furthermore, the versatility brought about by the permissible mix of research methods instil in the mind of the researcher an improved understanding of the research problem than when using a rigid research approach.

2.3 RESEARCH APPROACH AND DESIGN

The selection of an appropriate research design is pivotal to the attainment of research findings that are valid and comparable to other similar studies. Equally, a faulty design has a detrimental effect of yielding misleading findings. It is therefore crucial to select a research design that is valid, workable and manageable (Kumar, 2014:39). Erikson and Kovalainen (2016:6) assert that understanding the advantages and disadvantages of different research methods affords the researcher the informed position to choose the most suitable research methodology.

There is an alternative use of the concepts research approach, design and research strategy to mean the same thing (Sileyew, 2019:27-29; Walliman, 2016:32). Taherdoost (2022:53) outlined that the research approaches can be used to bring a distinction between research types by broadly classifying their research methods and their output data. Abuhamda, Ismail, Bsharat (2021:72) gave tacit synopsis that there are two approaches that can be used in research namely quantitative and qualitative. It is when the methods from the two approaches are combined in research that they are called mixed research methods.

Punch (2014:114) adduce that a research design is a basic plan for a piece of a research that includes the strategy, conceptual framework, a phenomenon that is investigated; and tools and procedures to be utilised for collecting and analysing data. A research design extends from the philosophical worldviews or philosophical perspectives of the study in that it addresses the ontology (the reality) and epistemology (acquisition of knowledge) that form part of the methodology (Vanson, 2014). Kumar (2014:39) contends that the main function of a research design is to decide, describe, justify and explain how the researcher will find answers to the research questions. Furthermore, the research design sets out the specific details of

the enquiry; includes the logistical arrangements that a researcher proposes to undertake; reveal the measurement procedures involved in the study; and outline the sampling strategy, the frame of analysis and the time frame. Hence, the research approach and design for this study is explained in Section 2.2.1 and 2.2.2, respectively.

2.3.1 Qualitative research approach

Taherdoost (2022:53) commended the uniqueness of qualitative research methods in crime matters because their subjective and comprehensive accounts benefit researchers and policy makers, they provide relevant and meaningful information that is beyond average crime data, and their use in research has increased to supplement the quantitative statistical conclusions with experiential data derived from studying the real world of offenders and crime. Qualitative research approach is fundamental to this study because it fits the purpose of the research as in Section 1.5 *supra*, which includes to explore the electricity theft and to describe aspects related to it.

Taherdoost (2022:55) warned that even though the exploratory and descriptive research lend itself more to qualitative data that do not impose an absolute scope and direction of the research, it remains crucial for the study to reveal the route and methods intended by the study. The researcher also considered the assertion by Eriksson and Kovalainen (2016:4); that qualitative approach is embedded through interpretation and understanding of concepts, rather than quantitative that deals with explanation, testing of hypothesis and statistical analysis. According to Mohajan (2018:24), qualitative research serves to describe and interpret in a systematic manner the phenomena stated by the studied members of the population, thus assist in generating a theory or a new concept.

The approach to this research is not to deduce or verify a theory as applied in quantitative research methods; but to induce or generate a theory as required by qualitative research. Furthermore, qualitative research approach is suitable for pragmatism worldview that is concerned less with the methods but focuses on the actions, situations and consequences (Creswell, 2014:10). Mohajan (2018:24) informed this research approach by revealing that qualitative studies are optimal in that they:

- Provide variation in data which cannot be obtained through quantitative means;
- Deliver depth in data to ensure credibility in results regardless of small sample sizes;
- Use less resources;
- Provide a voice for the participants in marginalised contexts and from less driven preconceived research theories and literature;
- Highlight the complexities of the phenomenon; and
- Serve as a crucial point in expanding the scope of issues and problems around the studied phenomenon.

2.3.2 Convergent Parallel research design

Kelley (2021:10) define a convergent parallel design as a design that requires the researcher to obtain concurrently both quantitative and qualitative data during the same phase of the research process. As a result of concurrent data collection, the researcher is enabled to compare the methods equally, analyse the methods independently and interpret the results together. According to Dawadi (2021:30), the converging or interfacing of both qualitative and quantitative data can be done during analysis and/or interpretation.

Kelley (2021:10) suggests that desirable research design applies more than one research method, thus creates enabling latitude to benefit from the strengths of different methods employed. Convergent parallel research design enables the researcher to collect both qualitative and quantitative data in one visit to the field. Both types of data have equal value for understanding the research problem and help the researcher to manage extensive data collection activities individually or with a team (Dawadi, 2021:30). The convergent parallel research design also fits well with the pragmatic worldview that employs various methods to understand phenomena as outlined in sub-section 2.1.1.

The convergent parallel research design applies explanations to determine how reality works and how various factors relate to each other. Therefore, convergent parallel research design is vested on the available practical mechanism that influences the outcome of an investigation (Kelley, 2021:10). The researcher implemented the convergent parallel research design by dividing the research process into three

phases namely data collection and analysis, data comparison and interpretation of result. Firstly, the data collection and analysis involved the reading of documents, articles and electronic resources, reviewing of literature, interviewing, making notes and analysing data.

Secondly, the data comparison included studying the impressions, frequency and intensity of the participants' responses to identify relations; identifying the patterns and structures of responses; identifying key themes emerging from the data and coding the data obtained. Lastly, the results were interpreted and transformed into a general and conceptual outcome, which is theory. The process of the convergent parallel research design for this study is schematically represented in Figure 2.1 below.

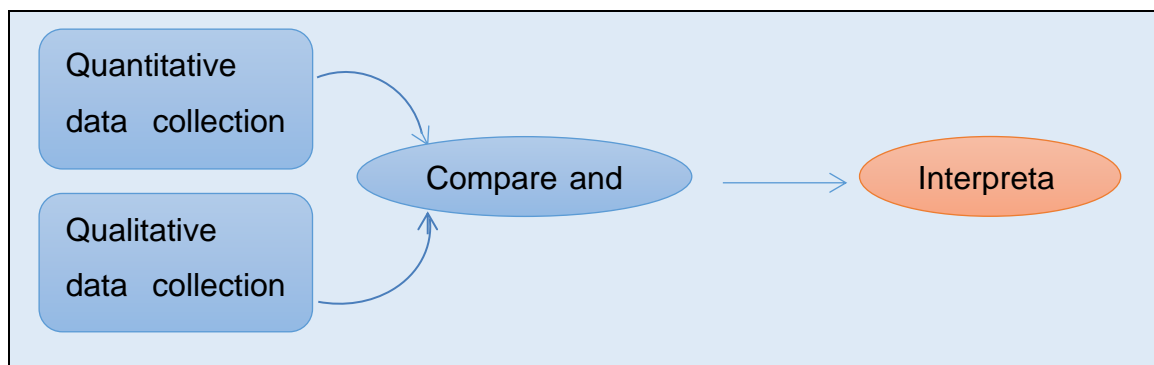


Figure 2.1: Convergent parallel research design

(Source: Demir & Pismek, 2018)

Figure 2.1 above depicts the convergent parallel research design commencing with quantitative or qualitative data being collected and analysed. In this context, the researcher is then enabled to compare and interpret data.

2.4 POPULATION AND SAMPLING

Population and sampling are intertwined in that it is impossible for the enquiry to assess the units of study without selecting a sample (smaller representative group) of the units for assessment. In turn, the outcomes derived from the representative group can be applied to the population (total units for the study) from which they were drawn. The researcher is able to define the target population (focus units of the study) that is informed by the scope of the study from the total units of study (Alvi, 2016:11). A description of population, target population and sampling is detailed in Sub-sections 2.4.1, 2.4.2 and 2.4.3 below.

2.4.1 Population

Population is a totality of all people, items and events that a researcher is concerned about and wishes to understand in relation to the research problem (Rahl, 2017:3). Shukla (2020:np) understands a population for the study as a group from which conclusions could be drawn. Riffe, Lacy and Fico (2014:720) guides the identification of this study when describing that the research population is a well-defined collection of individuals or objects that are generally large and known to have similar binding characteristics.

A supportive definition by Shukla (2020:np) considers population in terms of its use in setting boundaries on the study and reference to individuals in the universe who have certain properties or traits. Population is known to other authors as a general population (Asiamah, Mensah & Oteng-Abayie Kwame, 2017:1610-1611). The ideal population in this research comprised of all Eskom employees from security and investigations, customer services (CS) and operations and maintenance, and energy trading and energy protection, Municipal employees in the department of electricity, SAPS police investigators, NPA prosecutors and Community leaders or representatives in Limpopo who were dealing with and had dealt with and investigated cases of electricity theft. Figure 2.2 below depicts the position of Limpopo in the map of South Africa.



Figure 2.2: The map of South Africa depicting the position of Limpopo

(Source: South African Tax Guide, 2015)

The ensuing sub-section provides the reasons and rationale for the study's identification of the ideal population. Such clarification is relevant, considering the multiple participant categories involved in the study.

2.4.1.1 Eskom personnel

The researcher identified Eskom because it is the main licensed generator and distributor of electricity in South Africa and Limpopo Province in particular. Eskom is experiencing the offence of electricity theft in Limpopo, which is the core focus area of the study.

2.4.1.2 Local Municipal personnel

The selection of local municipal population is premised on the fact that the municipalities have a functional role to generate and supply electricity as a service to the people residing within the municipality's sphere of jurisdiction. Furthermore, some of the local municipalities in Limpopo have a licence to distribute electricity to the occupants of the municipal area and they are prone to electric theft incidents. Lastly, local municipalities have a functionary responsibility to create by-laws that intends to address theft of electricity in their specific zones.

2.4.1.3 Police investigators

The identification of SAPS police investigators as a population emanates from Section 205(3) of the Constitution of the Republic of South Africa (Act No. 108 of 1996), which authorises the police to prevent, combat and investigate crime that includes theft of electricity (South Africa, 1996).

2.4.1.4 Prosecutors

The inclusion of prosecutors in the population is informed by their role regarding decisions on criminal cases, seeking and ensuring the attainment of justice, and protecting the innocent.

2.4.1.5 Community leaders

The researcher identified the community leaders as the ideal population since their role is pivotal in almost all other social matters in communities. They interact with almost all persons or organisations that have a particular interest in the community, to an extent that to some regions, permission to access a particular community should be sought with them. They also play a vital role in ensuring that development initiatives

such as electrification becomes a reality, and they work in partnership with law enforcement authorities to deal with crime affecting their communities.

The leaders could be the traditional authority, civil society or municipal authority (Baloyi, 2016:80). It was not practical for the researcher to interview all the members of the ideal population in Limpopo because of the huge number of population members, limited budget and time constraints. Therefore, the researcher selected a target population as delineated.

2.4.2 Target population

The target population comprises of a set of elements larger than or different from the group that the researcher identified as focus of the study, and has a potential to enable the researcher to generalise the research findings back to the entire population (Bachman & Schutt, 2012:108). The target population was selected for this study as informed by Willie (2022:521) who believes that the study should take into consideration that the institutions or people selected should satisfy the relevant scope of the studied topic, because their contributions are determinants to the attainment of the research outcomes.

In Section 1.2 supra, the researcher reflected on how Limpopo Province is divided into five districts; namely, Vhembe, Capricorn, Mopani, Greater Sekhukhune and Waterberg. The target population for this study comprised of all Eskom personnel from security and investigations, Customer Services (CS) and Operations and Maintenance (O&M), and energy trading and energy protection, Municipal employees in the department of electricity matters, SAPS police investigators, NPA prosecutors and Community leaders or representatives in Mopani district or region who were dealing with and had dealt with and investigated cases of electricity theft. The position of Mopani district in the map of Limpopo is depicted in Figure 2.3 overleaf.

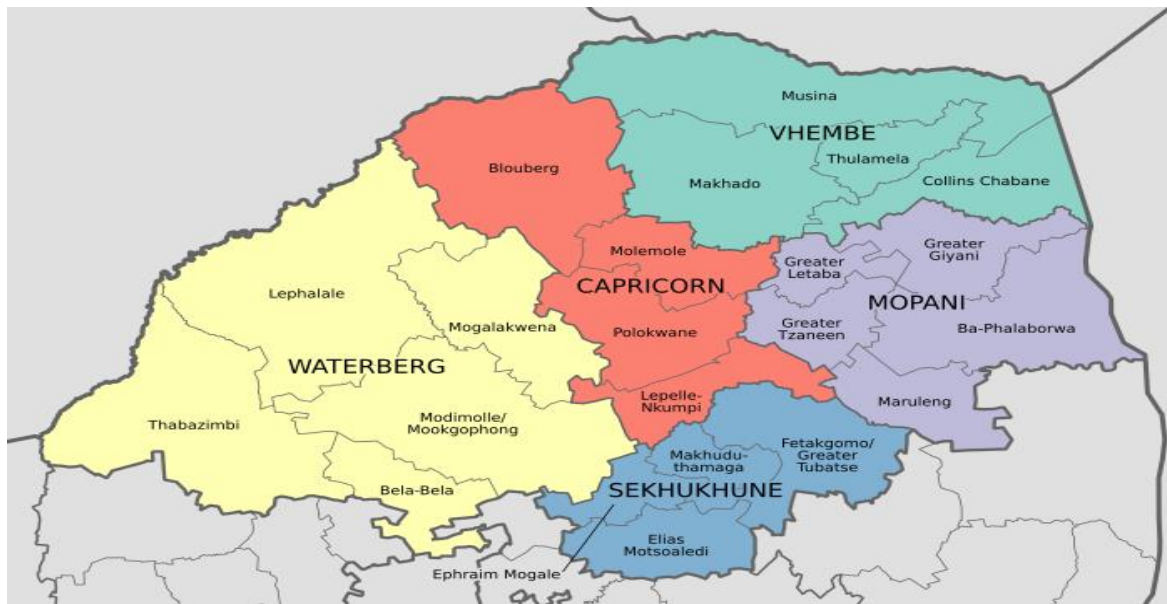


Figure 2.3: The map of Limpopo Province depicting the position of Mopani district
(Source: Municipalities, 2016)

The researcher selected Mopani district or region to generalise and interpret the results because according to Eskom Customer Care and Interaction (CC&I), it recorded 12521 number of incidents of electricity theft during the period of 2013 to 2017, and that is the highest when compared to number of incidents reported during the same period from all other districts in Limpopo. It was not possible for the researcher to conduct interviews with all the members of the target population in Mopani because of financial constraints and time factor. The researcher has therefore selected samples from the members of the target population.

2.4.3 Sampling

Sampling is the process of drawing a relatively smaller number of people or objects known as sample from a population for investigation purpose (Alvi, 2016:11). According to Riffe, Lacy and Fico (2014:71) sampling involves the selection of study units that can be in any other form and will ascertain that the study is realised, and the outcomes of the sampled units could be applied generally to the population from which the sampled units were drawn. In addition; Bless, Higson-Smith and Sithole (2013:394) describe sampling as the act of selecting research participants from the whole population and deciding about which units or/and social processes to observe. Sampling methods are broadly classified into probability and non-probability (Acharya,

Prakash, Saxena & Nigam, 2013:330). A distinction between probability sampling and non-probability sampling is outlined in Sub-sections 2.4.3.1 and 2.4.3.2 below.

2.4.3.1 Probability sampling methods

Various authors concur that probability sampling methods are associated with wide ranged studies and are applied in research with known boundaries (Pace, 2021:4; Shukla, 2020:np). Probability sampling is also premised on its utilisation of random selection and affording every member an equal opportunity to be selected (Zikmund, Babin, Carr & Griffin, 2013:392). Therefore, it can be used when a researcher wants to generalise the findings of the sample to the target population. Leedy & Ormrod (2015:179-183) informs that simple random sampling, stratified random sampling, proportional stratified sampling, cluster sampling and systematic sampling are techniques associated with probability sampling.

Noor, Tajik and Golzar (2022:78-79) supported by Du Plooy (2013:110), recount, that the application of the simple random sampling method allows each individual in the population an equal opportunity of being selected. Simple random sampling method is one of the sampling methods that the researcher applied in selecting samples for this study. According to Noor, Tajik and Golzar (2022:79), simple random sampling method entails that the researcher selects required number of participants from the sampling frame. In addition, simple random sampling is attained in the event of a fixed number or percentage being drawn from the sampling frame.

2.4.3.2 Non-probability sampling methods

Pace (2021:9) consider non-probability sampling as a sampling technique that does not indicate the likelihood of a target population unit selection in advance. Aspects of the non-probability sampling techniques include convenience sampling, quota sampling and purposive sampling (Leedy & Ormrod, 2015:179-183). According to Acharya et al. (2013:330), non-probability sampling includes convenience or purposive sampling, quota sampling and Snowball sampling. (Acharya et al., 2013:330). The other two sampling methods that the researcher used to select samples for this study are purposive sampling and snowball sampling methods. The selected sampling methods are described hereafter.

- **Purposive sampling method**

The purposive sampling method is in the class of non-probability sampling methods, and is defined as a sampling method in which the chance or probability of each unit to be selected is not known nor confirmed (Rahl, 2017:3). Sampling for qualitative studies is inherently purposive in nature, but it should be taken with caution to clearly describe their methodological philosophy (Pace, 2021:3). Bachman and Schutt (2012:121), cite that researchers who apply purposive sampling in their studies have a need that impels them to select each element according to a specific purpose it has on research.

Purposive sampling method also allows the researcher to deliberately apply their own judgement in selecting individuals who are believed to have particular pertinent knowledge about the study (Bachman & Schutt, 2014:119; Etikan et al., 2016:2). The rationale for a researcher to engage purposive sampling is based on the selection of information-rich cases that have a potential to yield in depth information that is central to the study Pace (2021:9).

- **Snowball sampling method**

Snowball sampling is network research that helps the researcher to identify hidden and relevant members of the study population. The snowball sampling is not used to estimate the characteristics of the general population, but to estimate the characteristics of relevant members of the population that cannot be easily observed or identified (Dragan & Isaic-Maniu, 2013:160-161). Taherdoost (2016:22) reveals that snowball sampling is non-random in nature and uses few people to help encourage others to participate in the study, thus increases the sample size.

Kirchherr and Charles (2017:1-2) describe a snowball sampling as a method in which the interviewee provides the researcher with the names of potential interviewee or interviewees. The potential interviewee or interviewees, in turn, identify the names of potential person or persons relevant to be interviewed in relation to the objectives of the study. The trend of identification and giving names continues as the sample grows like a rolling snowball. The Snowball sampling allows the researcher to deviate from using the strict sampling frame, based on the fact that it is difficult to identify the information-rich cases of participants using the sampling frames.

“Snowball sampling involves seeking information from key informants about details of other ‘information-rich cases’ in the field” (Pace, 2021:9). Therefore, the snowball sampling enabled the researcher to take advantage of relying on expert wisdom, studies that are highly valued by different stakeholders and those that are outside the academic mainstream, and on the assumption that rich cases are derived from the most cited primary research Pace (2021:9).

2.4.3.3 Sample

A sample is a group of elements selected from the population, regarded to be representative of the population and studied in order to obtain certain knowledge about the entire population (Bless, Higson-Smith & Sithole, 2013:394). On the other hand, Alvi (2016:11) define a sample as a group of relatively smaller number of people selected from a population for investigation purpose and it comprises of members and participants. The researcher requires a list of the items that constitute the elements of the population from which the sample is drawn. A list of the items to identify all elements of the. population is called a sampling frame (Harvey, 2019, Johns Hopkins University & Freya Sonenstein, 2012).

Chaturvedi (2012) accentuates that in more general cases, it is not possible to identify and measure every single item in the population and to include any of them in a sample. It was therefore reasonable to use a sampling frame with identifiable properties that could be included in the sample, and it should have been representative of the population. The use of sampling frame assisted the researcher to define how to get access to the target population. The researcher has therefore considered that the people included in the sample met the characteristics of having dealt with or were dealing with and involved in the investigation of electricity theft. Moser and Korstjens (2018:10-11) culminate an understanding that the size of a sample and data saturation are interactive variables.

The interaction emerges from a submission that qualitative study should adhere to a rule that requires a researcher to sample until there is no further data to be collected and analysed, and the enquirer is satisfied that maximum data to achieve the purpose of the study has been obtained. The authors warned that to avoid new redundant information the researchers should discern when they reach a saturation point of data, and that is attainable by noticing excessive and irrelevant information (Moser &

Korstjens (2018:11). It is important for the researcher to scrutinise the quality of the participants sampled to decide whether it is the right time to end the sampling.

According to Lopez and Whitehead (2013:127), qualitative sampling approaches differ with those of quantitative in that they do not apply formal criteria in determining the sample size. Furthermore, determining the actual number of the participants in qualitative sampling is not promoted than the selection of the sample size that will ensure acquisition of rich data. Fusch and Ness (2015:1409) underpin that the researcher should select the size of the sample informed by data saturation that is measured in conjunction with the richness (quality) and thickness (quantity) of data. In deciding on the number of individuals to be interviewed, the researcher relied on the recommendations by Fusch and Ness (2015:1409). The latter illuminate that a qualitative researcher could use his/her own discretion to choose a sample size that enables the researcher to reach data saturation, on condition that the researcher guarded against the potential compromising effect to the quality of the data collected.

The researcher also considered the budget and resources constraints, and that data collected from interviews was complemented by other data collection sources, namely literature and personal experience as discussed in Section 2.4 of this study (Vasileiou, Barnett, Thorpe & Young, 2018:9). Furthermore, the researcher noted the advice by Baker and Edwards (2012:6) that the time given to complete a research project and to keep in contact with participants and the institutional demands of ethics committees is important internal determinants of research projects. However, it should be noted that external factors play a central role in determining the number of interviewees.

Another reason for the selection of the number of interviewees in this study is that Vasileiou et al. (2018:10), assert that reasonable samples adhere to the average of 30 participants for a qualitative study, irrespective of the methodology the researcher applies. At the lower end of the spectrum, a higher proportion of researchers seem more ready to adhere to a maximum of 50 interviewees. Depending on the nature of the data required for the study, in order to obtain a detailed account of information, the number of participants in qualitative research may not be less than three (3) or more than 50 participants (Lopez & Whitehead, 2013:127; Martínez-Mesa, González-Chica, Bastos, 2014:615; Moser & Korstjens, 2018:11).

The fact that it is permissible in qualitative designs to estimate the number of participants that are to be interviewed does not limit the researcher to small sample numbers (Moser & Korstjens, 2018:11). The researcher surfed through the internet, enquired from peers and colleagues about the contacts of the institutions that their inclusion will be of help to achieve the goals of this study. Furthermore, the made calls, visited and wrote emails to the proposed institutions to request contacts about their employees who their duties required them to be involved in electricity matters. Samples were drawn after an engagement to identify the potential participants of the study from those that were dealing with and have dealt with and investigated electricity theft.

The researcher used her own judgement for this research as bolstered by the experience the researcher has in terms of the environment and settings of electricity theft. The researcher has had seven-year (7) experience of working as police official (as both visible policing and detective member) and had ten-year (10) experience working in Eskom (both as an investigator and as security officer). It was imperative for the researcher to interact with various stakeholders in both employment settings in order to predetermine the participants' sample from different settings that might possess particular characteristics and knowledge pertinent to electricity theft.

As such, it was the researcher's responsibility to ensure that the samples drawn fulfilled certain pre-determined criteria of being selected for this study, because each of them is believed to have dealt or was dealing with and involved in investigations of electricity theft. The following sample units from Limpopo were drawn according to their relevance in answering the research questions:

- **Sample A1:** Eskom personnel from security and investigations;
- **Sample A2:** Eskom personnel from customer services (CS), and engineering (Operations and Maintenance (O&M));
- **Sample A3:** Eskom personnel from energy trading and energy protection;
- **Sample B:** Local municipality personnel responsible for electricity matters;
- **Sample C:** SAPS detective police;
- **Sample D:** NPA prosecutors; and
- **Sample E:** Community leaders or representatives.

Sample 'A' included Eskom employees and was divided into three sub-samples. Each sub-sample contributed to 'electricity theft' information which is unique to the role of dealing with electricity theft within Eskom. Sample 'A1' comprised of employees responsible for security and criminal investigations within Eskom. This sample assisted in answering the research questions that sought to evaluate how electricity theft is interpreted in terms of the laws governing crime in South Africa; determine the current practices employed by utilities to curb electricity theft and exploring the dynamics associated with reporting, investigating and prosecuting the offence.

Sample 'A2' is composed of employees responsible for interacting with customers or consumers within Eskom, while Sample 'A3' is composed of employees responsible for trading and protecting the energy against unlawful consumers or customers. Sample B comprised of Local municipality personnel responsible for electricity matters within the municipal boundaries. Sample 'A2', Sample 'A3' and Sample 'B' helped to answer the research questions that address the nature and extent of electricity theft and also determine the current practices of curbing electricity theft in their working environments. The relevance of Eskom and municipal employees in this research is premised on their pivotal role in the distribution and commercialisation of electricity; thus, places them at the receiving end of the conduct of electricity theft.

The criminal justice background of Sample 'C'-SAPS detectives and Sample 'D'-NPA prosecutors informed their selection, because they contributed to answering the research questions that seeks to understand how electricity theft is interpreted in terms of the laws governing crime in South and the dynamics of reporting, investigating and prosecuting electricity theft. Sample 'E' consisted of community leaders or representatives whose inclusion in this research is influenced by the fact that they are almost the first line of contact, and they are within reach to deal with various development matters in the community.

Their immediate availability in the community places them in a position to give their experiences about electricity theft related matters in their communities. They were included because their experience and views assisted this study on determining the suitable guidelines to curb the offence focusing on using the criminal justice system. Qualitative research projects tend to begin with a broadly defined sample before they could move to specific samples (Moser & Korstjens, 2018:11). Mopani region is

divided into five (5) local municipalities namely: Ba-Phalaborwa, Greater Giyani, Greater Tzaneen, Greater Letaba and Maruleng.

There are some of the members from Eskom and courts that form part of the target population and are working across and beyond municipal boundaries. This overlapping across and beyond municipal boundaries is as a result of Eskom and courts that have their own demarcations that are not aligned to municipal boundaries. In such instances, the researcher included the Eskom service points and courts that offer services within the Mopani district municipality.

Mopani district comprises of 16 Eskom service points, 125 municipal wards, 23 SAPS stations and 11 courts that consist of members who ultimately formed part of the target population and offer services within the boundaries of Mopani district. The location of the five (5) local municipalities within Mopani district is shown in Figure 2.4 below.



Figure 2.4: The map of Mopani district depicting the positions of five local municipalities (Source: Municipalities, 2015)

Samples were drawn using all the Eskom personnel from security and investigations, customer services (CS) and Operations and Maintenance (O&M), and energy trading and energy protection, Municipal employees in the department of electricity matters, SAPS police investigators, NPA prosecutors and Community leaders or representatives in Mopani district or region who were dealing with and had dealt with and investigated cases of electricity theft. The samples were selected applying simple

random sampling, purposive sampling and snowball sampling methods. The reasons for the choice of the sampling methods in this study have been outlined in Sub-sections 2.4.3.1 and 2.4.3.2. Furthermore, the sample selection is depicted in the five sub-sections below.

- **Eskom employees from security and investigations, customer services (CS) and Operations and Maintenance (O&M) and energy trading and energy protection**

The researcher wrote down the names of all Eskom service points within Mopani on each small piece of paper. The researcher put all the piece of papers with all names in the box and shook to mix them. The researcher *randomly* drew three (3) pieces of papers with names of Eskom service points on them. The Section Head for each of the components was *purposively* selected, such as: Security investigations, Customer Services (CS) and Operations and Maintenance (O&M) and Energy Trading as well as Energy Protection. The selection yielded three (3) section head participants. The researcher then applied *snowball* sampling method to ask each section head selected to identify five (5) employees from their respective sections who have dealt with and were dealing with, and have been involved in the investigations of electricity theft. The five selected by each section head when added to three brought the number to a total of eighteen Eskom participants across three (3) components within Mopani district.

- **Municipal employees in the department of electricity**

The researcher wrote down the names of all the local municipalities within Mopani on each small piece of paper. The researcher put all the piece of papers with all names in the box and shook to mix them. The researcher *randomly* drew three (3) pieces of papers with names of local municipalities on them. The researcher then *purposely* selected the electricity section heads for each of the three (3) local municipalities selected. The selection yielded three (3) electricity section heads participants.

Subsequently, the researcher applied *snowball* sampling method to ask each selected electricity section head to identify one member from their respective electricity sections who have dealt with and were dealing with, and have been involved in the investigations of electricity theft. Each member selected by each electricity section head when added to the three (3) brought the number to a total of six (6) participants of municipal employees in electricity department across Mopani district. The

researcher obtained permission to conduct the study with three (3) selected local municipalities.

- **SAPS police investigators**

The researcher wrote down the names of all the SAPS police stations within Mopani on each small piece of paper. The researcher dropped all the piece of papers with all names in the box and shook to mix them. The researcher *randomly* drew five (5) pieces of papers with names of SAPS police stations on them. The researcher then *purposely* selected Detective Commander for each of the five (5) SAPS police stations selected. The selection yielded five (5) Detective Commander participants. The researcher then applied *snowball* sampling method to ask each Detective Commander selected to identify one (1) detective member from their respective units who have dealt with and were dealing with, and have been involved in the investigations of electricity theft. The one selected by each Detective Commander when added to five (5) brought the number to a total of ten (10) participants of SAPS Detectives across Mopani district.

- **NPA prosecutors**

During the interviews with the five (5) selected detective commanders as outlined above, the researcher requested the commanders to refer the researcher to NPA prosecutors servicing their jurisdictional precincts, and who were experienced in cases of electricity theft. The researcher put the names of the prosecutors given by detective commanders in a box and *randomly* drew three (3) names from the box and conducted interviews with the selected prosecutors. The selection of prosecutors as suggested by detective commanders was done to ensure that the researcher conducted interviews with prosecutors who have dealt with these specific police stations cases relating to electricity theft.

- **Community leaders or representatives**

The researcher wrote down the numbers of all the municipal wards within Mopani district on each small piece of paper. The researcher put all the piece of papers with all names in the box and shook to mix them. The researcher *randomly* drew three pieces of papers with ward numbers on them. The researcher then *purposely* selected one (1) ward councillor from each of the three (3) selected wards. The selection yielded three ward councillors who were not forming part of the participants but helped the researcher to identify the possible participants. The researcher then applied *snowball*

sampling method to ask each ward councillor selected to identify two community representatives or leaders from their respective wards who have dealt with and were dealing with, and have been involved in the investigations of electricity theft.

The requirement for the identification of two community representatives or leaders was that one should come from the traditional leaders and the other from the municipal leaders. The identified community representatives or leaders were six (6) in total. The sum of participants for this study as derived from adding the sub-totals of the five target population categories namely Eskom employees, Municipal employees, SAPS employees, NPA prosecutors and Community representatives or leaders is forty-three (43). The population and sampling breakdown in this study is represented in Figure 2.5 below.

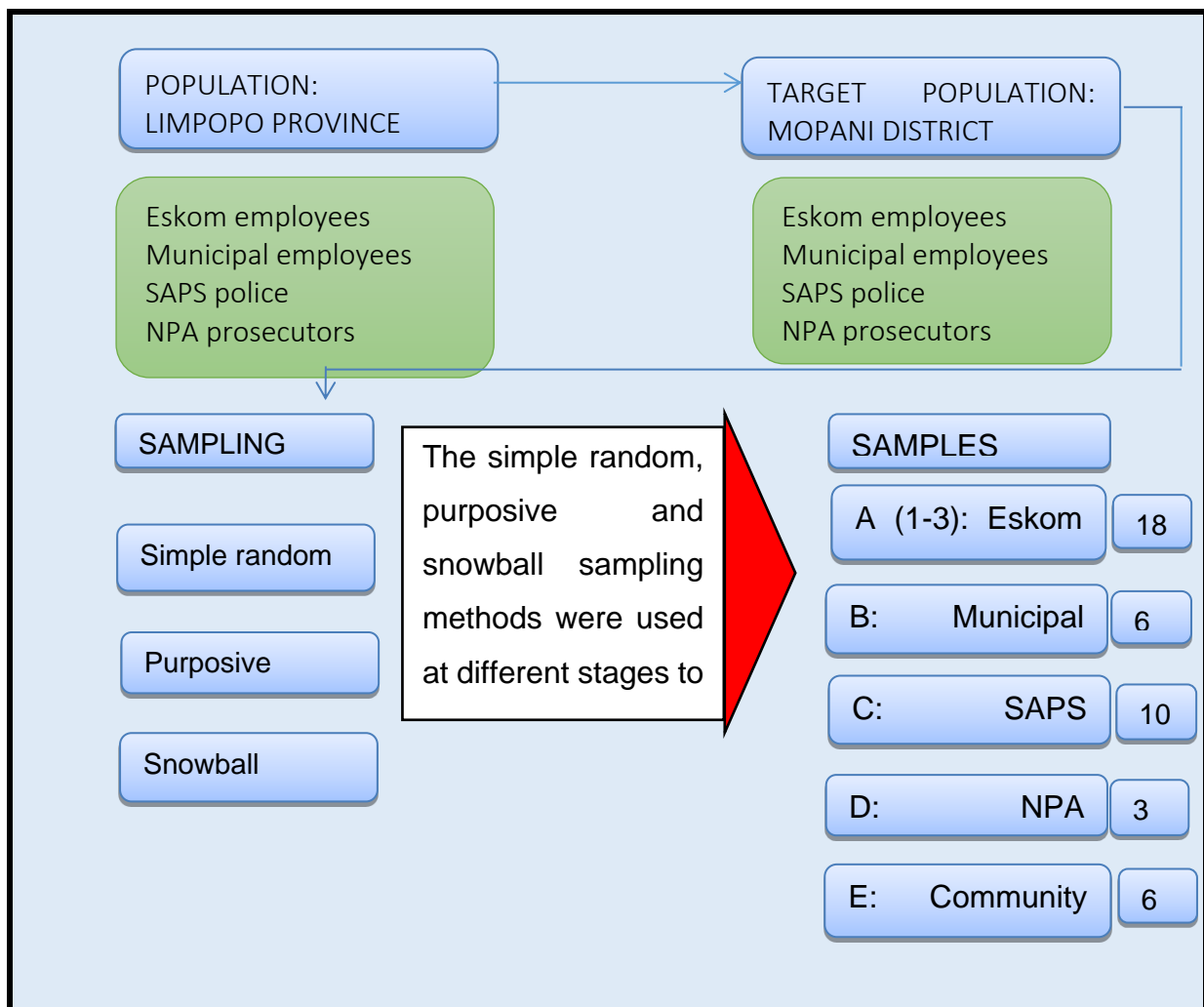


Figure 2.5: The population and sampling breakdown
(Compiled by the researcher)

2.5 DATA COLLECTION

Data collection is among the research methods that researchers propose for their studies (Creswell & Poth, 2018:16). Halcomb (2016:6-7) described data collection as a way of capturing the multiple realities to gain a deep understanding of the human experience. Furthermore, data gathering is amongst the creative methods employed in qualitative studies to gain an insight into the participants' world (Halcomb, 2016:6-7). The importance of data collection methods rests on how the information collected is utilised by the researcher and the justification for such a method is selected (Paradis, O'brien, Nimmon, Bandiera & Athina, 2016:263).

According to Creswell and Poth (2018:16), it is useful for a researcher to consider the range of possibilities presented by the data collection methods. The range consideration guided the researcher to organise the data collection by the degree of predetermined or emerging methods. The qualitative data collection methods informed the researcher's utilisation of open-ended type of questions, and to focus on qualitative data analysis. Employing qualitative data collection methods is further encouraged by Kumar (2014:35) who reiterates that data collection is another process amongst others that differentiate qualitative from quantitative research. Qualitative data collection is not so much concerned with numbers it yields but promotes in depth investigation from few individuals about the phenomenon (Kumar, 2014:25).

When describing the way data were collected the researcher considered some advice by Denscombe (2012:96) who alludes that the researcher should pay attention to details that may provide the necessary insight to the reader about the practicalities. Denscombe (2012:97) further enlightens that the details of the data collection are very essential in enlightening the reader about the following:

- They tell when the data will be collected (month and year);
- How long data collection will continue (duration of research); and
- And where the data will be collected (location, situation).

Halcomb (2016:6-7) identified interviews, focus groups and observations as the most common data collection methods used in qualitative research. A research tool or research instrument is anything that becomes a means of collecting information for a study. The example of such tools is the interview schedule, questionnaire, survey,

notes on field observations, field diaries, information collected from secondary notes and interview guides Kumar (2014:39). Kumar (2014:26) asserts that it was common for qualitative researchers to develop data collection instruments in consultation with the potential respondents in order to ensure their relevance. The latter ensures validity of the questions by exploring the extent to which the respondents interpreted and understood the questions as intended by the researcher.

Steered by Denscombe's (2012:97-98) propositions, the researcher considered access and authorisation of acquiring information, sift through personal contacts and networks that may be helpful in getting access to population that will provide relevant information for the study. According to Creswell (2006:116), the researcher needs to enter sites in a way that is respectful and does not disrupt the flow of activities. The researcher also obtained consent to access the population, information, events, settings and records or documents that may be helpful to the purpose of the study. That was done by writing letters or emails, securing appointments to meet the relevant heads or company directors or individuals and using the phone to obtain preliminary details about who is the relevant person to approach for permission to conduct the study.

The researcher collected data between March 2020 and March 2021. Due to the exploratory nature of the study, the researcher explored locations suitable for data collection and suits the participants. The researcher used more than one method of data collection namely literature, documentary sources, interviews and personal experience. The multiple data collection method was very helpful because there was a chance that the single source of data could not bring detailed and accurate information required by the study, then the other approach method filled the gaps left by the other (Kumar, 2014:26). Qualitative researchers use a variety of data collection methods to develop understanding of how people perceive the social realities (McLeod, 2017:2).

2.5.1 Literature sources

Desai and Potter (2011:3) consider literature as an information material that is not only relevant to the researcher's topic under investigation, but is also useful in enlightening how other similar topics have been investigated by other researchers previously. Flick (2011:32-33) clarifies that different types of literature and evidence about the selected

topic is sought in various ways. The author further highlights the importance of the press such as magazines and newspapers in showing the kind of attention the general public pays to the topic under investigation. However, the author warns that such publications should not be treated as scientific literature. Only the credible sources such as primary sources and secondary sources, original work and reviews, and grey literature sources can be used for scientific literature purpose (Flick, 2011:33-34).

The reading of literature was done to provide critical and relevant aspects of the study; verify a number of key areas from the study; identify key themes; criticise the existing research work constructively; demonstrate how literature informs the research questions, practice and analysis; communicate other researchers' work and provide clear comments on other researchers' arguments (Desai & Potter, 2011:2). In addition, the literature review enables volition to consider if some of the research methods used in reviewed studies could be duplicated in a scientifically permissible manner.

Both the qualitative and quantitative researchers have recently reached a point of consensus that a researcher should be familiar with the investigated field, in that new insights should be informed by what is already known in relation to the problem under investigation. Since a literature review served as a departure point and formed the basis for the aim of this research, its perusal allowed the researcher perused the credible published research work related to the field of the study and the research methods that the researcher intended to apply (Flick, 2011:32; Denscombe, 2012:57). Qualitative data collection methods enabled the researcher to source information or data from primary sources and secondary sources, original works and reviews, and grey literature.

Primary sources are those that are immediate or first encounter with the event or occurrence, whereas secondary sources are those that often summarise, rework, elaborate or condense the primary work of others. Original works are those sources that report the results for the first time and give basis for others to review the work. Grey literature is scientific or technical in nature, but often not available from the usual bibliographic sources such as databases or indexes (Flick, 2011:33-34). To avoid an overwhelming, unnecessary and irrelevant information; the researcher centred the literature review in a manner that will address the aim of this research, which is to explore and establish the extent to which the application of South African laws

governing crime could assist in curbing electricity theft, than relying on engineering technology to enforce compliance.

That was done by placing the main concept of this study at the centre, and in a manner that shows how it is related to supporting objectives of the research in a form of a literature mind map. Mind mapping the key themes also assisted the researcher to organise and synthesize information according to relevant key sub-headings (Desai & Potter, 2011:4). Figure 2.6 below, indicates the literature mind map applied in this study.

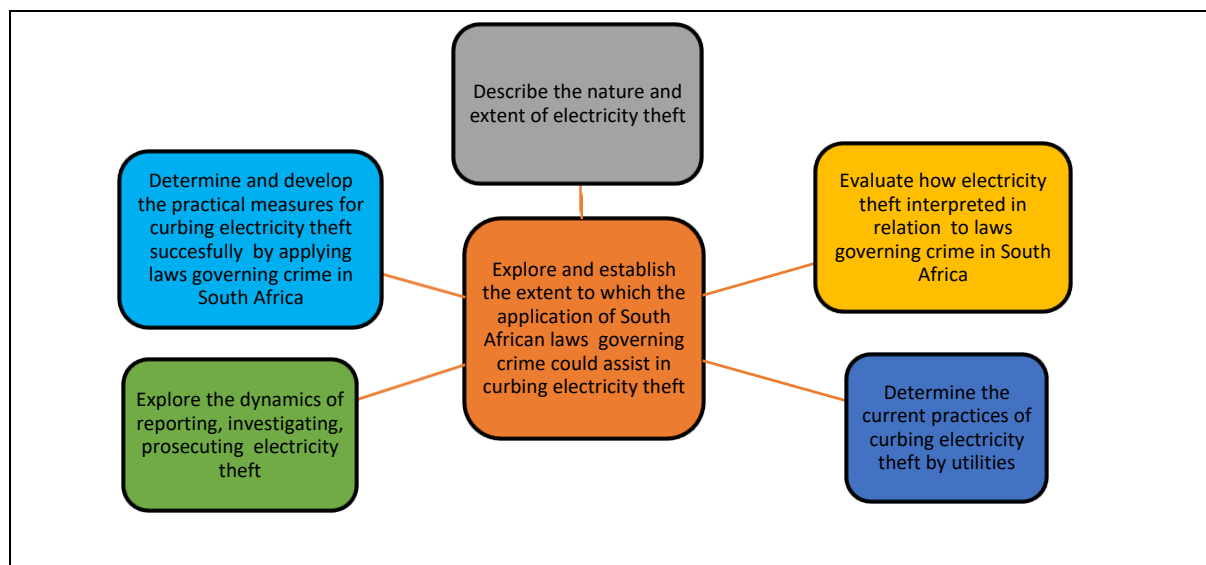


Figure 2.6: Literature mind map showing the main and sub-headings of the study
(Compiled by the researcher)

Guided by Denscombe (2012:59-60), the researcher explored published and unpublished material covering the current research topic. The researcher searched for information from the library; sought the expert advice; searched the internet using suitable key words; perused textbooks in search of content relevant to the study; searched online database that includes biographies, articles, abstracts and documents from various institutions; and reviewed articles to draw main themes. During the review of literature, the researcher found adequate information on similar topics to that under research, but when sifting, only four studies that include the material information more pertinent to the research topic, aim and questions were found - in the research work of Bihl and Hajjar (2017), Mbanjwa (2017), Parbhoo et al. (2011), Smith (2004) and Yakubu and Narendra (2017).

From all the pertinent sources, the researcher gained abundant clarity from the study by Parbhoo et al. (2011), entitled: “*The effectiveness of the judicial system and its enforcement in successfully prosecuting electricity offenders*”; and that of Mbanjwa (2017) entitled “*An analysis of electricity theft: The case study of KwaXimba in eThekwinj, Kwazulu-Natal*”. These two studies were particularly enlightening for their insightful and incisive explication of electricity theft and its associated causal factors in the South African context. For the international context, the researcher benefited greatly from the study by Smith (2004), entitled: “*Electricity theft: A comparative analysis*”; as well as the study by Bihl and Hajjar (2017), entitled: “*Electricity theft concerns within advanced energy technologies*”.

South Africa is included among the 102 countries that formed part of the comparative study by Smith (2004) whereas Bihl and Hajjar (2017) avoided focusing to any region or country. Diversely, Yakubu and Narendra (2017) focused their research interest to a case study of electricity theft in Ghana. Irrespective of whether the study is focusing on a particular country, region or international spectrum; the research work of all relevant sources used in this study cited and referenced international sources. The reviewed combined relevant sources comprise of relevant literature sources that are useful and relates to key aspects of this study as outlined in the literature mind map in Figure 2.6 above.

The latest sources show that the results of the research conducted by Smith (2004:2073) which highlighted an increasing electricity theft in the presence of engineering technology, are still relevant in the South African context almost a decade and a half they were published. The sources indicate that until recently the electricity theft is still unacceptably high (Bihl & Hajjar, 2017:271; Mbanjwa, 2017:ii; Yakubu & Narendra, 2017:170). Smith (2004:2073) provides an insight that points out that understanding, explaining the nature and extent of electricity theft, and being knowledgeable about the offence beyond conventional and engineering methods is basic to attainment of drastic alleviation of electricity theft.

Furthermore, the author contends on the dynamics associated with the failure to reduce the offence to the lowest levels. The assertions by the author contributed to addressing the objective of this study that sought to describe the electricity theft phenomenon, and investigate its nature and extend. When discussing different

manners of stealing electricity, Smith (2004:2069) supported by Yakubu and Narendra (2017:173) inadvertently hinted on the behaviour of consumers, staff, utility agents, contractors, politicians and government as plausible stakeholders that may either assist or destruct the cause of curbing the crime of electricity theft. Such input is contributory to the aspect in this study that intended to explore the dynamics of reporting, investigating, prosecuting electricity theft.

Despite the fact that the study by Yakubu and Narendra (2017) was not based in the South African context, it contains information that relates to electricity theft and that can be consulted for this research. The work of Mbanjwa (2017:32) has more relevance to this study in that it has detailed on the effectiveness of South Africa's judicial system in prosecuting offenders of electricity theft. Furthermore, the title "*The effectiveness of the judicial system and its enforcement in successfully prosecuting electricity offenders*" of the research article by Parbhoo et al. (2011), has a link to one of the objectives entailed in this study, which is: to analyse the dynamics of investigating, prosecuting and convicting electricity theft as an offence.

Additionally, the authors highlighted their intention of drafting legislation and/or amending existing legislation to enhance awareness of and conviction rates offences that may reduce the energy losses by utilities with the hope to improve prosecution rates and the revenue losses faced by utilities. However, obfuscation arisen in the recommendations drawn from both local and international case discussion that pursue to determine landmark judgements and benchmarks as found in the study by Parbhoo et al. (2011). There is a recommendation that requires the South African judicial system to perform duties falling out of its functionary mandate, which is to utilise high quality metering.

This function is best suitable for electricity utilities because metering involves a regular activity of measuring electricity by energy utilities. The topic, aim and question of this research are partially informed by the assertion that the offence of electricity theft thrives in the presence of engineering technology and requires interdisciplinary approach. However, the study is lacking details that relate to investigation, prosecution and conviction of electricity theft (Bihl & Hajjar, 2017:276). Furthermore, the authors suggested that an effective reduction of electricity theft would be enhanced by training electrical engineers on interdisciplinary approaches beyond the engineering

technology to ensure ethical and legal concerns in engineering (Bihl & Hajjar, 2017:275-276).

The suggestion is useful for this research as developed from the general belief that criminal justice system is the custodian of offence related matters that include electricity theft. The belief echoes Smith (2004:2073) who correlates the efficient power systems in the world and the devotion they have to anti-theft methods - that are practised in a governance culture that promotes organisational efficiency and enforcement of theft laws. Smith (2004:2075) concludes that good governance culture, skills and willingness are essential inputs that will enable the electricity utilities to effectively curb the electricity theft. The author recommends multidisciplinary approach to curb electricity theft which is highly enabled by corruption.

Even though this study focus is on exploring electricity theft, the recommendations by Smith (2004:2075) provide practical solutions that can effectively curb the offence, and the mention of corruption as an enabler relates to the scope of this study that seeks to investigate the dynamics associated with investigating, prosecuting and convicting the electricity theft. In their conclusion, Parbhoo et al. (2011), recommended a need for further research work on the following:

- Implementation of 'New and improved' legislation;
- Creation of public awareness of offences and the appropriate penalties;
- Stricter enforcement of the legislation and regulations;
- Greater involvement of utility legal teams, protective services and law enforcement agencies to further research and encourage information sharing;
- Ensure adherence to defined value chain processes within utilities, Incentive schemes to be implemented to encourage regions that are effectively combating non-technical losses; and
- Engaging in revenue recovery exercises, and the role of NERSA – NERSA should regulate the policies, procedures and could introduce targets for technical and non-technical losses.

Besides the incomprehensible aim and obfuscation identified in the recommendations by Parbhoo et al. (2011), their content and recommendations reflect aspects that are material to the objective of this research in that they require determination of the

practical aspects that may be effective to curb electricity theft. Although Bihl and Hajjar (2011:276) do not specify the disciplines, the authors indicated in their conclusion that theft of electricity can successfully be curbed when the involved parties have an understanding of cross-domain issues that are not only linked to the engineering discipline. The exposition is accommodative of the study aim that seeks to explore application of the laws governing crime in South Africa in relation to the application of engineering technology.

Yakubu and Narendra (2017:173) conducted their study with an ultimate desire to have a developed system that will be utilised to track the metering electricity thefts for purpose of prosecuting and preventing such offences. In their conclusion, they proposed a model to extract evidence of electricity theft committed using the specific metering technique they have identified (Yakubu & Narendra, 2017:173). In spite of the fact that the authors focal attention is on technological device, their purpose of prosecution and prevention contributed meaningfully to the practical guidelines to curb the crime as an aspect of this study.

Smith (2004:2068) does not clarify the aim and research question in the study, however listed the objectives that seek to define electricity theft. The objectives listed include examining the international scope and trends of electricity theft, how such theft can be institutionalised as part of the political, economic and managerial culture of governance and the methods of addressing the problem of electricity theft. The reader then assumes that the aim of the study by Smith (2004) is to analyse electricity theft by comparing countries as it is informed by the topic. Contrary to the topic of the study by Parbhoo et al. (2011); entitled "*The effectiveness of the judicial system and its enforcement in successfully prosecuting the electricity offenders*"; the abstract and conclusion shows that the discussion, analysis and proposed solutions are more relevant to legislature than judicial; thus renders the aim and research question hardly comprehensible.

All would be lost if the same body or authority exercise the power of making laws, executing public resolutions and that of judging crimes (Woolman & Bishop, 2013:OS 06 08; 12-6). Bihl and Hajjar (2017:271) succeeded in revealing the aim of their study which is "*To introduce interdisciplinary concerns as they relate to electricity theft in the*

presence of advanced technology". Similarly, Yakubu and Narendra (2017:171) clarified their aim, which is:

"To characterise the type and nature of attacks which could be experienced by analogue post-paid and smart prepaid energy devices in Ghana with intention to eventually influence the development of a system to track such offences for prosecution and also to prevent such attacks".

The study by Mbanjwa (2017) revealed the aim which is to investigate the strategies in place to curb electricity theft and it is very relevant to address the current practices employed by utilities to curb the theft in this study. Neither of the four sources demonstrated evidence relating to theoretical perspective that influenced their study, however, they acknowledged by citing and referencing the sources consulted for their various studies (Bihl & Hajjar, 2017; Parbhoo et al., 2011; Smith, 2004; Yakubu & Narendra, 2017).

Furthermore, the research articles of Bihl and Hajjar (2017), Parbhoo et al. (2011) and Smith (2004), do not mention if any literature review was done and neither have they enlightened on the research methodology used or preferred. Their study did not provide an insight on what research approaches, designs, sampling methods, data collection methods, data analysis methods, validity, trustworthiness; and how they treated ethical issues.

Acknowledging those who provided permission to use their material and resources presents an exception that Bihl and Hajjar (2017:276) have subtly shown their consideration of ethical issues. Not outlining the research methodology and other research instruments, create a peculiar and inconvenient scenario for the authors to justify and explain how they achieved the results of a particular research problem. In comparison to other reviewed sources, Mbanjwa (2017) and Yakubu and Narendra (2017:172-173), fairly justified the way they arrived at their research conclusion by detailing the research methodology. However, Yakubu and Narendra (2017:172-173) have not made it clear which research designs they used to draw samples and how they ensured validity, trustworthiness and some ethical issues such as obtaining permission to interview or conduct their case studies.

The authors approached their study from the perspective of both qualitative and quantitative research, indicated how they obtained documents of related information,

conducted a case study, observed their study population, and mentioned the limitations of the study. Furthermore, the authors added the procedure to implement the solutions, the context of the research, the sample size, the manner of analysis to get the tallying figure and the reason for selection of such method. Finally, their results addressed the objectives of their study (Mbanjwa, 2017:75-76; Yakubu & Narendra, 2017:172-173).

2.5.2 Documentary sources

Documentary sources are recorded sources of information, and comprises of academic and non-academic sources (Hernández-Hernández, 2016:81-82). The academic (scholarly) documentary sources are objective and credible sources; have been reviewed by academic peers or passed the academic scrutiny; and they can be in a form of books, journals, research reports and reviewed articles (Ahmad & Jan, 2019:358). The non-academic (non-scholarly) documentary sources include magazines, news-papers, policies, standards, regulations, guidelines and procedures; can be formal or informal; and their compilation is mostly not informed by scientific, scholarly or academic processes (Worthington, 2014:np).

An indication by Polanin, Tanner-Smith and Hennessy (2016:5) is that both the academic and non-academic documentary sources can be published (accessible or available to public) or not published (not accessible or unavailable to public). The researcher predominantly used the scholarly documentary sources for this study because they have been subjected to academic credible test as indicated by Ahmad and Jan (2019:358). The use of non-academic sources was limited following the advice by Kotzé (2016:6), that the reliability of such sources should have been assessed by specialists in the studied field or academic experts. The following are some of the non-academic documents that have been subjected to experts' appraisal and have bearing on this study:

- **Ba-Phalaborwa Municipality Model Electricity Supply by-law** (Ba-Phalaborwa Municipality, 2016) which was promulgated to deal with the electricity supply, the tampering of electricity equipment and enforcement of the by-law including the use of courts to help reinforce the by-laws within the Ba-Phalaborwa Municipality;
- **Polokwane Municipality Electricity Supply by-law** (Polokwane Municipality, 2020) which was edited in March 2020 to deal with protection of electricity supply

main and tampering, and also prescribing the offences and penalties for contravention of the prohibited electricity supply related conduct mentioned in the by-law;

- **Greater Tzaneen Municipality Electricity by-law** (Greater Tzaneen, 2013) which prohibits the tampering of electricity main and equipment; and deals with illegal connection, liabilities, offences and penalties associated with electricity theft;
- **Eskom Process Control Manual (PCM) for managing energy losses** (Eskom, 2016d) which deals with the control procedure for technical and non-technical losses of energy; and
- **Criminal Matters Amendment Act 18 of 2015** (South Africa, 2015) which deals with the protection of essential infrastructure not limited to electricity equipment. This Act is not specific in dealing with electricity theft but can implicitly be useful address energy theft. The Criminal Matters Amendment Act can be useful to law enforcement and prosecution because it criminalises certain conduct committed against essential infrastructure (including electricity equipment) and stipulate the penalties for the prohibited conduct.

2.5.3 Interviews

Paradis et al. (2016:263), describe interviews as methods that are used to gather information from individuals using a set of predetermined questions. The authors further indicated that interviews can be in a structured or unstructured format, require active listening and questioning, could be recorded and transcribed; and they are ideal when used to document the participants account. According to Adhabi and Anozie (2017:87), interviews form the basis of a primary data collection method in qualitative research designs. The structured interviews are rigid in nature in that they follow a prescribed fixed pattern of asking questions. In this regard, the unstructured interviews are flexible in nature in that they are more informal.

The semi-structured interviews are derived from the combination of both the structured and unstructured interviews, and they utilise pre-planned but flexible questions to probe information (Adhabi & Anozie, 89-90). Without deviating from the common purpose of this study as indicated in Section 1.5 *supra*, the researcher prepared the questions in a manner that encompasses the settings from which the various samples are derived. The researcher conducted semi-structured interviews with the

participants using the face-to-face interview method (interview schedules appearing as Annexures A-E). Semi-structured interviews were used because they are a suitable data collection method in qualitative research, contain both structured and unstructured sections with standardised open format questions and allow flexibility to probe more information from the participants.

This kind of interview enabled the researcher to be flexible to get better understanding of the participant's responses (Walliman, 2014:127). The researcher prepared semi-structured interview schedules that were utilised to ask the participants questions relating to this study. The researcher drew from Banda et al. (2017:17896), by organising in advance the open-ended questions that did not invade the participants' privacy. The researcher clarified the questions to the participants who found it difficult to understand the phrasing of the questions. The researcher also applied bracketing during data gathering and data analysis. Bracketing allowed the researcher to obviate any possible pre-conceptions that could potentially have impacted on the data collection and analysis.

According to Dörfler (2020:2), bracketing is helpful in that it keeps in check the researcher's behaviour that is likely to influence the data collected. The semi-structured interview schedules that were prepared for the study ensured that they cover the research aim which is to explore if the application of laws governing crime in South Africa in relation to the use of engineering technology can assist in curbing electricity theft in Limpopo. The researcher also considered the research objectives and questions that described the nature and extent of electricity theft; evaluated the interpretation of 'electricity theft' in relation to laws governing crime in South Africa; determined the existing practices of curbing electricity theft by utilities; explored the dynamics of reporting, investigating and prosecuting of electricity theft perpetrators; determined what could practically be done to successfully curb the electricity theft and developed the practical guidelines to curb electricity theft applying the laws governing crime.

The researcher tested the interview schedules with three potential participants to evaluate if it was going to be decoded as intended, so that the purpose of asking questions was not lost. Informed by Creswell (2006:115), the researcher ensured that the data collected for this research is recorded for preservation and future reference.

The audio-recording device and interview schedules served a good purpose of recording data for qualitative purpose. The researcher arranged the data in themes related to the research questions and objectives of the study to ensure that detailed information about the aims and objectives of the study is covered during an interview. Figure 2.7 below indicates the data collection process that applied in this study.

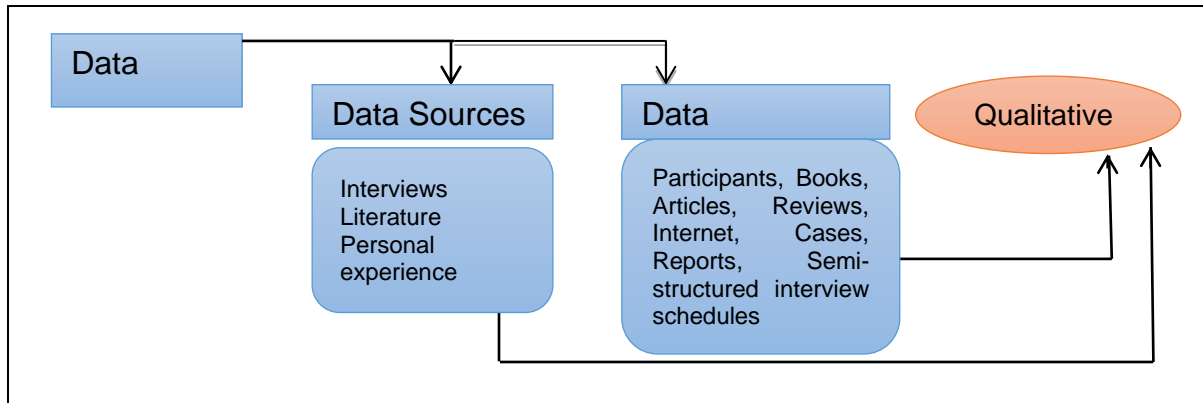


Figure 2.7: Qualitative data collection for this study

(Compiled by the researcher)

2.5.4 Personal experience

Dörfler (2020:9) describe personal experience as a tacit and elusive connection that a person has and is a potential source of valuable research. Furthermore, the personal experience emphasises the way personal ideas can be applied in selecting research topics that explain past decisions and help to suggest potentially valuable research direction for the future (Dörfler, 2020:9). Byczkowska-Owczarek (2014:11-13) clarifies that the use of personal experience in research is not intended to write down a person’s experiences, but to gain scientific knowledge by providing and analysing data that are not inter-subjectively available. Moreover, personal experience is used to construct a theory and thoroughly understand the phenomenon being researched.

Flick (2011:32) indicates that there is consensus among the researchers that one should be familiar with the context and environment in which they intended to make progressive research. Furthermore, having a prior knowledge about a phenomenon to be studied is fundamental to finding new insights. The researchers own personal training and experiences influences their choice of research approaches (Creswell & Poth, 2018:21). The researcher engaged the community leaders as sampled participants to source information about their personal experience that relates to the

subject under investigation. The selection of community leaders as participants was another way of getting information that might have been missed with the other sources of data collection.

The researcher identified the leaders in the community by asking ordinary community members to name any community leader they knew who could assist in answering matters related to electricity. The researcher selected the leaders according to their relevance in performing duties that might have linked their knowledge to the studied problem. The use of interviews is also another form of obtaining personal experiences of those people who are involved with the matters related to electricity theft in their working environments. The researcher's experience and knowledge of working with crime assisted in understanding the participants' answers better, as well as in the better analysis of literature.

Fusch, Fusch and Ness (2018:19) find it difficult for qualitative researchers to separate their personal experience, values, perspectives and bias to their research. Notwithstanding the theoretical world views on which the researchers based their various studies, paying attention to and suspending one's personal bias in research is crucial in mitigating the contamination of the data collection and data analysis that may result from such bias, thus promoting trustworthiness. The researcher detailed how trustworthiness was applied to mitigate the personal bias in Section 2.6 of this study. This research enhanced the trustworthiness amid the application of personal experience by employing triangulation.

Triangulation is the application of multiple sources of data collection in a single research topic. The various samples comprise different individuals from different environments, and were interviewed at different times about the same research topic; are vital to mitigating the researcher's bias that relates to personal experience. The researcher also used a peer review mechanism according to which other researchers who are familiar with the researched topic were given an opportunity to comment on the study results. The researcher further compared various theories concerning the researched topic in order to draw any inherent commonalities, differences and contradictions. Lastly, the selection of literature, interviews and personal experience enabled the research to have results that are not biased to one method of data collection. If one method of data collection was not sufficiently reliable, it was

complemented with other methods for optimised trustworthy results (Fusch et al., 2018:20).

2.6 DATA ANALYSIS

Denscombe (2012:97-98) values a brief description of how the data were analysed because it allows the reader to decide if such methods were appropriate to the study. Data analysis in qualitative research entails that the themes are identified and that the interviews or observation are described (Kumar, 2014:35). Denscombe (2012:99) mention that qualitative and quantitative analysis need to tell the reader how data are going to be interpreted, how data will be coded, the techniques to be used, as well as the categories and concepts and their relationships. According to Denscombe (2012:101) when analysing the data, the researcher needs to ascertain that the data analysis method chosen is workable and relevant to produce the required information in relation to the study.

The researcher analysed the qualitative data as informed by Moser and Korstjens (2018:15-16) as follows:

- First organised large amount of data in smaller and manageable units, which could be retrieved and reviewed easily;
- Obtained a sense of a whole; analysis began with reading and re-reading the data, looked at themes, emotions and the unexpected, took into consideration the overall picture;
- Developed an inductive open coding scheme that described the actual data;
- Made as many labels as needed based on what emerged from the data that the researcher needed to understand;
- Made a coding sheet that was used to collect the labels;
- Based on the interpretation, clustered the labels according to preliminary categories;
- Arranged categories in order of similar and dissimilar;
- Named each category using content characteristic words;
- Used abstraction by formulating a general description of the phenomenon under study and grouped together sub-categories with similar events and information;
- Identified missing analytical information and continued with data collection;

- Re-read, recoded, re-analysed and recollected until the findings provided breadth and depth; and
- Throughout the qualitative study, reflected on what is seen and missing in the data by writing memos that contain summaries of major findings, comments, reflections on particular aspects and patterns that emerged in the data.

2.6.1 Sample A1 (6): Security and criminal investigations within Eskom

The biographical information of participants in this study is that Sample A1 participants (6) constituted employees responsible for security and criminal investigations within Eskom. All (6) Sample A1 participants had more than ten (10) year experience working in the security department within Eskom. The researcher noted that two (2) participants had Standard 10 (Grade 12) as the highest qualification and each of them have acquired 12- and 33-year experience of performing security functions in Eskom.

Furthermore, the other two (2) participants each had the Diploma in security management as the highest qualification and they each had 13- and 15-year experience working security duties within Eskom. This sample also had other two (2) participants who had 11-year experience working within security department in Eskom and each had Diploma in policing and Advanced Diploma in security management. All (6) Sample A1 participants have attained informal security courses encompassing investigations of crimes that were offered or sourced from external service providers by Eskom and have acquired knowledge of dealing with electricity theft during performance of their security duties. All the participants indicated that they encountered electricity theft incidents at various stages of their work experience and that there was no specific training to deal with electricity theft they were offered during their service.

2.6.2 Sample A2 (6): Eskom personnel from Customer Services (CS) and Operations and Maintenance (O&M)

In this sample, the researcher noted that all six (6) participants in Sample A2 were employees responsible to interact with customers or consumers on service delivery within Eskom. Two (2) of participants have acquired N6 electrical engineering qualification as highest qualification, and each had 13- and 17-year experience in the field of electrical engineering within Eskom. One (1) participant had 11-year

experience within engineering department and acquired an N3 engineering qualification with trade.

Furthermore, two (2) participants from Sample A2 have Grade 12 as the highest qualification and each had 22 and 28 experience of working in the Customer service department within Eskom. One (1) participant was found to have been working in Customer services for 12 years and being in possession of a Diploma in marketing. The participants' duties of directly interacting with customers and consumers afforded them an opportunity to attend various workshops and trainings equipping them with skills and knowledge to deal with electricity theft.

2.6.3 Sample A3 (6): Eskom personnel from Energy Trading and Energy Protection

The interviews also indicated that Sample A3 participants comprised of employees responsible for trading and protecting the energy against unlawful consumers or customers. It was determined that three (3) of the participants have acquired the N6 electrical engineering qualification, of which two (2) had 7-year experience and one (1) had 15-year experience in the field of energy protection within Eskom. One (1) participant had Grade 12 as the highest qualification and 16 years' worth of work experience. Another participant had the N3 electrical engineering qualification and 10 years' worth of work experience, while another participant had N2 electrical engineering work experience in the department of energy trading.

2.6.4 Sample B (4): Local municipality personnel

Furthermore, the researcher determined that Sample B participants comprised of Local municipality personnel responsible for electricity matters within the municipal boundaries. Four (4) Sample B participants were in possession on N6 electrical engineering qualification with each of the participants having 8-, 10-, 11- and 14-year experience in the electrical department at municipality. Two (2) of the participants each have N3 electrical engineering qualifications, and each has 21- and 23-years' experience of working in the municipal electrical department.

2.6.5 Sample C (10): Electricity investigators

The interview data analysis also showed that Samples C and D participants have experience of coordinating the investigation and prosecution functions in the Criminal

Justice System. It was determined that four (4) Sample C participants had Diploma in policing qualification and each had 16, 18, 23 and 25 years of experience as detectives. Two (2) of Sample C participants had 27 years of detective experience and each had a Degree in Police Science and B-tech degree in policing. Other four (4) participants from Sample C had Grade 12 as the highest qualification; and each 12-, 13-, 17- and 18-year experience in the investigation of crimes. All (10) Sample C participants have Basic Police Training and other detective courses namely Detective Learning Programme (DLP) and/or Resolution of crime (ROC).

2.6.6 Sample D (3) Legal Team

The interview data analysis also revealed that all (3) Sample D participants have LLB degree qualification and each had 11-, 15- and 18-years' experience in prosecuting criminal cases. However, the researcher noted that the participants in Samples C and D participants did not receive a special training on electricity theft, however, have received various internal trainings dealing with general crime.

2.6.7 Sample E (3): First line of contact

Lastly, it was determined from the interviews that the Sample E participants are usually the first line of contact and within reach to deal with various development matters in the community. The Sample E participants comprised of three (3) traditional leaders, each had 7, 21 and 35 years working with community and traditional affairs; two (2) ward committees each with 3 and 5 years working with community and ward councillors on service delivery and community development matters; and one (1) religious leader (Reverend) with 17 years' experience of leading the church and participating in community well-being. There was no training specific to electricity theft received by Sample E participants.

2.7 DATA INTERPRETATION

Ngulube (2015:18) explains that data interpretation is the dynamic process of allocating meaning by reflecting on and without distorting the original meaning of the analysed data. It is crucial for researchers to be mindful of the importance and implication the interpretation process has on the findings of the study, because the process depend on the researcher's ability to perceive the participants' thoughts and convert them into reality (Arkkelin, 2014:2).

It was not feasible to have a clearly distinguished data interpretation from data analysis, because the interpretation of data in this study is influenced by convergent parallel design selected as indicated in Section 2.3.2 *supra*. The selected research design was based among other reasons on its practical mechanism allowing the researcher to analyse and interpret the data concurrently. Nonetheless, the interpretation of data in this research followed the interpretation approach applied in a convergent parallel study by Tomasi, Warren, Kolodzey, Pinkney, Guerguerian, Kirsch, Hubbert, Sperling, Sutton, Laussen and Trbovich (2018:7-8) as follows:

- Compared the participants' data and literature to identify points of convergence, contradictions, complementary and discrepancies about the phenomena of electricity theft;
- Integrated qualitative and quantitative data as informed by data analysis;
- Evaluated the practices applied in electricity theft related initiatives in conjunction with the literature, perceptions and observations in the context of energy supply;
- Examined the possible cause of not implementing the best practices of dealing with electricity theft;
- Examined how best the results to deal with electricity theft could be achieved; and
- Highlight the emerging effective practices and opportunities for improvement to inform future work or studies

2.8 TRUSTWORTHINESS OF STUDY

Gunawan (2015:10) emphasises that the study should leave readers with a belief that its content is sufficiently authentic and trustworthy in that its implications could be applied. When qualitative research criteria are applied, the researcher needs to assess the trustworthiness of the study and employ different diction to persuade readers to have trust in the study (Merriam & Tisdell, 2016:238). According to Kumar (2011:184), the value and the use of validity and reliability are among traits that distinguish quantitative research from qualitative research.

Quantitative studies are concerned with validity and reliability, whereas in qualitative they ensure trustworthiness (Pace, 2021:9-10; Creswell, 2013:246). Some researchers strive to define validity and reliability as often applied in quantitative studies, to be in consistent with trustworthiness and authenticity which their use is

preferred in qualitative studies. Gunawan (2015:10) further outline that trustworthiness in a qualitative study encompasses four measures namely; credibility, transferability, dependability and confirmability. Bryman (2016:44) indicates how trustworthiness has a parallel with the quantitative research as indicated in Table 2.1 below.

Table 2.1: Qualitative and quantitative relations to trustworthiness, validity and reliability

QUALITATIVE	QUANTITATIVE	EFFECT ON THE STUDY
Credibility	Internal validity	Describes how believable are findings
Transferability	External validity	Determine if the findings would apply to other similar contexts
Dependability	Reliability	Determine if the findings would likely to apply at other times
Confirmability	Objectivity	Limit the researcher interference with the study

(Bryman, 2016:44)

Merriam and Tisdell (2016:238) consider as imperative that the nature of social research influences the reader to have confidence in the conduct of the investigation and the results of any study. Notwithstanding the different types of research approaches, transferability and dependability has been given careful consideration from the inception of the study. The mindful approach of the researcher to trustworthiness is thoughtful in that it ascertains the constant awareness and monitoring of data collection, data analysis, data interpretation and the way in which research findings are presented (Merriam & Tisdell, 2016:238).

A significant number of social researchers do not concur with claims that validity and reliability is only applicable to quantitative studies. The researcher further contends that ignoring validity and reliability in every research, renders the study insignificant and not useful in that the reliability of the methods and validity of conclusions cannot be tested (Leedy & Ormrod, 2013:104). Flick (2011:207) points out objectivity as a feature concept of variation in addition to reliability and validity. The author alluded that validity, reliability and objectivity have historically been valuable measure to be applied in qualitative research.

Merriam and Tisdell (2016:239) mentioned the eight strategies for promoting “*authenticity and trustworthiness*”-pertinent to qualitative research- and “*validity and*

reliability’-rigorous and quantitative in nature. The strategies are triangulation, respondent validation or member checks, adequate engagement in data collection, researcher’s position or reflexivity, peer review or examination, audit trail, rich or thick descriptions and maximum variation. Therefore, the researcher considered the qualitative manner of ensuring trustworthy as discussed in this section.

2.8.1 Credibility

Leedy and Ormrod (2013:104) recount that prolonged engagement, persistent observation, triangulation, referential adequacy, peer debriefing and member checks are available options that a researcher could rely on in order to successfully ascertain that data is credible. Furthermore, Kumar (2014:39) alludes that it was common for qualitative researchers to develop data collection instruments in consultation with the potential respondents to ensure their relevance. This is confirmed in Section 2.4 in the current chapter. This has been done in this study to ensure that the questions designed for interviews were believable and could explore whether or not the participants interpreted and understood them as intended by the researcher.

2.8.2 Transferability

A qualitative researcher is not compelled to prove transferability (the findings of the study would be applied to other context); instead, the researcher used thick descriptions and purposive sampling as means to ascertain transferability (Stahl & King, 2020:26; Leedy & Ormrod, 2013:104). The researcher provided enough description to contextualise the study so that it is helpful for readers who need to compare their situations or that of others to this research context.

2.8.3 Dependability

Dependability points out an idea that the results of the study should be similar, given that research employs similar participants in the similar context as the previous study. (Stahl & King, 2020:27). The mention of the data collection and specifying the samples is a way in which the researcher complied with dependability.

2.8.4 Confirmability

The choice of the data collection and analysis methods, and sampling procedures aligned to the research design are aspects that the researcher ascertains other researchers that the findings of this study are confirmable. The literature searches and

review attest to the researcher's testing this study's confirmability against similar studies conducted previously.

2.9 ETHICAL CONSIDERATIONS

Creswell (2006:116) asserts that ethicalness in both qualitative and quantitative includes courteous and considerate behaviour to the people helping the researcher to realise the object of the study. The courtesy assisted the researcher to acknowledge the willingness to participate in the study, handle with care and confidentiality the sensitive information that might have arisen and being honest in revealing the purpose of the study. The researcher adhered to the University of South Africa (UNISA)'s policy on research ethics (UNISA, 2016). Ethical clearance was obtained from the College of Law Ethical Clearance Committee to conduct the research (Annexure F). The researcher also considered all ethical issues described as follows:

2.9.1 Respect for human dignity and confidentiality

The researcher took into consideration the feelings and thoughts of the participants and ensured that they are not subjected to any trauma or psychological effect resulting from the study (Leedy & Ormrod, 2013:104).

2.9.2 Informed consent

The consent was obtained for the use of the material, documents and people as participants to this study. The researcher was honest in providing reasons for the study (Creswell, 2013:174). The researcher ensured that the participants were not coerced to partake in the research process, and were told that they were free to withdraw their consent to participate in the study at any stage before the data collection process could be finalised. The researcher obtained permission to conduct the study with institutions and participants involved in the study (request to conduct research and permission to conduct research attached as Annexures G-L).

2.9.3 Conflict of interest

The researcher cleared all issues that might have resulted in conflict of interest in the study. The researcher also paid attention not to cause provocative thoughts or ideas that were not considerate to the diversity of participants, such as race, gender, sexuality and any other form of discrimination.

2.9.4 Legal issues

The researcher was cautious of legal issues that might have arisen because of this study and at all times acted in a manner that did not deviate from legal prescripts.

2.9.5 Plagiarism

The researcher cited and referenced the work of others as used in the study, and did not claim other people's ideas to be the researchers' original work. The final research thesis was submitted for a Turnitin plagiarism and originality check (Turn-it-in report attached as Annexure M). The researcher observed what is mentioned by Roberts (2020:3187) that researchers should beware of what they encode and decode in the process of communicating. The awareness assisted the researcher to keep in check the remarks that may have harmful effect during and after the interview, take a proper decision about the interview techniques that were in line with the policies and ethical standards of organisations, take into cognisance the health and safety of the victims, proper manner of asking questions, write accurate and in detail and avoid making unwarranted promises.

CHAPTER 3: DESCRIPTION OF THE NATURE AND EXTENT OF ELECTRICITY THEFT

3.1 INTRODUCTION

Understanding the nature and extent of electricity theft is fundamental for endeavours that seek to curb its recurrence. To realise optimally the inherent feature and extent of electricity theft, utilities and law implementers need to go beyond knowing the common factors contributing to energy theft by studying attributes and trends associated with electricity theft (Myers, 2018). The research objective namely 'to describe the nature and extent of electricity theft' (Section 1.4 of this study) forms the basis of this Chapter.

It is therefore rudimentary to delineate the aspects and characteristics that relate to the phenomenon of 'electricity theft' comprehensively. An all-inclusive understanding of the aspects and characteristics relating to electricity theft is requisite to synthesise in a logic manner the phenomenon of electricity theft. In this chapter, the researcher explicates the term 'electricity' to determine its intelligible relevance to the conduct of theft. The definition, sources, types, importance and the rationale of regulating the supply of electricity from generation to distribution will form part of the discussion.

In order to attain an overarching understanding to the stealing of electricity, electricity theft will be explicated by defining electricity theft phenomenon, discussing methods of stealing electricity and methods of detecting electricity, outlining the impact of electricity theft on customers and utilities, discussing the motives of electricity theft and relating the estimated quantities of electricity theft in Limpopo.

3.2 Explication of electricity

Various conventions hardly conclude their discussions successfully without conversing about or experiencing the exasperation resulting from power outages and shedding of electric loads. The statement is in harmony with the report by National Treasury of South Africa (2011:143) that the supply of electricity services in South Africa has reached a critical point. Among the various factors that contribute to the challenge of electricity supply services is non-technical losses relating to electricity theft (Mbanjwa, 2017:22), which is the focus of this study.

It is therefore requisite to view the electricity supply impasse beyond the technical perspective, by drawing in the collaborative efforts of generating solutions to the problem. To derive a meaningful contribution to the electricity supply problem that is associated with theft requires a basic understanding of what electricity is and the details of specific related aspects that are comprehensible to a non-expert in electricity matters (Dostal, 2015:1).

3.2.1 Definition of electricity

Electricity remains a difficult concept to define and understand even by experts in physics. To understand the concept 'electricity' requires a highly distinctive approach, particularly in that it is evidential from the literature that there is often a confusion when casual day-to-day terms such as electricity energy, electric power and voltage are used synonymously with electricity related concepts as in physics. A concern is that even noteworthy teachings by physicists fail to transform the advanced scholars in the spectrum of physics to acquire a precise definition of electricity (Guisasola, 2014:129).

The complexity associated with the terms relating to electricity have a potential to perpetuate the intricacy of comprehending the definition of electricity for meaningful contribution to life practical solutions. According to Fatima and Mustafa (2016:9), electricity is a natural phenomenon produced through exploring various mechanisms. Electricity is commonly defined as the directional movement or presence of charged particles in the form of energy and has effects that are observable in physical properties (University of Colorado Boulder, 2019; United Nations Statistics Division, 2015:vii). Electricity is a kind of energy usually made in power plants known as power stations and is versatile in that any type of fuel has a potential to transform into electricity.

Furthermore, electricity is transmittable from one place to another, over the ground or underground through cables, and is useful form of energy that has undergone conversion through various appliances for multiple purposes (Technical Learning College, 2019:viii; Woodford, 2018). Xue, Cai, James, Dong, Wen and Xue (2014:47) define electricity as secondary energy because it is a product of primary energy. According to Clauser and Ewert (2018:3684-3685) primary energy is found in both renewable and non-renewable sources of energy, and has not been processed or

transformed to other forms of energy. Section 1.8.7 (Chapter 1 of this study) indicates the consensus on the notion that electricity is secondary in nature.

The discussion of renewable and non-renewable sources of energy follows in Section 3.2.2 below. There are competing views on whether electricity is eligible to be energy. More than two decades ago, Beaty (1999) evoked confusion among physicists on categorically stating that it is a misconception to refer to electricity as energy. Until recently there are experts in the field of physics who still regard electricity as energy. Ratshomo and Nembahe (2018) are in particular referring to electricity as energy when they mention that the mining sector is one of the consumers of energy in South Africa. The authors share an understanding of the concept electricity with Ekundayo (2015:53) who consider it necessary to sustain electricity as an essential energy that is pivotal to the lives of people.

Gunawan, Harjono, Sahidu and Herayanti (2017:258) consider the term 'electricity' as one of the significant concepts that are complex to visualise and require adequate, practical and supporting explanations to understand. Lin and Magnago (2017:xi) explicitly indicate that the definition of 'electricity' should be basic enough to enable the understanding of complex matters relating to the supply of electricity. The understanding of the complex operations of electrical system are attainable by taking onto consideration the multiple disciplines of learning when defining the concept 'electricity'. The use of an inclusive definition of 'electricity' is likely to be helpful in various contexts, and its application relevance will depend on the purpose of a particular context.

An understanding of electricity is important for general technological literacy (University of Colorado Boulder, 2019). The preferences and backgrounds of various authors and sources have an influence on the way they differently refer to electricity as energy, power or electric power (Jamil, 2013:267; Yurtseven, 2015:70; Technical Learning College, 2019:viii). The general understanding of technological literacy associated with electricity is pertinent to this study, because of its focus on electricity theft as a non-technical aspect. It is therefore salient to define electricity to acquire sufficient insight to determine the nature and extent of electricity theft in Limpopo.

As outlined in Section 1.8 (Chapter 1 of this study) the defined key concepts help the reader to understand the contents of the research and meaningfully interpret the research results. It has also been clarified that conceptualisation permits the researcher to develop new concepts that give meaningful interpretation in the absence of clearly defined concepts, using the existing theory. For the purpose of this study, the researcher uses various aspects raised by the authors and sources in the discussion for the purpose of operationalising the concept of electricity (Guisasola, 2014:129; Technical Learning College, 2019; United Nations Statistics Division, 2015:vii; University of Colorado Boulder, 2019).

Therefore, electricity is conceptualised as a set of phenomena associated with the presence or movement of electric charges by unstable force through physical properties. The participants in Sample A2 (Eskom personnel from customer services (CS) and Operations and maintenance (O&M)), Sample A3 (Eskom personnel from energy trading and energy protection), and Sample B (Local municipality personnel responsible for electricity supply) were asked the question:

- “What is your understanding of electricity?”

The question asked was open-ended and required the participants to provide answers without any plausible options by the researcher. Five (5) out of six (6) participants from Sample B and all (12) participants from Sample A2 and Sample A3 answered the question. The majority of participants (16) based their understanding of the concept ‘electricity’ on its importance and functions performed at various places in society. The participants’ answers pointing to functions of electricity are characterised by phrases or/and verb derivatives such as “use”, “make”, “perform”, “do”, “run”, “function”, “cook”, “heat”, “operate”, “weld”, “light” and “smelt”.

Furthermore, the participants’ answers refer to different places or contexts in which electricity is used, including, but not limited to homes, businesses, industries, schools, mines and churches. Words such as important, crucial, essential and needed have been used in the participants’ answers to indicate the importance of electricity in human life. Out of all the participants selected to answer the question, one (1) participant from Sample B did not answer the question and one (1) Sample A3

participant provided an answer describing electricity using scientific and technical concepts, as shown in the verbatim responses below:

“Energy formed by charged electrons and protons”.

The scientific answer from Sample A3 participant is aligned with literature as it provides a description that electricity is produced when there is movement or presence of charged electrons and protons in an object (Saleh, Alizadeh & Dalili, 2020:30; Technical Learning College, 2019:27). Similarly, the answers relating to functions and importance of electricity as provided by majority (16) participants are consistent with the provisions of literature describing electricity as necessary to livelihood and essential to power modern activities (Mbanjwa, 2017:75; Ratshomo & Nembahe, 2018:35; Zohuri, 2016:1).

Zohuri (2016:1) further mentioned various activities that depend on electricity as it is used to power homes, businesses, economic sectors, transport, communication and many other facets of life. Therefore, an expression obtained from literature is that electricity plays an indispensable role in the lives of people.

3.2.2 The sources of electricity

There are many different discussions on sources of electricity, and the terms ‘sources’ and ‘reserves’ are interchangeably used. Amri (2017:62) and Igwemezie (2016:61) use the terms ‘source’ and ‘reserves’ distinctively but in a manner indicating that they are interrelated. The authors indicate that a source is a place or thing from which energy originates, whereas a reserve is a source that has been stored for future use (Amri, 2017:62; Igwemezie, 2016:61).

As such, coal is a source of energy whether, it is immediately utilised or stored for future use. For the purpose of this study, the researcher uses the term ‘source’, because its meaning has direct relevance that relates to explaining where electricity comes from. Sources of electricity are distinguished between non-renewable and renewable sources. Owusu and Asumadu-Sarkodie (2016:4) explain that renewable sources of energy cannot be depleted because they are naturally replenished. The renewable sources of energy are solar (light and heat from the sun), wind, - (municipal solid waste, wood waste, landfill gas), geothermal (heat from the internal earth surface), hydropower (flowing water), hydrogen, hydroelectric, tides and waves.

Sources of electricity such as hydropower, hydroelectric, tides and waves are derivatives of water (Bento & Moutinho, 2016:147; Franzitta, Curto, Rao, Viola, 2016:2-3). The different renewable sources of electricity are as follows:

- Solar - the radiant light and heat from the sun is solar;
- Wind – energy in motion;
- Biomass – organic material such as solid waste, wood, crops and many more;
- Geothermal - heat from the internal earth surface;
- Hydropower - energy of flowing water;
- Hydroelectric – energy that increases the rate at which water flows at a time;
- Hydrogen - odourless, colourless and flammable gas that is combined with oxygen to generate electricity;
- Tides - Tides are caused by the moon and sun energy attraction that causes rise and fall of water in the ocean or sea; and
- Waves - are formed on the surface of the ocean or sea when it is set in motion by the wind.

According to Tahseen and Karney (2017:226), non-renewable sources of energy diminish as they are utilised over time. Moreover, non-renewable sources of energy replenish because the million-year time required for them to naturally decompose and replenish is extremely long to prevent them being depleted. Non-renewable sources of energy generally comprise of fossil fuels and nuclear fuels. Fossil fuels are formed by natural decomposition of plants and animal remains whereas nuclear fuels result from radioactive decay. Fossil fuels that make sources of electricity are coal, oil and natural gas. Uranium is a source of electricity that is in a nuclear fuel form and is formed when atomic nucleus releases energy through the process known as radioactive decay (Ekundayo, 2015:26; Eriksson, 2017:5; Jacobson, 2019).

The non-renewable sources of energy are as follows:

- Fossil fuels - fuels that are formed by decomposition of plants and animal remains, and example are coal, oil and natural gas; and
- Nuclear fuels - fuels that result from the loss of energy in a form of radiation by atomic nucleus of the metal or earth crust, and an example is uranium.

Ratshomo and Nembahe (2018:2) assert that coal is a major source of energy in South Africa in that more than 80% of the country's electricity is generated from this source. Unlike other sources of electricity that are costly, coal is in abundance and cost effective. However, coal contributes to carbon emissions that are in contrast with the environmental and health requirements (Ekundayo, 2015:56; Ratshomo & Nembahe, 2018:29). The momentum on the call to reduce carbon emissions and use of clean energy sources is increasing but lacks coherent efforts in combating electricity theft. The effects of electricity theft are anticipated to remain even when the cleaner sources of energy are used to generate electricity.

Paying scant attention to electricity theft will likely contribute further to the generation costs of electricity, particularly in that the future use of cheaper sources of electricity such as coal is facing discontinuity owing to its diminishing factor and reduction of carbon emissions (Ekundayo, 2015:56; Ratshomo & Nembahe, 2018:29). The participants in Sample A2 (Eskom personnel from customer services (CS) and Operations and maintenance (O&M)), Sample A3 (Eskom personnel from energy trading and energy protection), and Sample B (Local municipality personnel responsible for electricity supply) were asked the following question:

- “What are the sources of electricity?”

The question asked was open-ended and required the participants to provide their own answers without options from which to choose. All the participants from Sample A2, Sample A3 and Sample B answered the question. However, the number of responses may not correlate with the number of participants because some provided more than one answer. Drawn from the participants' responded is that the majority (17) participants from Sample A2, Sample A3 and Sample B mentioned more than one source with coal and water as common denominators in all the answers. Following are the participants' responses: solar/sun (11 participants), wind/air (5 participants), nuclear (5 participants), gas (4 participants), biofuels (3 participants) and ocean (1 participant).

However, when the researcher compared the responses of the majority of participants, it is evident that they are consistent with literature (Bento & Moutinho, 2016:147; Franzitta, Curto, Rao, Viola, 2016:2-3) as sources of electricity. The authors

mentioned one additional source of electricity not mentioned by the participants, and it is geothermal (heat from internal earth surface). Although the participants omitted to mention one source appearing in literature, the number of sources they mentioned are significant to regard them as having a reasonable understanding of electricity sources. The manner in which the majority of the participants illuminated coal and water as sources of electricity indicates that the participants' knowledge of two sources is influenced by experience that South Africa is more than 80% relying on coal and water to generate electricity (Ekundayo, 2015:53; Statistics South Africa, 2018:np).

The answers indicate that majority of participants understand and have reasonable knowledge about sources of electricity. However, one (1) Sample B participant provided an answer that was not in accord with literature by mentioning that Eskom and IPPs are sources of electricity. To that effect, the participant stated:

“Bought from Eskom, self-generated using solar, bought from IPPs”.

Eskom and IPPs are not sources but are utilities involved in the production of electricity using various sources (Eskom, 2017c:15). Nonetheless, the same participant was able to mention solar as a source of electricity and that is in line with literature. Owusu and Asumadu-Sarkodie (2016:4) indicate that solar is energy from the sun and one of sustainable types of renewable sources of electricity.

3.2.3 The types of electricity

There are two main types of electricity namely static electricity and dynamic electricity. Static electricity occurs when two or more objects are rubbed together to build up charges on the surface of objects. Dynamic electricity is formed when the electrical charges flow along the conductor (Baird, 2016; Blood, 2011:1; Dobbie, Goel & Maldonado, 2017; Technical Learning College, 2019:17). Dynamic electricity and static electricity types are respectively described in 3.2.3.1 and 3.2.3.2 below.

3.2.3.1 Dynamic electricity

Dynamic electricity is a constant movement of charged electrons across the electric field (Atomberg Technologies, 2016). The charged electrons flow through a conductor. A conductor is a type of material that allows the flow of an electrical current in one or more directions, and it is often in a form of copper, silver and aluminium wires (De Wachter, De Keulenaer, Nuño & Targosz, 2019:4; Penn Foster College, 2019:15-16).

Dynamic electricity is also called circuit electricity based on the flow of electrons take place in a closed path, circuit or loop system.

The sources of energy such as a battery, solar cell and a generator trigger the flow of electrons in an electric circuit (Baird, 2016; International Renewable Energy Agency (IRENA), 2017:34). Ekundayo (2015:55-56) asserts that dynamic electricity is produced when electrical energy generated flows in a specific direction through the conductor to where it is required. Dynamic electricity could be sourced and generated in large quantities and is the most feasible kind of electricity that is used in large scales to power electrical appliances.

Dynamic electricity is commonly supplied by utilities using wires for purpose of generating profit (Technical Learning College, 2019:282). Eskom (2017c:30) and Ratshomo and Nembashe (2018:21) indicate that South Africa distributes its electricity mainly through the grid to energise the business, mines and residential zones. The grid is an example of dynamic electricity because the flow of electricity occurs in an electric circuit system.

3.2.3.2 Static electricity

Williams (2012:316) articulates that static electricity occurs when the electric charges accumulate in a poor electrical conductor such as an insulator. Static electricity is the kind of electricity that is generated when two or more objects are rubbed together to create friction (Atomberg Technologies, 2016; Technical Learning College, 2019:25). The phenomenon of lightning is an example of static electricity in that it occurs when the charged particles move from one cloud to another or to the ground. Furthermore, a person experiences the effects of static electricity in a form of a shock when in contact with materials or objects (Baird, 2016; Atomberg Technologies, 2016; Technical Learning College, 2019:25).

Technical Learning College (2019:27) provides a description of static electricity as a phenomenon that exists naturally and occurs when there is an imbalance of charged particles (electrons or protons) in an object or material moving from one object to another. The imbalance of the charged particles means that there is unequal number of electrons (negatively charged particles) and protons (positively charged particles) found in materials or objects. The charged particles in materials or objects remain

imbalanced for so long they are separated. It is only when materials or objects with different (negative and positive) charged particles come into contact that the charged particles attempt to be balanced or neutrally charged (neutrons). That process of balancing the charged particles results in static electricity.

According to Ekundayo (2015:55), static electricity is convertible into usable electrical energy. However, the use of static electricity is very low because it is very little and a weak form of electricity for appliances. Engineers and technologists are still researching on how static electricity can be of notable use to the day-to-day electrical needs and how its production can be in huge quantities (Harmon, 2011; Ornes, 2019; Panko, 2017). In static electricity the charged particles in a material or an object remain at rest until there is contact with other material or object. Furthermore, with static electricity, the current emanates from natural build-up of electric charges that are free from a closed electrical circuit.

Dynamic electricity is distinctive from static electricity because it flows in its path (circuit) in a form of a current through the conductor (Atomberg Technologies, 2016; Baird, 2016; Blood, 2011; Technical Learning College, 2019:17). The difference between dynamic electricity and static electricity is illustrated in Figure 3.1 below.



Figure 3.1: The difference between dynamic and static electricity

(Source: Soffar, 2019)

The participants in Samples A2 (Eskom personnel from customer services (CS) and Operations and maintenance (O&M)), A3 (Eskom personnel from energy trading and energy protection), and B (Local municipality personnel responsible for electricity supply) were asked the question:

- “What are the types of electricity?”

The question asked was open-ended and required the participants to provide answers based on their understanding. The majority of eleven (11) participants responded to the question, only seven (7) participants did not answer the question. The breakdown of participants who did not answer the question is as follows: one (1) participant from Sample A2, three (3) participants from Sample A3 and three (3) participants from Sample B. It is likely that the participants who did not answer the question lacked knowledge and understanding of electricity types. From the eleven (11) participants who answered the question, some of them provided more than one answer which may not tally with the number of participants.

However, out of the participants who answered the question, eight (8) participants provided answers in line with literature, whereas three (3) Sample A2 participants mentioned answers not supported in literature. In terms of literature, the two types of electricity are static and dynamic electricity (Baird, 2016; Dobbie, Goel & Maldonado, 2017; Technical Learning College, 2019:17). Some of the participants who aligned their answers with literature used current electricity to describe dynamic electricity, and that is supported in literature. Dynamic electricity occurs when charged electrons flow in a form of a current in a particular direction (Méjean, 2019:55; Northern Highlands, 2023:297).

Eight (8) participants who provided answers in line with literature, one (1) participant from Sample A2 confused types to sources of electricity by providing two (2) answers referring to a source (water and hydro) together with answers pointing to types (current and static) of electricity. The answers of three (3) participants not consistent with literature provided sources as discussed in Sub-Section 3.2.2 *supra* instead of types of electricity. The participants’ responses that were not supported by literature are quoted verbatim as follows:

“Gas turbines generated electricity, coal generated electricity, nuclear generated electricity, solar generated electricity”.

“Electricity made of renewable sources, electricity made of non-renewable sources”.

“Water electricity, solar electricity and coal electricity”.

Despite that the purpose of establishing the types of electricity is based on general understanding on the nature and extent of electricity theft than deeper scientific conceptualisation of electricity phenomenon, an indication is that the limited knowledge on types of electricity may result in participants lacking appreciation that electricity can be a subject of theft. Hence, the participants limited understanding of types of electricity may derail the required intervention to curb electricity theft.

3.2.4 The importance of electricity

Ratshomo and Nembahe (2018:35) indicate that electricity is vital energy that powers various sectors of the nation. The authors support the assertion by Jamil (2013:267) who values electricity because it carries a huge potential to contribute to cost effectiveness. The efficiency associated with electricity is observable in that the modern economy cannot thrive well in the absence of sustainable production and distribution of electricity.

The unstable supply of electricity affects the manufacturing companies, transport, output, capital, labour and technology of business. In the study “An analysis of electricity theft: the case study of Kwa-Ximba in eThekweni, KwaZulu-Natal” it was revealed that electricity is necessary and essential for the livelihood and survival of the society (Mbanjwa, 2017:75). Electricity is a controllable, multi-purpose and convenient form of energy that energises appliances and stimulate economic growth (Eskom, 2017c:4). Gaur and Gupta (2016:130-131) regards electricity as a phenomenon that should be valued because of its many uses in human lives. To comprehend the importance of electricity it is important to understand the value chain of supplying electricity, commercialisation of electricity and the impact of lacking electricity supply that will be discussed in the following Sub-sections 3.2.4.1, 3.2.4.2 and 3.2.4.3.

3.2.4.1 The value chain of electricity from generation to distribution

National Treasury of South Africa (2011:143) supported by Ratshomo and Nembahe (2018:20) lists three phases that contribute to the value of electricity supply as generation, transmission and distribution. Generation is the phase that involves the production of electricity, transmission phase pertains to the conveyance of electricity from the production zone to distribution stations, and distribution phase entails the supply of electricity from distribution sub-stations to where it will be utilised by consumers (Eskom, 2021a:13).

The responsibility of the South African government is to safeguard that all the phases contributing to the value chain of electricity supply are functional (National Treasury of South Africa, 2011:143; Ratshomo & Nembahe, 2018:20). According to Ratshomo and Nembahe (2018:21) there are four (4) groups that generate electricity in South Africa. The groups that generate electricity consists of Eskom, Municipalities, Independent Power Producers (IPPs) and Auto-generators. Eskom is a state-owned entity that has major generating power plants and generates more than 90% of electricity the country uses.

The municipalities own municipal generators, and their electricity is supplied to the business and residents of the municipalities. IPPs are self-supporting generators that sells electricity to businesses and Eskom. Auto-generators are industries that generate the electricity to use in their projects or operations. The municipalities, IPPs and Auto-generators together contribute to less than 10% of electricity generated in the country (Ratshomo & Nembashe, 2018:21). Although municipalities are legitimate institutions to generate electricity, the majority lack generating capacity. Lack of generation capacity by some of municipalities creates a challenge of sustaining revenue collection that can be utilised for rendering services to the residents and businesses within the municipal area (National Treasury of South Africa, 2011:143; Ratshomo & Nembahe, 2018:20).

As in the entire world, South Africa uses 80% of fossil fuels to generate electricity (Ekundayo, 2015:53). Technical Learning College (2019:60) describes various manners used to generate electricity. The common method of generating electricity is the use of generators and numerous factors often implicate the successful production of electricity. Among the factors is the deterioration of resources such as coal, the constraints in a form of regulations and various societal interest groups and costs that comes with methods of generating electricity using renewable (wind, solar, biomass, water, geothermal) sources (Eskom, 2017b:71-72). Eskom and municipalities share the responsibility of distributing electricity to the consumers in South Africa.

Eskom is the biggest electricity entity in Africa owned by the South African Government. Eskom is responsible for generating and conveying a major share of the country's electricity and owns 48 805 kilometres of distribution lines (Ratshomo & Nembahe, 2018:21-22). Municipalities are buying electricity from Eskom in bulk and

generate some in small quantities for distribution to their municipalities. Municipalities also form part of the government, and have a legal duty to distribute electricity to their residents and businesses under their jurisdictions. Ratshomo and Nembashe (2018:21) vouch Eskom as the sole owner of transmission power lines that cut across the country.

The transmission network lines are commonly called grid. The length of Eskom's transmission grid is 32 698 kilometres (Eskom, 2019a:8). Eskom (2017b:138) provides a description of grid as a concept that encompasses either transmission or distribution electricity lines, because it entails an electrical network that conveys electricity from where it is generated to where it is required for consumption. Devidas and Ramesh (2010:637) suggest that utilities in most developing countries transmit and distribute electricity to customers using traditional electricity networks. Operating traditional electricity networks is complex because most utilities position their electricity plants near water sources, where they are often far from densely populated consumers.

Considering that South Africa relies on national grid to supply electricity to consumers, it becomes demanding and costly to convey the generated electricity along the transmission lines that can carry high voltage over a long distance. On reaching the consumer point, the electricity conveyance system is stepped to a lower voltage that enables the distribution of electricity to consumers. The entire process of conveying electricity result in myriad of challenges that potentially lead to electricity demands not met (Department of Mineral Resources & Energy, 2019a:18; Eskom, 2017b:138). The value chain of traditional electricity grid system is shown in Figure 3.2 below.

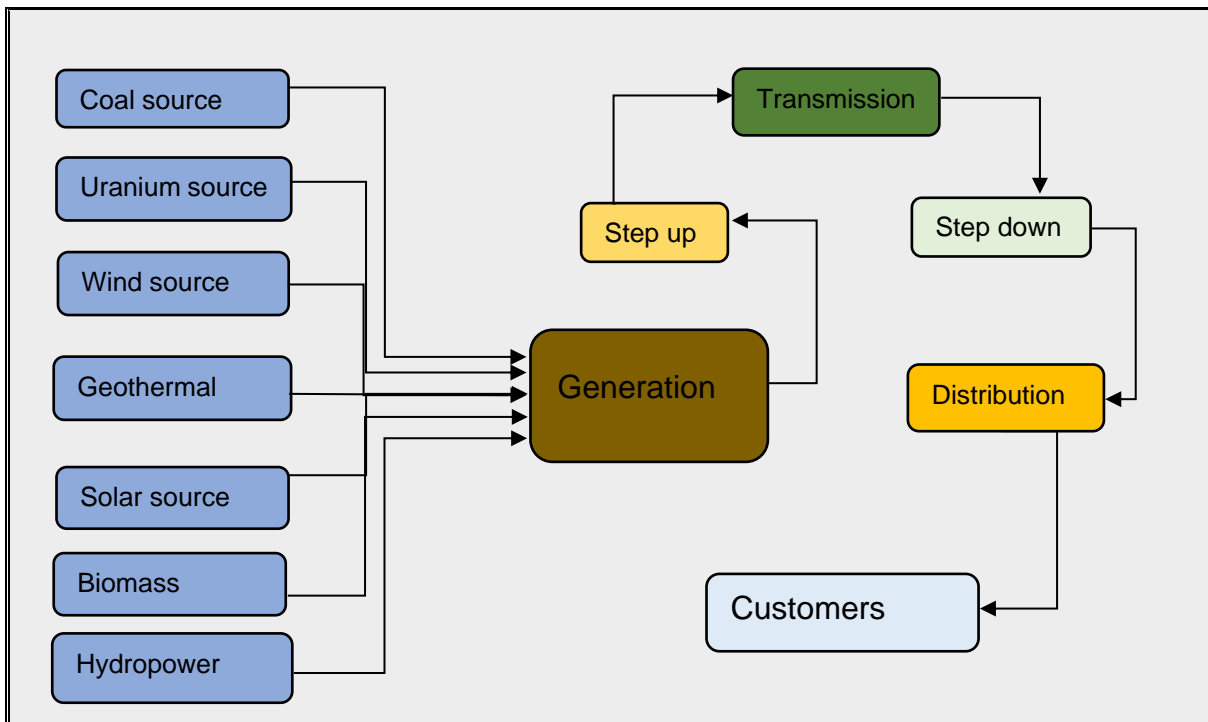


Figure 3.2: The value chain of traditional electricity grid

(Source: Compiled by the researcher)

Han, Xiao, Hong, Vrbsky, Zhang and Zheng (2017:5) consider the traditional energy system used to convey electricity from generation plants to the end users as inflexible, because it flows electricity in one direction. The flow of energy in a single direction potentially result in inefficiency and unreliability of the performance of electrical system. The unreliable and inefficient traditional electrical systems often result from reduced time response and lack or poor monitoring.

Successively, the inefficient monitoring and poor time response lead to power outages. Han et al. (2017:5), find it necessary to convert from traditional grid to smart grids that have a two-way electricity flow system. The two-way direction system enables the integration of renewable energy and have the potential to alleviate electricity crises. Nonetheless, the authors acknowledge that the smart grids have their own challenges in that they too are susceptible to electricity theft. The rationale of the discussion is that the value chain from generation to distribution; in either traditional or smart grid, is laborious because it involves resources, time and costs. Furthermore, the susceptibility arising from electricity theft muddles with the supply chain in general. Figure 3.3 overleaf depicts the value chain of a two-way smart grid electricity system.

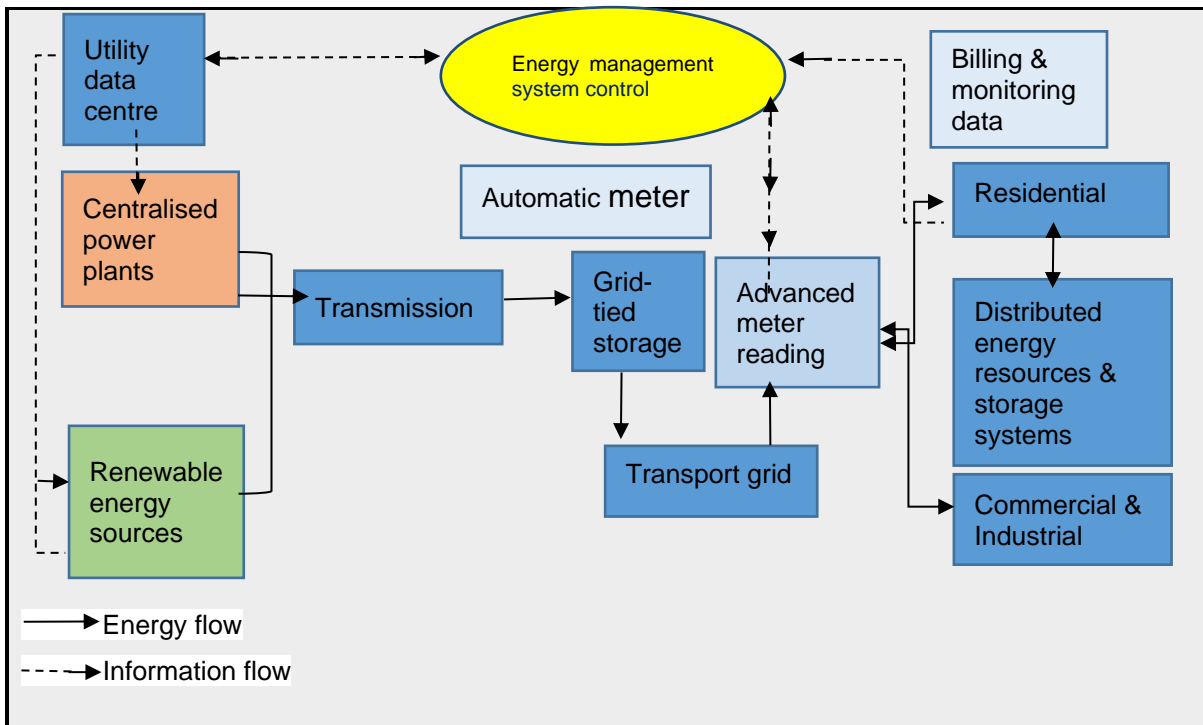


Figure 3.3: The value chain of a two-way smart electricity grid

(Source: Pew Charitable, 2016)

The participants in Samples A2 (Eskom personnel from customer services (CS) and Operations and maintenance (O&M)), Sample A3 (Eskom personnel from energy trading and energy protection), and Sample B (Local municipality personnel responsible for electricity supply) were asked the question:

- “How do you describe in simple terms the process from generating to supplying electricity to customers?”

The question asked was open-ended and required the participants to provide their own answers. Seventeen (17) participants except one (1) participant from Sample A3 responded to the question. The participants who answered the question were elaborative. The majority of (16) participants who answered the question understand the process from generating to supplying electricity to customers in a traditional way commonly presented in a linear (generation-transmission-distribution) form. One (1) participant from Sample B provided an answer deviating from conventional or traditional understanding of electricity value chain from generation to customers. The participant did not indicate the role played by transmission in the value chain, and the answer quoted verbatim is as follows:

“Production of electricity from power stations and distributing it to customers”.

The responses by the majority of the participants are congruent with the dominant literature perspectives. However, one (1) Sample B participant deviated from the traditional definition of electricity supply. According to Crofton, Wanless and Wetzel (2015:10) and Eskom (2017b:130), electricity supply value chain is conventional from generation, transmission and distribution. In modern electricity systems, the generation and supply process is complex and in the form of a network that cannot follow a particular sequence. The participants understanding of electricity supply process indicates that the participants are experts in the field of electricity supply, and their views are beneficial to understanding the nature and extent of electricity theft.

3.2.4.2 Commercialisation of electricity production

Understanding of aspects that relate to commercialising electricity requires corresponding understanding of the concept commercialisation. Sløk-Maden, Ritter, and Sornn-Friese (2017:2) define commercialisation as a process of acquiring wealth by converting the work invented from acquired knowledge and generated ideas. Furthermore, commercialisation relates to innovation in that it involves the introduction and selling of new products or services for profit into the market. Additionally, commercialisation also entails the marketing strategies and ways to deal with foreseeable barriers to production and profit (Datta, Mukherjee & Jessup, 2014:24; University of Pittsburgh, 2020).

The two benefits of commercialisation as highlighted by the University of Pittsburgh (2020:np) are as follows:

- Provide new products and services that can be used to solve some of life’s most pressing problems; and
- Increase and improve the quality of life for consumers and business effectiveness across a wide variety of domains.

It is predictable that contentions in beliefs about the commercialisation of electricity are unavoidable. The dissention is likely to result from an understanding that electricity is a natural phenomenon (described in Section 3.2.1 *supra*) which is not justifiable to be commercialised. Margaryan (2017:15) asserts that there should be lack of human

influence for a phenomenon to be natural. In addition, if human effect is experienced, it should not change the natural processes and the phenomenon.

Nonetheless, evolution has brought a feasible perspective of understanding nature in relation to human association to natural phenomenon. Irrespective of whether people have different perspectives about reality, it is common for human being to require natural resource in order to survive (Margaryan, 2017:14). Schweppe, Caramanis, Tabors and Bohn (2013:ivii) consider it necessary that society should transform from primitive ways of understanding electricity as a phenomenon that cannot be traded. Instead, electricity ought to be treated as a commodity that can be commercialised because of its varying input factors such as infrastructure, resources and costs involved in producing it.

Furthermore, the society is increasingly showing respect for natural phenomena. This is evident from continuous pressure directed to utilities by environmental lobbyists, who require the use of sustainable and renewable resources that have less negative impact to the planet earth (Margaryan, 2017:11-12). Jamil (2013:271) advises utilities to commercialise their operations to be self-sufficient and sustainable particularly at distribution level. The commercialisation of electricity is feasible in municipalities that have well-established networks in areas occupied by pre-dominantly rich communities. The revenue generated from the sale of electricity in such wealthy municipalities is used as a buffer for other municipal services.

On that note, one of the reasons most of the rural poor municipalities are struggling to trade electricity is because a number of them are situated within the boundaries of the previously disadvantaged areas, where there is lack of electrical capacity or empowerment to generate electricity that can be commercialised. The inability to generate, buy and sell electricity to residents impact the liquidity of those municipalities. Sequentially, the poor communities in previously disadvantaged areas continuously suffer deprivation of opportunities or delays to be electrified (National Treasury of South Africa, 2011:149).

The reasoning behind the commercialisation of electricity rests on the notion that electricity is multi-disciplinary oriented and involves a variety of activities that require efforts and costs. Those activities entail entrepreneurship to develop and grow the

economy (Datta et al., 2014:24). South Africa draws support of commercialising electricity from the National Energy Act (NEA), Act 34 of 2008 (South Africa, 2008) and Electricity Regulation Act (ERA), Act 4 of 2006 (South Africa, 2006). Section 2(j) of NEA allows the commercialisation of energy related technology. Section 4(c) of ERA supports the facilitation of investment in the electricity supply industry, and Section 4(f) of ERA promotes competitiveness and the choice of customer.

The participants in Samples A2 (Eskom personnel from customer services (CS) and Operations and maintenance (O&M)), Sample A3 (Eskom personnel from energy trading and energy protection), and Sample B (Local municipality personnel responsible for electricity supply) were asked the question:

- “Why is the production and supply of electricity commercialised?”

The question asked was open-ended and required the participants to provide their own answers. All the participants from Sample A2, Sample A3 and Sample B answered the question. Some of the participants provided more than one answer. Hence, the number of answers may not tally with the number of participants. The participants’ answers demonstrate that the majority (17) were of the view that securing revenue and profit is central to commercialisation of electricity production and supply.

The responses of the participants differed in terms of the concepts or phrases used, which did not alter the similar meaning participant have, because they correspond on indicating financial gain or/ and profit as the reason for commercialising the production and supply of electricity. However, one Sample B participant provided an answer not pointing to monetary value or revenue. In that regard, the participant’s verbatim answer was:

“To provide sustainable services of electricity to the people”.

Notably, the Sample B participant’s answer not indicating financial reasons is aligned to parts of some answers pointing to sustainability or continuation as provided by three (3) Sample A2 participants, three (3) Sample A3 participants and other three (3) Sample B participants. The answers of the participants include phrases derived from terms such as sustain, maintain, continue and without failure; and they are quoted verbatim as follows:

“To generate revenue and to sustain the business of electricity supply”;
“To generate income and to operate sustainably the electricity equipment”;
“To sustain the electricity business by generating profit and create employment. Improve the lives of people”;
“To generate income that will sustain the continuous supply of electricity”;
“To secure finances for maintenance. To generate profit. To create jobs”;
“To make profit and to sustain the business of electricity”;
“To be able to get money that will maintain the electricity equipment and service people without failure”;
“To generate funds that will be useful to maintain the infrastructure and service people”; and
“To generate finances useful to sustain the business of giving services to people”.

It is deduced from the nine (9) answers quoted above and that of Sample B participant (who did not mention revenue) that sustainability of a product including electricity depends on finance as commercial outcome. The answers further demonstrate a relationship between the views of majority (17) participants and one (1) Sample B participant (who did not mention revenue) view *supra* in that it becomes apparent that sustainability of services, production and supply is influenced by financial income and profit obtained from selling the products or services.

All the responses from the majority of participants in Sample B participant (who did not mention “revenue”) are in tandem with dominant literature perspectives. It has been drawn from literature sources that commercialised activities are basic to developing, growing and improving the lives of people (Datta et al., 2014:24). According to Jamil (2013:271), continuation of electricity utilities is based on the revenue and profit generated from the sales of electricity. In addition, Schweppe, Caramanis, Tabors and Bohn (2013:ivii) advise that modern society should understand commercialisation of electricity as necessary to sustain the production and supply of electricity, particularly in that there are costs involved in bringing the resources and maintaining the infrastructure.

The participants’ responses demonstrate secondary reasons of commercialising the production and supply of electricity. The reasons include to create employment, improve the lives of people, contribute to the growth of the economy, and fund other services in communities. The additional reasons found in the participants’ responses are supported in literature. According to Mensah (2018:6), the availability and sustainability of electricity is necessary for betterment of communities in that it reduces time and effort spent on home production or duties.

Furthermore, the author indicates that the use of modern technology that mostly rely on electricity to operate is instrumental in improving productivity and economy. Lastly, the creation of jobs and improved wages is determined to a large extent by modern occupations that attracts improved wages (Cosgrove-Davies, 2019:31; Jamil, 2013:267; Mensah, 2018:6).

3.2.4.3 The impact of lacking electricity supply

Electricity is an integral component of modern life in that its daily use to power many functions cannot be underestimated. However, it seems that less people appreciate the advantage of having electricity. The way most people seldom think about the importance of electricity unsettles Blimpo and Cosgrove-Davies (2019:xi), who recounts on the daily importance of electricity in people's lives. Kumi (2017:5) reports that electricity is a requisite for many residential functions in that it capacitates users to perform multiple functions simultaneously. Electricity is a controllable and convenient form of energy used in the applications of heat, light and power (Igwemezie, 2016:31) although there are still areas that are without electricity.

Lack of electricity is applied in this discussion to describe that some areas or communities are without electricity because they have not yet benefitted from the government electrification programme, or they do not have financial resources to pay private companies to electrify their places. The discussion is not concerned with lack of electricity that results from events such as load shedding and disconnections that are for remedial purpose, such as non-payment of electricity bill, tampering and illegal redistribution of electricity. Mbanjwa (2017:1) avers that the effects of no electricity supply experienced by communities is likely to further affect the utilities responsible for generation and supply of electricity.

The impact can manifest in a form of electricity theft in that the lacking communities connect themselves to the nearest electrical infrastructure. Thus, that result in damage of electrical equipment and non-technical losses of energy associated with theft. The electricity theft resulting from communities that lack electricity supply in turn contribute to massive load shedding due to the fact that it increases load on power stations (Jamil, 2013:269; Mbanjwa, 2017:4). Lack of electricity supply contribute to a continuous hindrance to economic growth, production and employment (Jamil, 2013:267). It is deductible from Blimpo and Cosgrove-Davies (2019:31) that electricity

is among crucial services and their absence has potential to negatively affect a service delivery by government agencies.

Furthermore, the effects of lack or shortages of electricity are more evident in densely populated zones in that they expose human to life threat conditions. The life-threatening conditions include criminal elements that are escalating in the dark because of no lights at night, and the functioning of health facilities and equipment. People staying in densely populated areas like informal settlements are exposed to fire hazards, because the lack of electricity requires them to use flammable fuels and open flames methods of cooking and lighting (Walls, Kahanji, Eksteen & Cicione, 2019:343-344). A discussion in Section 3.3.2 *supra* indicates that municipalities have a responsibility to provide services that include electricity.

However, the conduct of stealing electricity by communities that have not been electrified contribute to delay in upgrading and expanding electricity infrastructure to extend the services to all the residents (National Treasury of South Africa, 2011:157). The impact of no electricity supply experienced by society turns out to be a vicious cycle that could hardly be unnoticed but desirable to form the discussion basis of the rationale behind regulating the generation, transmission and distribution of electricity in Section 3.2.5.

The participants in Samples A2 (Eskom personnel from customer services (CS) and Operations and maintenance (O&M)) and Sample A3 (Eskom personnel from energy trading and energy protection) were asked the following question:

- “What is the impact of not having electricity supply in your work precinct?”

Meanwhile, the participants in Sample B (Local municipality personnel responsible for electricity supply) were asked the following question:

- “What is the impact of not having electricity supply in your municipal precinct?”

The questions asked to Sample A2, Sample A3 and Sample B are similar, but differ in respect of the use of work premises for Sample A2 and Sample A3, and use of municipal premises, which was directed to Sample B. The questions asked were open-ended and required the participants to provide their own answers. All the participants

from Sample A2, Sample A3 and Sample B answered the questions. Some of the participants provided more than one answer. Hence, the number of answers may not tally with the number of participants. The participants' answers are characterised by phrases and concepts such as poor human conditions, difficult, uncivilised, unimproved/not improving, less income/reduced finances, high crime, non-productive/slow business, poor economic performance, primitive lifestyle and impoverished families.

Regardless of different wording and phrases used by participants to answer a question focusing on the impact of not having electricity supply, the participants' answers are culminated into three categories of challenges. The challenges in a chronological order from the most to least mentioned are poor human living conditions (17), poor economy growth/poor business (7) and crime (1). The participants' answers correspond with literature stating that electricity supply affect communities in that they should rely on unsafe methods of conducting home activities such as cooking and keeping warm (Igwemezie, 2016:31).

It is also found in literature that areas without electricity supply enjoy less the use of technology critical to improve the lives of people and are unable to leverage on the economic benefits created by availability of electricity (Walls, Kahanji, Eksteen & Cicione, 2019:344; United Nations, 2021:41). Electrified places can benefit from reduced crimes because of streetlights powered to deter potential crimes activities taking place in the streets at night (Tompson, Steinbach, Johnson, Perkins, Edwards & Armstrong, 2022:np). However, literature revealed two other aspects resulting from lack of electricity supply and they were not included in participants' answers. According to Blimpo and Cosgrove-Davies (2019:31), the first impact relates to people who do not benefit from the constitutional right to basic services, which in this case is lack of electricity supply.

Deprivation of basic electricity supply leads to the deprived communities conducting illegal connections that result in overloading and damaging electricity networks (Jamil, 2013:269; Mbanjwa, 2017:4). Therefore, the impact of lacking electricity supply demonstrates that electricity theft is not only a legal problem, but a socio-economic challenge requiring multiple role players in society.

3.2.5 The rationale of regulating the generation, transmission and distribution of electricity

Koop (2015:23) summarise regulation as an intervention that is intentional towards the activities of a particular population. The intervention can include to control and adjust the way organisations conduct their activities. The functions associated with generation, transmission and distribution of electricity are not spared from being regulated. South Africa has numerous statutes that relate with the way in which electricity is generated, transmitted and distributed. Some of the regulations are not unique to the industry of electricity but are also applicable to other working environments.

The Occupational Health and Safety Act 85 of 1993 (South Africa, 1993) is an example of a statute that is applicable to all employment sectors. The Act guides employers and employees on ways to conduct their work activities in a safe manner that might not harm any persons at work and outside the work environment. There are two statutes that are relevant and crucial in the electricity sector, namely, Electricity Regulation Act 4 of 2006 (South Africa, 2006) and National Energy Act 32 of 2008 (South Africa, 2008). Electricity Regulation Act 4 of 2006 authorise the National Energy Regulator of South Africa (NERSA) to deal with matters related to licences, determination of tariffs, trading, importing and exporting in the electricity industry.

It is common knowledge that South Africa is experiencing challenges associated with funding the huge projects designed to expand the generating capacity of electricity (Department of Public Enterprises, 2019:27). NERSA as a regulatory body constantly engages with utilities such as Eskom, municipalities and Independent Power Producers (IPPs), because they are at the core of ensuring that the electricity demand is met (Treasury, 2011:150). The purpose of National Energy Act 34 of 2008 (South Africa, 2008) is to secure a mix of sustainable, renewable, efficient and environment friendly energy.

The National Energy Act 34 of 2008 is also concerned with economic growth, poverty alleviation, research and other matters connected therewith. It is important that the assessment of disbursement be done in conjunction with other aspects that relate to consideration of poor people, in consideration that the electricity sales yield significant

contribution to municipal revenue and expenditure (Franks, 2014:151; National Treasury of South Africa, 2011:151). Yakubu and Narendra (2017:171) indicates that part of the costs associated with generating, transmitting and distributing of electricity is incurred by consumers in the form of increased tariffs.

The regulation of electricity is necessary to put a bracket cap according to individual needs and affordability of electricity. The regulator strives to approve individual tariffs in a fair and balanced manner to alleviate the high tariffs that might affect the customers and is considerate of the costs incurred by generating, transmitting and distributing utilities. Furthermore, the regulation of electricity is helpful in that it secures funds that are used back to needy communities. The funds are part of the surplus acquired through electricity sales, are collected through the National Electrification Fund (NEF) and used to subsidise electricity connections to poor communities (Department of Energy, 2017:29).

Therefore, a cautious approach to considering the political and economic interests is a pre-requisite in regulation matters. Regulatory bodies also play a role in defining the requirements and conditions of licences to participate in the business of generating, transmitting and distribution of electricity. Section (8)(1) of Electricity Regulation Act 4 of 2006 prohibits people who do not meet the license requirements of Electricity Regulation Act 4 of 2006 to participate in the business of electricity. Such persons may not:

- (a) Operate any generation, transmission or distribution facility;
- (b) Import or export any electricity; or
- (c) Be involved in trading.

The conditions of licence as set by Section 15 (1)(a) of Electricity Regulation Act 4 of 2006 entail:

- The right to operate generation, transmission or distribution facilities, import or export electricity, to trade or to perform prescribed activities relating thereto, including exclusive rights to do so, and conditions attached to or limiting such rights;
- The duty or obligation to trade, or to generate, transmit or distribute electricity; and

- The termination of electricity supply to customers and end users under certain circumstances, the duty to reconnect without undue discrimination, and conditions relating thereto.

Regulating electricity is not always a favourable endeavour. According to Doukas and Ballesteros (2015:8), the government regulations often have overlapping mandates that complicate the way various departments operate. Furthermore, the regulatory complexities have a potential to create leadership vacancy that result from ill-defined mandates. A typical example of vague legal discretion that is relevant to the South African context is in relation to the announcement made by Gwede Mantashe, Minister of Mineral Resources and Energy. The announcement was that his ministry would urgently and immediately develop sufficient electricity generation capacity to meet electricity demand as short- and medium-term interventions (Department of Mineral Resources & Energy, 2019b).

Furthermore, the announcement included the removal of the red tapes or bureaucratic impediments that are associated with regulations. The announcement was met with mix reactions in that some groups of interests regarded that as an attempt to halt the process of fast tracking the increase or renewable energy sources of electricity (Paton, 2019; Department of Mineral Resources & Energy, 2019b; Sguazzin & Burkhardt, 2020). Doukas and Ballesteros (2015:7) unequivocally state that an explicit legal and regulatory framework for mini grids can enhance business and investment, contribute to reduction of transaction costs and improve the quality of service directed at consumers. The assertion by the authors is an indication that regulatory bodies do not have a well-defined legal base in terms of electricity matters.

The authors further indicated that regulatory bodies are inconsistent in applying their legal discretion on acquisition of off-grid permits and licences. In some applications, the regulatory bodies implement uniform approaches that are not befitting to the purpose of acquiring electricity permits or licences. A discussion in Section 1.1 (Chapter 1 of this study) indicates that the focus of regulatory bodies in electricity industry is to secure sustainable, efficient and competitive supply of electricity. The regulatory bodies seem to be less concerned about the curbing of electricity loss that is associated with theft. Some of the municipalities in South Africa regulate electricity matters through the promulgation of by-laws.

The challenge is that the by-laws are not applicable to all municipalities and other utilities responsible for generation, transmission and supply of electricity. It is therefore imperative that regulatory rules relating to electricity matters are developed in a manner to create a balance between the necessity, affordability and sustainability of electricity; that are mostly threatened by electricity theft as discussed in Section 3.3 of this chapter. The participants in Samples A2 (Eskom personnel from customer services (CS) and Operations and maintenance (O&M)), Sample A3 (Eskom personnel from energy trading and energy protection), and Sample B (Local municipality personnel responsible for electricity supply) were asked the following question:

- “Why is generation, transmission and distribution of electricity regulated?”

The question asked was open-ended and required the participants to provide their own answers. All the participants from Sample A2, Sample A3 and Sample B answered the question. Some of the participants provided more than one answer. Hence, the number of answers may not necessarily tally with the actual number of participants representing the participants’ views. An inference drawn from the participants’ answers in Table 3.1 overleaf is that the regulation of electricity supply (generation, transmission and distribution) culminates into three reasons identified as: compliance with legal prescripts governing electricity sector, protection of interests of consumers and producers of electricity, and assurance of quality electricity services.

Following are the responses of two (2) Sample B participants and one (1) Sample A participant describing the reasons to regulate electricity supply services as aligned to each of the three (3) regulating reasons culminated from the participants’ answers.

“To ascertain the correct and legal processes of generating and supplying electricity”

The answer relates to assurance of quality electricity services.

“For the benefit of utilities generating and supplying electricity and the people, so that no one suffers unnecessarily”

The answer relates to protection of interests of electricity consumers and utilities.

“To ensure compliance with laws of electricity industry”,

The answer relates to compliance with the legal prescripts that govern the use and supply of electricity. For better understanding of how the participants' answers resulted in three regulating reasons, the answers or part of the answers sharing similar meaning or description were grouped and aligned according to appropriate regulatory factors. Since some participants mentioned more than one answer, and some answers are compound in nature, the answers may not necessarily tally with the actual number of participants who took part in the study. An indication was made of a sample from which each part or extract of an answer is drawn. Table 3.1 overleaf is an indication of the breakdown of electricity regulating reasons and extracted participants' answers aligned to the reasons.

Table 3.1: Breakdown of electricity regulating reasons as identified from participants answers

Electricity Regulating Reasons	Phrases or parts of participants' answers on electricity regulating reasons	Sample from which a phrase is taken
Compliance with legal prescripts governing electricity	To ensure that the technical process of energy generation and supply is done according to safety requirements.	A2
	To control the behaviour of generators and suppliers to comply with the law.	A2
	To control the electricity business/industry.	A3
	For government to control who generates, transmits and distribute electricity.	B
	To ensure compliance with laws of electricity industry.	B
	To conform to electricity standards.	B
	For effective control of electricity industry business.	B
Protection of interests of consumers and producers of electricity	To prevent unqualified persons to operate electricity equipment.	A2
	To avoid unqualified persons to operate electricity equipment because they may subject people to danger or life threats.	A2
	Electricity supply is a specialised service that cannot be performed by any person, but skilled people who cannot expose people's lives to danger.	A2
	To prevent illegal supply of electricity.	A3
	For a fair practice of electricity generation, transmission and distribution.	A3
	To guard against illegal commercialising of electricity.	A3
	To determine electricity prices and tariffs.	A3
	To ensure fair tariffs and prices to customers.	B
For the benefit of utilities generating and supplying electricity and the people, so that no one suffers unnecessarily.	B	
Assurance of quality electricity services	To ascertain the correct and legal processes of generating and supplying electricity.	A2
	To have proper control measures in place.	A3
	For proper control.	A3
	To contain inconsistencies in the business of electricity industry.	B

(Source: Feedback from the participants)

Table 3.1 above indicates that the participants' answers yielded 20 extracts or phrases pointing to reasons of regulating electricity supply services. The grouping of phrases or parts of the answers demonstrate that the most-mentioned reasons (with 9 extracts) are the following:

“Protection of interests of consumers and producers of electricity”, followed by
“Compliance with legal prescripts governing electricity (with 7 extracts)” and
lastly is
“Assurance of quality electricity services (with 4 extracts)”.

The answers of the majority of the participants are consistent with literature in that Koop (2015:23) revealed that the process of regulating involves control and balance of operations in organisations. Since electricity utilities are organised institutions responsible for supply of electricity services, they are affected by regulatory provisions. Yakubu and Narendra (2017:171) explains that the regulation of electricity is critical to create a balance between the costs incurred by electricity consumers or customers and costs affecting the utilities when generating, transmitting and distributing electricity. The assertion by Yakubu and Narendra (2017:171) demonstrates that interests of customers and utilities are considered by electricity regulator. Doukas and Ballesteros (2015:7) alluded to the way in which clear regulations can be useful to enforce compliance and provide assurance that electricity related activities are carried in a quality manner.

Despite the majority of participants showing an understanding of reasons to regulate electricity as in literature, two (2) Sample A3 participants provided answers that are not specific about what needs to be controlled. The non-specific participants' answers as are quoted verbatim as follows:

*“To have proper control measures in place”, and
“For proper control”.*

The vagueness of the participants' answers is likely to lead to different interpretations by different people, and that makes it difficult to comprehend the intended meaning of participants' views. The participants in Sample A2, Sample A3 and Sample B were asked a further question as follows:

“In your opinion, why electricity cannot be generated, transmitted and distributed by any other person or institution without a licence to do so?”

The researcher posed this open-ended question which required the participants to provide their answers based on their own opinions. Accordingly, all the participants from Sample A2, Sample A3 and Sample B answered the question. Some of the participants provided more than one answer, which may not tally with the actual number of participants who answered the question.

The participants' responses culminated into four (4) reasons indicating a need for assurance of safety and protection of life; assurance that electricity generation and supply is performed by skilled, assurance to competent and authorised persons; assurance to compliance of laws governing the electricity industry; and assurance to standardised practices in the generation and supply of electricity. Since some of participants' responses are suitable for categorisation in more than one of the summarised reasons, the answers or part of the answers may appear more than once under different reasons.

Where participants' answers appear more than once, the part of the answer relevant to clustered reasons is highlighted in bold and italic. The following Table 3.2 demonstrates the participants' answers or part of the answers aligned to the summarised reasons.

Table 3.2: Participants answers in relation to reasons for electricity non- generation, non-transmission and non-distribution

Participants' answers summarised into four reasons	Participants' answers or parts of answers aligned with summarised reasons electricity cannot be generated, transmitted and distributed by any other person or institution without a licence to do so.	Sample from which a phrase is taken
Assurance to safety and protection of life	To avoid unqualified persons to operate electricity equipment because they may expose people to life threatening situations.	A2
	Because unlicensed people may not follow the correct processes and end up endangering other persons' lives.	A2
	Unlicensed persons or institutions may perform dangerous operations and they may not be held accountable for their actions.	A2
	To ensure safe ways of supplying electricity to customers.	A3
	To prevent illegal operations that may cause harm to people .	A3
	For safety reasons.	A3
	To avoid unsafe acts on humans.	A3
	Electricity require people with qualifications who will perform their duties in a way not harming others.	B
	Unauthorised people are a danger to society, they can put the lives of people on risk of death .	B
Assurance that electricity generation and supply is performed by skilled, competent and authorised persons	Because not everyone is trained to deal with electricity.	A2
	Because the law demands that only authorised people or institutions should supply electricity.	A2
	To avoid unqualified persons to operate electricity equipment because they may expose people to life threatening situations.	A2
	To prevent illegal operations that may cause harm to people.	A3
	Because unlicensed people do not have expertise, authority and knowledge to deal with electricity.	A3
	To prevent chancers from being involved in electricity production.	A3
	Electricity require people with qualifications who will perform their duties in a way not harming others.	B
	Because electricity generation duties are technical in nature and require specialised skills that have undergone critical assessment.	B
	Unauthorised people are a danger to society , they can put the lives of people on risk of death.	B
	The duty of generating, transmitting and distributing electricity is a very specialised and delicate task that needs to be done with care.	B
It requires specialised techniques and trades.	B	
Assurance to compliance of laws governing the electricity industry	Because the law demands that only authorised people or institutions should supply electricity.	A2
	Because unlicensed people may not follow the correct processes and end up endangering other	A2
	For compliance or adherence to law/legal stipulations of electricity industry.	B
Assurance to standardised practices in the generation and supply of electricity	To standardise the electricity industry.	A2

(Source: Feedback from the participants)

Table 3.2 above depicts that the majority (11) of participants believe that electricity is a specialised task which require to be performed by skilled, competent and authorised persons. Furthermore, nine (9) participants are of the view that electricity functions cannot be performed by unlicensed persons or institutions because safety and protection to life is of paramount importance. Three (3) participants mentioned answers relating to compliance of laws governing electricity industry and one (1) participant mentioned a need for standardised practices in the generation and supply of electricity.

The answers of all participants as summarised into four clusters are in line with literature and they are dealt with in the explanatory notes on the Electrical Installation Regulations (EIR), 2009 in notice 258 of the Government gazette (Department of Labour, 2012). Section 1 of EIR outlines that the purpose of the regulation is to ensure safety of persons in relation to electrical installations and compel all persons involved in electrical installations to have an approved health and safety standard. Regulation 7 requires that persons involved in electrical installations should be in possession of compliance certificate.

Regulation 8 requires persons involved in electrical installations to be authorised and permitted to do electrical work, and Regulation 11 requires that the persons involved in electrical work possess skills, practical knowledge and experience to do the work. Therefore, the answers demonstrate an extensive knowledge the participants have on reasons to regulate electricity industry.

3.3 EXPLICATION OF ELECTRICITY THEFT

Electricity theft constitutes a significant part of non-technical losses, and torments the power sector. The attitudes of customers and utility employees are critical determinants of the conduct associated with electricity theft (Saini, 2017:26). Yakubu and Narendra (2017:171) assert that the concerning manner electricity is stolen from developing countries requires the application of immediate solutions to protect utilities that are subjected to a massive revenue loss because of theft.

Increasing tariffs and operating profits cannot solve the phenomenon of electricity theft. Instead, such attempts have a potential to escalate the problem in that the consumers who cannot afford the increment might be tempted to continue stealing

electricity. The high tariffs harbours prospects to negatively affect production and hamper competition because the consumer's way of spending on electricity is likely reduced because of not being able to afford the increased prices (Jamil, 2013:269; Louw & Bokoro, 2019:209).

Louw and Bokoro (2019:209) consider any form of stealing electricity as insidious and yield unpleasant outcomes to South Africa. *"Although the problem of electricity theft and non-technical losses has been researched for decades, there is no universal solution comprehensive enough to mitigate electricity theft"* (Louw & Bokoro, 2019). An overarching implication is that the phenomenon of electricity theft is multifaceted and more complicated than it is observed (Gaur & Gupta, 2016:135; Mbanjwa, 2017:ii). Franks (2014:107) indicates that dealing with electricity theft is essential to extend the opportunities of distributing electricity even to the communities that are still lagging in terms of being electrified.

An explication of electricity theft would be provided by defining electricity theft, delineating the methods of stealing electricity and methods of detecting electricity, discussing the impact of electricity theft on customers and utilities, outlining the motives of stealing electricity and recounting on quantities of electricity theft.

3.3.1 Defining the phenomenon of 'Electricity Theft'

Louw and Bokoro (2019:210) and Razavi and Fleury (2019:1-2) find it is necessary for the definition of electricity theft to encompass different perspectives such as those from economical, regional, political, literacy, criminal and corruption contexts. Saini (2017:31) and Winther (2012:np) are of the view that the objectives of understanding the concept of electricity theft necessitate an attempt to address electricity theft in a relational and comprehensible manner. Electricity theft involves the use of electricity generated for commercial purpose without the owner consenting to such use.

The reason electricity theft is called commercial loss is because most of the theft incidents are experienced at distribution where customers are found, and it is expected that their sale transactions will increase the revenue of utilities (Abdullateef, Salami, Musse, Aibinu & Onasanya, 2012:2277; Chetty, 2018:7). Electricity theft is a criminal act that is committed by the instigator with an intention to acquire electricity without being authorised or permitted by the owner. The phenomenon of electricity theft is

applicable not only within the electricity industry, but also in the public services (Mbanjwa, 2017:8; Saini, 2017:28). Khwela (2019:7-8) describe electricity theft as a crime, and a moral and religious abomination in terms of the way in which various countries interpret theft.

Saini (2017:26) categorises electricity theft as a loss incurred in a non-technical manner, because its loss cannot be quantified using computer systems, instead the losses are estimable due to their occurrence influenced by external factors other than the electrical system. Electricity theft is regarded as a commercial loss in that it contributes to huge non-technical losses (Chetty, 2018:1; Pretorius, 2019). Electricity theft is the variance of amount of electricity measured in the transmission network and the electricity sold and consumed by customers (Mbanjwa, 2017:8, Sardar & Ahmad, 2015).

The concept, 'electricity theft' is operationalised in Section 1.8.6 (Chapter 1 of this study) as an unlawful and intentional appropriation of a characteristic that attaches to a thing and by depriving the owner of that characteristic. The operationalisation emanates from the way judge Lamont used the Prevention of Organised Crime Act 121 of 1998 (South Africa, 1998) in *S v Ndebele and Another* (SS16/2010) [2011] ZAGPHC 41 to ratify electricity as capable of being stolen. The 43 participants from Sample A1 (Eskom security personnel), Sample A2 (Eskom personnel from customer services (CS) and Operations and maintenance (O&M)), Sample A3 (Eskom personnel from energy trading and energy protection), B (Local municipality personnel responsible for electricity supply), Sample C (SAPS Detective police), Sample D (NPA prosecutors) and Sample E (Community leaders or representatives) were asked the question:

- “What do you understand by the concept electricity theft”?

The question asked was open-ended and required the participants to provide their own answers. All the participants from Sample A1, Sample A2, Sample A3, Sample B, Sample C, Sample D and Sample E answered the question. Some of the participants provided elaborate and compound answers. The participants' answers indicate that majority of participants understand electricity theft to be a conduct punishable by law, because twenty (20) participants used the word illegal and two (2) participants used

the word unlawful in their answers as key defining words to describe electricity theft as an act against the law.

In this regard, the majority of (29) participants across all samples have described electricity theft to indicate that it involves the conduct prohibited by law. The participants' views indicating prohibition conduct are underpinned by participants use of phrases or derivative words. As such, eleven participants used the following terms: "without permission", followed by 8 (eight) participants who used "without authority", 5 (five) participants stating "without consent" and "against the will" was used by two (2) participants. "Prohibited" was used by one (1) participant, while the other 2 (two) participants used "not allowed" and "not due to" respectively.

The unlawful and prohibited conduct from the participants' answers is described by verb phrases or words used by participants across all samples with reference to undue benefit or illegal control of electricity. The verb phrases include words such as use, utilise, bypass, tamper, disturb, connect, consume, acquire, obtain, get, buy, avoid and engage. The views of majority participants are partly supported in literature in that they point to unlawfulness and prohibition of electricity theft conduct, however, could not relate their answers to human culpability or liability.

Electricity theft is operationalised in Sub-Section 1.8.6 (Chapter 1 of this study) and informed by judgement in *S v Ndebele and Another* (SS16/2010) [2011] ZAGPHC 41 and *Another* that it is both unlawful and intentional conduct. In *S v Ndebele and Another* (SS16/2010) [2011] ZAGPHC 41 'electricity theft' is an unlawful and intentional appropriation of a characteristic that attaches to a thing and depriving the owner of that characteristic. Only one (1) participant from Sample C provided an answer in line with the interpretation and elements provided in *S v Ndebele and Another* (S16/2010) [2011] ZAGPHC 41 judgement. The answer of Sample C participant is quoted verbatim as follows:

"Using electricity in an unlawful manner with the intention to benefit without paying for it. Ultimately depriving the owner (Eskom) the ownership of the product or benefits of it".

The limited understanding of the constituent aspects of electricity theft by the majority of the participants may contribute negatively to initiatives to curb the crime. Hence, a comprehensive knowledge of electricity theft is basic to resolving the crime.

3.3.2 Methods of stealing electricity

Methods of electricity theft involve a particular way of illegally acquiring and consuming electricity from the utilities (Hu, Yang, Wang, Huang & Cheng, 2020). The methods of operation (modus operandi) involve the process, technique and the procedure to commit a particular act; and relates to a particular behaviour of persons or a way of expressing something (Hatton, 2017:3).

In criminal matters, the method of operation serves to discover a particular pattern of crimes committed by individuals or groups (Perera, Arumapperumas & Munasinghe, 2014:ii). Li and Qi (2019:1) explain the modus operandi as useful to extricate distinctive features and processes of a crime. The mode of operation is among the long-standing methods used to identify the perpetrators in criminal investigations; hence, it can be applicable in the identification of people who steal energy (Badore, 2018:1). Image 3.1 below depicts a stolen pole mounted on a transformer.



Image 3.1: Pole mounted transformer stolen

(Source: Northern Highlands, 2023:np)

Image 3.1 above is one of many examples that shows the intensity of the electricity theft. Electricity theft is complex in nature with each case having unique techniques of

commission. It is important for crime investigators to acquaint themselves with different operation modes applied to source energy from electrical infrastructure (Eskom, 2020b:15). Like other crimes, the success of criminally investigating and interpreting electricity theft depends on the investigators' ability to navigate the way in which a crime has been committed. Badore (2018:25) indicates that understanding the way a criminal operates can be useful to link the suspects to the crime scenes and justify their arrest in court.

Although some of the criminal activities display that the perpetrators exercise shrewdness in the planning of crime, such as the crime depicted in Figure 3.1 above. Familiarity with the criminals' method of operation is helpful to identify the suspect by repetitive patterns of criminal behaviours (Pardhoothman, 2015:8; Van der Watt, Van Graan & Labuschagne, 2014:64-65). According to Han et al. (2017:1), Mbanjwa, (2017:64), Yakubu and Narendra (2017:171-172) there are numerous methods of stealing electricity that are applied in different regions and are grouped into five categories as follows:

- Illegally connecting directly from the distribution feeder;
- Tampering with the electricity meter;
- Pilferage (the act of stealing things that are of little value);
- Billing irregularities to abate or avoid payment of electricity consumption; and
- Vendor fraud.

Pilferage is an exception among the methods of stealing electricity categories because it is associated with stealing things that are of little value and does not address any aspect relating to the methods of stealing electricity. The illegal connection from the distribution feeder and tampering with electricity meter are reasonably the same methods of electricity theft because they both involve the tampering of electricity infrastructure. The five categories of electricity theft methods mentioned *supra* could therefore be summarised into three methods of electricity theft as follows:

- Tampering with electricity infrastructure;
- Billing irregularities to abate or avoid payment of electricity consumption; and
- Vendor fraud

To enhance knowledge of the methods of electricity theft requires the description of the nature of electricity theft as a compound that involves the mode, type and form. The phrases '*methods of electricity theft*', '*types of electricity theft*' and '*forms of electricity theft*' are interchangeably used because they all describe the traits of how electricity theft occur. Mucheli, Nanda, Nayak, Rout, Swain, Das and Biswal (2019:302) use the term 'methods', Louw and Bokoro (2019:209) prefer the term forms; and Shokoya and Raji (2019:97) use the terms forms and types to refer to methods of electricity theft. Substantiation of the three methods of electricity theft namely tampering with electricity infrastructure, billing irregularities to abate or avoid payment of electricity consumption and vendor fraud follows in Section 3.3.2.1 below.

3.3.2.1 Tampering with electrical infrastructure

Criminal Matters Amendment Act 18 of 2015 (South Africa, 2015) define tampering in a manner to include the conduct of altering, cutting, disturbing, interfering with, interrupting, manipulating, obstructing, removing and uprooting any essential infrastructure installed for delivery of basic services to the public using any means such as methods or devices. The Act includes and protect the provision of energy as one of the basic services that are provided using essential infrastructure. As discussed in Sub-section 3.2.4.2 of the current chapter, it is common knowledge that electricity utilities involve various infrastructures to generate, transmit and distribute electricity. Tampering cannot acquire a different interpretation and meaning due to its occurrence on various electrical infrastructures such as meters, transformers and networks.

The rationale is that all the infrastructures of electricity exposed to the conduct classified in the definition as in Criminal Matters Amendment Act 18 of 2015 are subjected to tampering. The tampering could include illegal connections, bypass, or any other form of disturbance with electricity infrastructure. However, obfuscation still exist in differentiating the methods of electricity theft that involve tampering in that they are occasionally regarded as being different from tampering. Yakubu and Narendra (2017:171-172) treat meter bypass, tampering and illegal hooking up of the grid as separate.

Saini (2017:27) also regard the act of tampering as different, because they mention that electricity theft involves illegal tapping of electricity from the feeder, bypassing the energy meter, tampering with the energy meter and several physical methods to evade

payment to the utility company. Mbanjwa (2017:64) mention that the forms of electricity theft include meter tampering, electricity fraud and illegal connections. All the examples of electricity theft mentioned by Mbanjwa (2017:64), Saini (2017:27) and Yakubu and Narendra (2017:171-172) describe one method, which is tampering of electricity infrastructure.

The most-used methods of tampering electrical infrastructure involve the illegal connection of wires (Blimpo & Cosgrove-Davies, 2019:137; Martin, Starace & Tricoire, 2017:17). The tampering of electricity infrastructure in all forms is rife, and the common method used to steal electricity is tampering with the electricity grid and meters (Han et al., 2017:1; Hussain et al., 2016:4; Mbanjwa, 2017:64; Shokoya & Raji, 2019b:468; Yakubu & Narendra, 2017:171-172). The two common modes of stealing electricity namely electricity grid and meters are outlined in the two sub-sections below.

- **Tampering with electrical meters**

Electricity meter is a device used to record the amount of energy used by consumers, and in a traditional network is mostly placed at the customer's place (Suhail, Ahmed, Aamir & Ranjan, 2017:1488). The operating modes of electricity meters includes variety of methods such as spinning a disk in a meter to alter its accuracy of calculating power consumption, disturbing the meter and seals; damaging, cutting or removing meter wires, inserting foreign objects and intercepting the smart meter network communication by injecting false data (Blimpo & Cosgrove-Davies, 2019:137; Martin, Starace & Tricoire, 2017:17; Prakash, 2015:30842).

The introduction of modern (smart) electricity meters have improved the utilities income because their ability to be read remotely has reduced the labour costs of physically visiting the site to obtain consumption readings. However, like traditional (analogue) meters, the smart meters are susceptible to energy theft committed by applying different modes of stealing. The perpetrators use sophisticated technology such as software and hardware to manipulate the smart energy meter reading (Yakubu & Narendra, 2017:176).

The manipulation in smart meters could be performed remotely, whereas in analogue meters the perpetrators mostly use physical methods such as cutting, damaging, removing and using objects or devices to interfere with the reading of the electricity

used (Nakutis & Kaškonas, 2020:5247-5248). Although the meter tampering is common to all classes of people, the use of the remote manipulation techniques is commonly associated with wealthy people who can afford the services of a technical expert offered illegally to assist in tampering with the energy meter (Marangoz, 2013:1). Image 3.2 below depicts an example of electricity meter tampering.

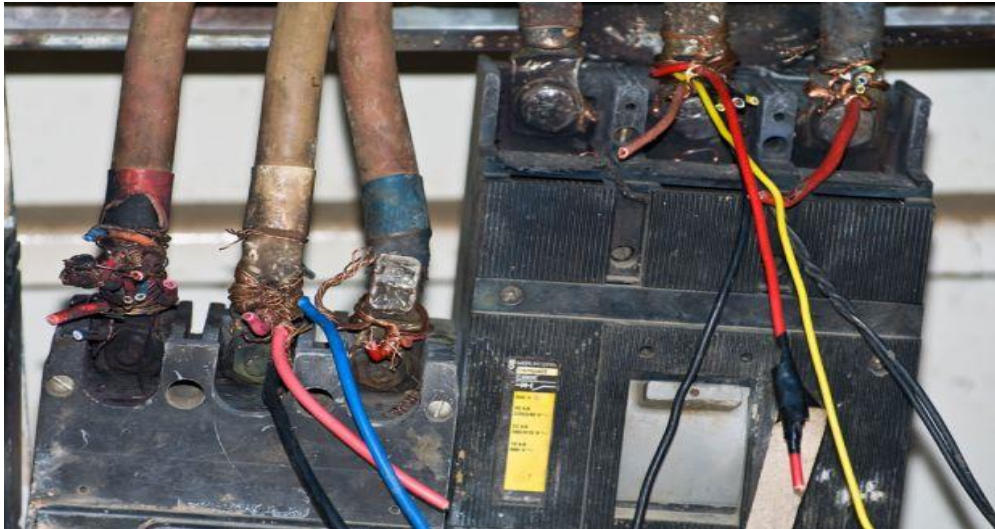


Image 3.2: Example of a tampered electricity meter
(Source: Smart Energy International, 2018)

South African law regards tampering with electricity meters as serious offence as manifested in the report by Smart Energy International (2018). The report is about a male accused namely Gerhard Ferreira who was found guilty and sentenced for manipulating the Eskom meters. The accused was illegally charging customers a fee to reduce consumption readings of customers in the Bothaville and Viljoenskroon areas. On pleading guilty to 14 counts of fraud and 10 counts of malicious damage to property, the accused was sentenced to 12 years in prison wholly suspended for five years on condition that he pays the amount of R921, 830.88 to Eskom that suffered the harm.

The sentencing of the accused is a demonstration that the South African Criminal law informs the interpretation of energy meter (as electricity infrastructure) tampering. Khan, Riaz, Khan, Khan, Rehman and Khan (2016:3164) aver that the different types of energy meters offer the perpetrators a wide range of energy theft options, which makes the tampering of energy meters the most frequent method of energy theft.

Networked Energy Services (2020) provides the summary of electricity theft modes applied in energy meters as indicated in Table 3.3 overleaf.

Table 3.3: Modes of electricity meter tampering

TAMPERING MODE	Description of the tampering mode
Magnetic tampering	A strong and rare magnet is used to saturate the meter and manipulate the energy consumption reading.
Meter spoofing/mock meter	Replacing the utility energy meter with non-utility meter.
Resistor insertion	Inserting an object in a meter to interfere with the normal reading of energy consumption.
Meter strap out	Fastening the wires around the terminals at the base of the energy meter.
Meter inversion	Turning in the opposite direction the socket in the meter or wiring the meter backwards.
Full or partial earth condition	Splitting of the load connection between the earth and the neutral wires of the energy meter.
Missing neutral	A neutral wire is disconnected from the energy meter.
Neutral disturbance	Using the neutral connection to manipulate the flow of energy from the source to the meter.
Missing potential	Removing one of the phase wires in a meter to reduce voltage to zero reading.
Phase and neutral interchange	Interchanging meter phase and neutral in a meter to reverse the flow of current.

(Source: Compiled by the researcher)

The other method used by thieves for stealing electricity from the meter without tampering with it is through the redistribution of electricity by a legitimate customer or account holder. As such, electricity is distributed to any other nearby place that is outside the borders of the premises where the electricity meter of the account holder is installed. The prohibition of such conduct forms part of the discussion in Section 3.2.5 of this Chapter, wherein Section 8(1)(a) of Electricity regulation Act 4 of 2006 prohibits persons without a licence issued by the Regulator in accordance with this Act to operate any generation, transmission or distribution facility.

It is likely that customers have agreements to purchase and consume electricity with utilities that are licenced to generate, transmit and distribute electricity; but the agreements cannot authorise customers to distribute further electricity obtained from utilities to other consumers. Both the legitimate account holder and the other party

receiving electricity through the prohibited conduct of redistributing could be held accountable using the Criminal Matters Amendment Act 18 of 2015 (South Africa, 2015) which will be detailed in Chapter 4 of this study.

- **Tampering with electrical grid**

Electricity grid includes a range of electricity systems such as transmission lines, distribution lines, mini-substations, overhead poles, transformers and other energy systems (Eskom, 2020b:5). Yakubu and Narendra (2017:172) assert that the operating modes in energy grid include the rigging and tapping (hooking) of wires from the source to where it is intended (domestic or business use). The offenders can cut, fuse, exchange or connect the wires directly from the source by bypassing the energy meter so that energy is used without being recorded (Golden & Min, 2012:2).

While the methods of stealing electricity by tampering with the grid are common, Bin-Halabi, Nouh and Abouelela (2019:71529) and Suhail et al. (2017:1488), demonstrate that such methods are easy to observe and detect, because the connections are often in the open view. Some of the tampered grid wires are observable hanging lower than at a required height. The exposure of grid related illegal connections of electricity serves as an advantage to crime investigators and utilities in that they may not struggle to collect evidence for criminal prosecution (Mbanjwa, 2017:25). Image 3.3 below indicates a picture of a tampered grid.



Image 3.3: Example of a tampered grid

(Source: Rubino, 2016:127)

3.3.2.2 Billing irregularities to abate payment of electricity consumption

Billing irregularities occur when there is non-adherence to invoicing of rates and there is manipulation of billing codes to attain illegitimate benefit (Legotlo & Mutezo, (2018:300). Illegal invoicing of electricity consumption is applicable in areas where consumers or customers use conventional non-prepaid methods. According to Marangoz (2013:1), billing irregularities often involves bribery in that customers offer incentives to utility employees', or the employees induce bribery from customers to lessen the electricity consumption payments that are due to utilities by the customers.

Pless (2014:4) explain that billing irregularities involve corruption in that the perpetrators use the entrusted authority for personal gain in contrast to their duty agreement. This is observable in some of the utility employees who offer to help customers to pay lower amounts of money than the actual energy consumed in exchange of illicit benefits. The irregularities associated with billing of electricity accounts manifest in various methods to both customers using pre-paid and those using non-prepaid methods of consuming electricity.

Pre-paid customers purchase the electricity in advance, whereas non-prepaid customers are provided a bill to pay after energy is consumed (Kambule, 2018:179; Yakubu & Narendra, 2017:171-172). Not all billing irregularities by utilities are intentional; however, significant number of them derive from deliberate illegal activities of the employees. The employees and contractors of utilities are responsible for billing irregularities of customers' accounts such as providing inaccurate meter readings, distorting the meter readings in favour of the bribing customer, illegally reducing the bill and fraudulently clearing the debt in order to gain illicit benefits from account holders (Dike, Obiora, Euphemia & Dike, 2015; Mbanjwa, 2017:8; Smart Energy International, 2020, np; Yakubu & Narendra, 2017:171).

The conduct of illegally clearing the bill and lowering the amounts whereas electricity has been consumed conforms to the conduct of electricity theft (Louw & Bokoro, 2019:209). Mazibuko (2013:12) posits that illegal billing system forms a basis of legislative, preventative and detective matters. Failure to adhere to the billing requirements not only contribute to deprivation of revenue but also render utilities unable to comply with the regulations because of missing details about their products.

The utilities may find themselves required to account in terms of delict or criminal law. It is evidential that the interpretation of billing irregularities as forms of electricity theft are included in the laws governing crime in South Africa.

3.3.2.3 Vendor fraud

Illegal vending of electricity involves the unauthorised selling of prepaid electricity and causes harm to utilities in that they lose energy without gaining revenue (Eskom, 2020b:2). The unofficial name for energy illegal vending is 'ghost vending' because it involves the illegitimate trading transactions (Eskom, 2020b:17). According to Geldard (2013:39), illegal vending of energy is a product of compromised vending machines wherein the perpetrators utilise the opportunity to generate money from selling energy credits belonging to utilities illegally.

Fraudulent vending of electricity has devastating effects to utilities in that they cannot predict the demand of electricity and account for energy losses associated with electricity theft. According to Mbanjwa (2017:7), the illegal vending of electricity in South Africa occurs because customers want to acquire electricity at reduced costs. Fraudulent financial gain is another reason the illegal vending of electricity occurs in the country as decided in *S v Ndebele and Another* (SS16/2010) [2011] ZAGPJHC 41. According to Gina (2016:23), the methods of stealing electricity in a form of illegal vending involves the illegal trading of pre-paid electricity vouchers obtained from stolen vending machines known as Credit Dispensing Units (CDUs).

In *S v Ndebele and Another* (SS16/2010) [2011] ZAGPJHC 41 it was clarified that the stolen CDUs could be tampered or manipulated to fail to reach the limit of electricity credits dispensed. The intention to manipulate the CDU's is to use electricity illegally. The perpetrators illegally generate revenue by selling the electricity credits that could be used to access energy supplied by utilities, thus cause utilities to lose revenue for the generated electricity. Section (8) of Electricity Regulation Act (Act 4 of 2006) prohibits the illegal selling of electricity (South Africa, 2006). National Energy Regulator of South Africa (2019:9-10) indicates that resellers should have a license or be registered so that they are regulated.

Eskom utility constantly conducts the campaigns reminding customers that the buying of illegal electricity credits is an offence punishable by law in South Africa. The utility

co-ordinates with law enforcement agencies to assist in criminal investigation and prosecution of perpetrators who buy and sell illegal electricity vouchers. (Eskom, 2021c:np). *S v Ndebele and Another* (SS16/2010) [2011] ZAGPJHC 41 is a decided case between the state of South Africa and three accused identified as Accused 1, Accused 2 and Accused 3. The case was heard in South Gauteng High Court at Johannesburg and was presided by Judge Lamont.

The accused faced 78287 counts of different charges relating to theft of five electricity vending machines known as Credit Dispensing Units (CDUs) and electricity theft. The CDUs were the property of Eskom and were stolen from an Eskom contractor in January 2005. The court established that Accused 1 and Accused 2 were in possession and operating the five CDUs that were stolen from an Eskom contractor. Accused 1 and Accused 2 used the CDUs to print electricity credit vouchers that were illegally sold to Eskom customers who in turn use the vouchers to consume electricity from Eskom network. The accused kept one CDU at a rented flat in Sasolburg and four CDUs at a rented flat in Westonaria.

In this regard, the court further established that the conduct of Accused 1 and Accused 2 relating to theft of CDUs and electricity theft caused Eskom to suffer losses of electricity and revenue. During January 2011, the court found Accused 1 and Accused 2 guilty of all counts of charges relating to theft of CDUs and electricity theft. The judge acquitted Accused 3 because there was no substantial evidence linking her to activities of CDUs theft and electricity theft. Furthermore, the court established in *S v Ndebele and Another* that the illegal vending of electricity is exploiting the vulnerability of pre-paid vending machines. Eskom was using two types of pre-paid vending machines (CDUs).

One type of CDU was designed to print without limit the electricity credit vouchers and the other was limited by the utility in order to exercise proper control to the vending contractors. When stolen, the CDUs without limit could be used to issue electricity credit vouchers that are usable to consume electricity on the grid. The introduction of pre-paid system has contributed to reduction of electricity theft because of users paying in advance. However, the non-recovery of stolen CDUs designed to issue unlimited quantities of vouchers offer culprits an advantage to continue defrauding

utilities without being traced and thus complicate dealing with electricity theft (Kambule, 2018:179).

The 43 participants from Sample A1 (Eskom security personnel), Sample A2 (Eskom personnel from customer services (CS) and operations and maintenance (O&M)), Sample A3 (Eskom personnel from energy trading and energy protection), B (Local municipality personnel responsible for electricity supply), C (SAPS detective police), D (NPA prosecutors) and E (Community leaders or representatives) were asked the following question:

- “In your experience, what are the methods of stealing electricity”?

The question asked was open-ended and required the participants to provide their own answers. All the participants from Sample A1, Sample A2, Sample A3, Sample B, Sample C, Sample D and Sample E answered the question. The majority of the participants provided more than one answer, which may not tally with the actual number of participants who answered the question.

The participants’ responses culminated into two (2) methods of stealing electricity namely tampering with electrical infrastructure (43 participants) and vendor fraud (6 participants). All (43) participants did not mention billing irregularities that is among the three (3) methods of stealing electricity as discussed in this Section 3.3.2 *supra*. The non-mentioning of billing related methods of stealing electricity may be reasonably attributed to lack of experience and exposure to billing matters within some echelons of electricity utilities.

The participants’ answers demonstrating the method of stealing electricity “tampering with electrical infrastructure” are characterised by words or phrases contextually used to mean illegal acquisition of electricity as derived from verbs such as connect which was utilised by the majority of (33) participants, followed by (26) participants who utilised the word, bypass was used by eight (8) participants, on the other hand, interfere was used by six (6) participants, tape utilised by two (2) participants, fiddle two (2) participants, another two (2) participant used hook, consume used by two (2) participants and only one (1) participant who used the word ‘bridge’.

Despite all participants providing answers pointing to tampering with electrical infrastructure as a method to steal electricity; answers of majority participants give the impression that the participants' understanding is characterised by their association of words such as tamper, interfere, bridge or bypass to meter or/and meter boxes, and word connect to wires or cables. This association of mentioned words with certain components of electricity infrastructure may limit the participants' appreciation that tampering is experienced across every part of electricity equipment. Nonetheless, three (3) participants; each from Sample A2, Sample A3 and Sample B provided answers indicating that tampering and connect is not limited to certain parts of electric equipment. The participants' answers showing an exception to majority answer are cited verbatim below:

Sample A2: "*Tampering with electricity equipment or meters*";
Sample A3: "*Interfering with meter or network*"; and
Sample B: "*Interfering or tampering with electrical installations such as meter and transformer, as well as network lines*".

The participants' answers demonstrating vendor fraud as another method of stealing electricity are derived from only six (6) participants, two (2) from Sample A1 and four (4) from Sample C. The number of participants who mentioned vendor fraud related answers is significantly low as compared to the total number of (43) participants who expressed significant knowledge on tampering with electric equipment method of stealing electricity. The participants' answers related to vending display phrases or verb derivatives mentioned in a way to relate them with illegal conduct of stealing electricity and the phrases include buy, sell and vend. The illegal effect of the verb derivatives as used by participants is expressed and linked to phrases such as ghost, illegal sellers, illegitimate tokens, illegal traders and illegal credits of electricity. The answers of participants in relation to the method of stealing electricity "vendor fraud" indicate that the method involves illegal way of selling and buying electricity, and two (2) participants provided a precise and comprehensive understanding of the method as follows:

Sample A1: "*Buying electricity from illegal sellers*"; and
Sample C: "*Sell and buy illegal electricity credits*".

The answers of majority participants are aligned with literature despite vendor fraud method of stealing electricity being mentioned by few participants. In literature, there

are three (3) methods of stealing electricity namely tampering of electric infrastructure, vendor fraud and billing irregularities to avoid payment. The most common method of electricity theft according to participants' responses and literature is tampering with electrical equipment.

These methods to steal electricity have been dealt with in Section 3.3.2 *supra* (Blimpo & Cosgrove-Davies, 2019:137, Kambule, 2018:179; Saini, 2017:27; Splynx, 2019:np; Martin, Starace & Tricoire, 2017:17; Yakubu & Narendra, 2017:171-172). However, the non-mentioning of billing irregularities by the participants exposes the incomplete participants' understanding of methods to steal electricity, and that is likely to hamper the efforts to curb electricity as necessary to the purpose of this study.

3.3.3 Methods of detecting electricity theft

Detection involves the process of discovering the unwanted or abnormal events that are likely to cause deviations from the main event (Li & Wang, 2020:1; Talagala, Hyndman & Smith-Miles, 2019). According to Razavi and Fleury (2019:2-3) electricity theft is one of the unfavourable circumstances causing distress to utilities in developing countries because it is a phenomenon that is generally complex to detect during distribution and transmission of energy. The intricacy of detecting electricity theft is observable in that there is no global solution to the problem of electricity theft as a kind of non-technical losses (Louw & Bokoro, 2019:209).

In order for one to detect and control electricity theft, it is imperative to assess its boundaries and variables such as social, economic and political issues are assessed (Razavi & Fleury, 2019:1). The methods used to detect non-technical losses related to electricity theft are grouped into three (3) categories namely data-oriented detection methods, network-oriented detection methods and hybrid-oriented detection methods (Papadimitriou, Messins & Hatziaargyriou, 2017:2830-2831). For this study, the discussion of non-technical losses (including electricity theft) detection methods will be specific to electricity theft and detailed in sub-sections 3.3.3.1, 3.3.3.2 and 3.3.3.3 below.

3.3.3.1 Data oriented detection methods

Data oriented detection methods employ data mining and data analytics to study consumer related data such as time series of active energy consumption, consumer

location, consumer characteristics and consumer behaviour relating to illegal consumption of electricity. The data-oriented detection methods are cost effective and are implementable if the database is well coordinated; however, the accuracy of the methods is compromised (Papadimitriou et al., 2017:2830).

Data mining or administrative technique involves the examination of large pre-existing data to identify patterns applied to generate new information that is usable to determine possible electricity theft (Jassim & Abdulwahid, 2021:1). According to Dayalan (2019:69), the technique of data mining is inherently inconvenient, because it might not be probable to measure and verify the data collected. The assertion by the author is applicable to electricity consumption. Hence, Louw and Bokoro (2019:210) recommend the use of technology to supplement the existing detection methods.

Júnior, Ramos, Rodrigues, Pereira, De Souza, Da Costa and Papa (2016:414) mention anomaly as a technique used to detect electricity theft. The anomaly technique requires that the person responsible for classifying the incidents occurring on the electricity infrastructure be trained to study the behaviour of regular consumers. The commonly used method to detect anomalies associated with electricity theft is to study Multivariate-Gaussian machine that estimates patterns of electricity consumption. The anomaly technique requires that any new consumer identified should be classified as a normal consumer. Júnior et al. (2016:420), point out the challenges associated with anomaly detection technique as follows:

- It is not straight-forward to design a labelled dataset for such purposes.
- It is difficult to build a balanced dataset, since the number of irregular consumers is often lower than regular consumers.

3.3.3.2 Network oriented detection methods

Network oriented detection methods apply network related data and resources such as observer meters, transformer measuring aggregate consumption, feeder remote terminal unit and sensors fitted on the network. A substantial difference of the sum of consumers' measurements is sufficient to suspect electricity theft at a particular point. The network-oriented detection methods have improved level of accuracy but are expensive and difficult to implement (Papadimitriou et al., 2017:2831).

According to Louw and Bokoro (2019:210), non-technical detection methods found in literature have several alternatives targeting the consumer point of supply. The various alternatives are likely to mitigate electricity theft and improve the revenue. However, it is apparent that even though the detection of electricity theft is crucial, it does not necessarily control theft. Instead, it confirms that there are losses of electricity at a particular point in the network and that depends on the location of the feeder (Ahmad, Chen, Wang & Guo, 2018:2930). The universal method of detecting electricity theft that is also applicable to the South African context is to conduct visual observations in the form of line inspections.

This method is applied generally in developing countries where most of the activities associated with electricity theft are in the public domain. Exposed electric wires used to steal electricity can be seen lying on the ground or hanging from support structures (Jiyane-Tshikomba, 2019:15-16). Louw and Bokoro (2019:210-211) commend the use of detecting device (technology) for smart meters as a method that contributes to the reduction of electricity theft and ameliorate the collection of revenue from electricity sales significantly. This method is effective if the detecting device is installed, usually at the point of supply and is monitored properly.

The drawback of a smart meter- detecting device is that it is costly; it requires further investigations by engineers so that upon discovering the illegal connections, they would reinstate the network to its normal function by disconnecting or removing the illegal operations. Conversely, Devidas and Ramesh (2010:638) appreciate smart grids because unlike traditional power grids, they have a two-way communication system consisting of sensors that automatically monitor, fix and generate a consumption bill without going out on-site. Han et al. (2017:2), commend the smart grids for being self-detecting but are concerned that their rate of intrusions exceeds the rate at which intrusions are detected.

3.3.3.3 Hybrid oriented detection methods

Electricity hybrid-oriented methods are a combination of electricity data-oriented methods and electricity network-oriented methods and are applied to reduce costs and improve accuracy of data relating to consumption of electricity (Papadimitriou et al., 2017:2831). The hybrid detection methods are not only concerned with the concurrent manner of attending to electricity network intrusions, but they also provide an explicit

perspective on the nature of illegal activities directed on electricity network (Simonov, 2014).

Han et al. (2017:2), summarised the detection methods of electricity theft by combining data-oriented detection methods, network-oriented detection methods and hybrid-oriented detection methods as follows:

- **Physical methods:** The current physical methods include video surveillance, power line inspection. They are expensive and inefficient methods;
- **Intrusion detection based methods:** The common Intrusion detection based methods are used in smart grid not to detect non-technical losses that include electricity theft, but to deal with general security issues of smart grid;
- **Profile based methods:** The profile-based methods entail machine learning and data mining that requires the analysis of large volumes of detailed energy consumption data;
- **Statistic methods:** Statistic methods are prone to high false alarm rate caused by variations such as change of weather, new home appliances and any other variation; and
- **Comparison based methods:** The current comparison-based methods can detect non-technical losses associated with theft but yield a small amount of data. Moreover, they require improvement of detection speed.

Nikonowicz, Kubczak and Matuszewski (2016) regard hybrid detection methods as being innovative because they maximise the detection rates of illegal activities experienced on electricity networks by incorporating two independent detection methods (data oriented and network oriented). Hybrid oriented detection methods have the following considerable advantages that depend on acquisition of meaningful energy network data and network characteristics (Chavez, Lai, Jacobs, Hossain-McKenzie, Jonas, Johnson & Summers, 2019):

- They are not easy to manipulate without a detection;
- They allow joint forensic analysis to be conducted to reveal any relationships between the observed cyber and physical events; and

- They integrate cyber network data and physical network data allowing capturing of physical measurements to specific events on the communications and control network.

Simonov (2014) considers as an advantage the potential of hybrid detection methods to provide improved stability of energy networks because of their regular control measures even to multiple remote equipment along the network. The hybrid detection methods are commendable for their potential of yielding accurate data about the illegal activities directed to energy networks (Fallah, Deo, Shojafar, Conti & Shamshirband, 2018:19). Although the hybrid detection methods have maximum benefits as compared to individual detection methods, the increased illegal events occurring on the electricity network may hamper their effectiveness and that could potentially increase data and costs (Simonov, 2014).

The incorporation of independent energy detection approaches by hybrid-oriented detection methods is a complicated mechanism and is predisposed to illegal activities that prevent the activation of detection process on electricity networks (Fallah et al., 2018:20; Chavez et al., 2019). Despite the challenges associated with the use of energy detection methods, the advantages found in the use of the methods are notable; and could be helpful in dealing with the impact of electricity theft on utilities and customers as detailed in the next Section 3.3.4. The participants in Sample A2 (Eskom personnel from customer services (CS) and Operations and maintenance (O&M)), Sample A3 (Eskom personnel from energy trading and energy protection) and Sample B (Local municipality personnel responsible for electricity supply) were asked the following question:

- “Based on your experience, how is the conduct of electricity theft detected?”

The question asked was open-ended and required the participants to provide answers freely without being provided with options to select from. All the participants from Sample A2, Sample A3, and Sample B answered the question. Some of the participants provided more than one answer which may not correlate with the number of participants who answered the question. The participants’ answers demonstrate four ways in which the participants experienced methods of detecting electricity theft, and they are summarised as follows:

- Inspections or auditing of electricity infrastructure (18) participants;
- Studying the electricity accounts of customers to understand the patterns and behaviour of buying and consuming electricity (4) participants;
- Acting on the information received from the reporters and informers (3) participants; and
- Conducting operations intended to identify and disrupt the illegal acquisition and consumption of electricity (3) participants.

The inspections or auditing of electricity infrastructure to detect electricity theft was mentioned by all (18) participants, which indicates that the method is common to their working environments. Although the overwhelming similar responses of participants were not predictable, they are tenable given that the selection of three Samples (A2, A3 and B) involved in answering the question was based on the nature of their work which makes them familiar with matters of detecting electricity theft. The other three (3) methods of detecting electricity were each mentioned by less than five (5) participants, and according to the researchers' experience of working in the Eskom security department as an investigator, the less number is attributed to various reasons.

The reasons as summarised include that the study of accounts and consumption patterns of electricity is a speciality assigned to extremely few employees hence the participants were likely not involved in functions relating to the method. Similarly, the handling of classified information requirement has a potential to limit and deprive certain employees an opportunity to experience the processes involved in acting on information received from reporters and informers as a method of detecting electricity theft. Lastly, the operations to disrupt electricity theft depends on volition to make known the illegal activities on electrical infrastructure by employees and reporters who became aware of the illegal activities.

The comparison between the participants' answers and literature leads to an understanding that the participants are conversant with the methods of detecting electricity theft as found in literature. Junior et al. (2016:420), underscored the importance of using technology to detect electricity theft. Furthermore, Jiyane-Tshikomba (2019:15-16) mention that visual inspections remain critical even in the

presence of detecting technologies because technology could falter and not pick some of the irregularities or electricity theft activities along the electricity network.

The participants' views are supported in literature in that Louw and Bokoro (2019:210) and Jassim and Abdulwahid (2021:1) described the importance of using data to detect electricity theft, an explanation given by participants in their answers describing the use of information received from reporters and informers. Another detection method found in participants answers and literature is the analysis of consumption behaviour of customers or consumers at particular area (Afiyah, 2023:1089). The participants also included in their answers the combination of various electricity theft detecting methods to complement where other methods are ineffective. The participants' views are in line with literature which highlighted the use of Hybrid (more than one) method to detect electricity theft (Han et al., 2017:2).

3.3.4 The impact of electricity theft on utilities and communities

The impact of electricity theft is not only appalling but also dreadful, because it affects both victims and the perpetrators. The impact of electricity theft contributes to failures to predict the demand of electricity in the country. The theft phenomenon adds to the myriad of issues that strain the Eskom electricity network load and that places the utility in an unfavourable situation of constantly relieving the system through the shedding of loads. The impact of electricity theft is huge in that it also drains the public purse. It turns out that the deficit is recovered through ways such as tariff increase and bailouts from the government. Ultimately, one acrimonious event leads to the other (Jamil, 2013:269; Mbanjwa, 2017:1-2).

According to Saini (2017:36), the impact of electricity theft on power utilities reduces their commercial viability. This result in utilities not being able to offer and sustain a quality service to customers, thus leading to customer dissatisfaction. Eventually, the utilities lose business because loyal customers sought better electricity offers that might not compromise them. Ahmad et al. (2018:2917), recount on the manner in which electricity theft yield adverse results for utilities, because it diminishes their chances of survival particularly when they cannot get return on investment about the electricity generated, that is lost in an illicit manner. As such, the commercial losses incurred by utilities affect the interest of utilities to develop new technology to curb the theft.

Furthermore, Gaur and Gupta (2016:128) indicate that the illegal use of electricity by consumers causes unstable supply of electricity and the loss of revenue by utilities. Subsequently, utilities become incapable of re-investing in better infrastructure and securing of skilled human resources to intensify the production of electricity to meet the demand. Eskom (2017a:56) reports that energy losses have a direct effect and increases generation requirements (both capacity and energy volumes) and primary energy costs. Non-technical losses in the form of electricity theft reverse efforts of conserving energy by utilities and the consumers, because culprits do not feel obliged to relieve the electricity system.

Electricity theft not only contributes to load shedding but, it also impacts the revenue of utilities because they have to pay taxes even for the electricity lost from theft (Han et al., 2017:7; Júnior et al., 2016:413; Mbanjwa, 2017:4). Louw and Bokoro (2019:209) provides another exposition of the impact of electricity theft beyond equipment damage and revenue loss. The authors suggest that electricity theft threatens life because the perpetrators do not take pre-cautionary measures when stealing electricity. Instead, they are just concerned with getting electricity without paying for it. The unsafe ways of operating the electric equipment are likely to create sparks that might result in burning homes and veld.

Electricity theft can result in electric shock, injury or death of all including the innocent people; and this might expose the utilities to lawsuits initiated by the affected parties who want a compensation for the harm or loss suffered (DSC Attorneys, 2012:np). Jamil (2013:268), Saini (2017:29) and Yurtseven (2015:70) regards electricity theft as the sole obstacle to private investment in the power sector and escalate unemployment. Lack of investment affects the availability of capacity in that it hinders and limit utilities to generate electricity to meet the demand. Therefore, utilities are bound to relieve the electricity system by rewarding heavy load users for shedding their excess loads at peak times.

However, the shedding of loads negatively affects the production that could result in adverse effects against the economy in that industries and businesses could be left with only the option of retrenching employees in order to cope with the slow economic growth. The prospects of job losses have the potential to escalate the unemployment rate and poverty, which in turn, could lead to social unrest in South Africa (South

African Institute of Race Relations (SAIRR), 2019:1). Electricity theft directly or indirectly causes harm to communities and utilities, because it compels utilities to divert funds that were allocated for development and improvement of communities to control incidents relating to electricity theft.

The diversion of funds to curb electricity theft result in countable effects that hinders the reduction of electricity tariffs, providing quality service, and subsidising the poor and remote areas (Saini, 2017:27). Franks (2014:22) indicate that poor customers are compelled to use unsafe and flammable fuels to reduce costs associated with increased electricity rates or tariffs. Higher prices of electricity also increase the temptation of impoverished consumers to steal electricity (Jamil, 2013:268). The participants in Sample A2 (Eskom personnel from customer services (CS) and Operations and maintenance (O&M)), Sample A3 (Eskom personnel from energy trading and energy protection) and Sample B (Local municipality personnel responsible for electricity supply) the following question:

- “In your own opinion, how does electricity theft impact the sustainability of utilities?”

On the other hand, Sample E (Community leaders or representatives) were asked the following question:

- “What is the impact of electricity theft in your community area?”

The questions asked were open-ended and required the participants to provide their own answers. All the participants from Sample A2, Sample A3, Sample B answered the question about electricity theft impact on utilities, and all Sample E participants answered the question about electricity impact of communities. Some of the participants provided more than one answer which may not tally with the number of participants who answered the questions.

All the participants in Samples A2, A3 and B, who were asked a question relating to the impact of electricity theft on utilities, commonly pointed to the negative effects of this crime on the finances of the utilities. The participants used words such as “financial” by eight (8) participants, “profit” used by seven (7) participants, “revenue” utilised by (1) participant, “money” used by four (4) participants, “income” used by six

(6) participants and “funds” used by three (3) participants to describe the financial impact of electricity theft. Furthermore, the negative financial impact on participants’ answers is shown by use of phrases or verb derivatives having reference to finances such as limit, reduce, lost, not recovered (cannot recover), deprive, cannot sell, takes away, lessens, negatively affect (affect), disturbs, drains and don’t get.

Among participants’ answers are descriptions indicating the way finances of utilities are impacted negatively and they include replacing of electricity infrastructure damaged by electricity theft related activities, costs invested in the electricity production are not recovered, thus affecting the profit required to fund new electricity development projects in communities. Furthermore, the maintenance and operations required to sustain the supply of electricity theft are negatively affected. Four participants provided a comprehensive description on the manner electricity theft impact utilities and their answers as quoted verbatim are as follows:

Sample A2: “Utilities lose lot of money because they keep on replacing infrastructure damaged by electricity theft activities”.

Sample A2: “Decreases income or profit. Reduces chances to financially cater for day-to-day operations”.

Sample B: “It affects the financial capabilities of utilities, in turn, maintenance may not be done properly. Other new residential areas may not be electrified on time due to lack of funds”.

Sample B: “It impacts negatively the financial abilities of utilities, because they use money to buy in bulk electricity or to generate electricity, but they don’t get the profit or money used”.

The views of the participants are in concurrence with literature in that according to Gaur and Gupta (2016:128), electricity theft contributes tremendously to utilities loss of revenue. Ahmad et al. (2018:2917), asserts that the failure to recover the costs because of electricity theft negatively affects the utilities return on investment. Furthermore, electricity theft impacts utilities in that it leads to a myriad of challenges not limited to hampered community development, economic development and employment opportunities (Eskom, 2023a:1-2).

From the answers of Sample E participants which relate to impact of electricity theft on communities, the following points are drawn: Safety concern in that persons are electrocuted, injured or killed by activities associated with electricity theft two (2) participants; Electricity equipment is damaged and require constant fixing which requires funds two (2) participants; there is unstable supply of electricity affecting

legitimate and loyal customers in that electricity equipment is damaged and utilities are bound to protect the infrastructure by implementing load reduction (4 participants), and electricity becomes more expensive and the shortfall for damages and losses incurred is recovered from the customers two (2) participants.

There is one (1) Sample E participant who provided an answer encompassing almost all the four aspects (safety concern, damaged electricity equipment, unstable supply of electricity and expensive electricity) pointing to the way electricity theft impacts the communities. Although the participants' answer lacks an indication that the impact might lead to expensive electricity, it is surmisable that the form of impacts mentioned by participants depend on availability of funds, which are likely to escalate the electricity prices. The answer of the Sample E participant was quoted verbatim as follows:

“Children are electrocuted. Transformers are overloaded and trips. Now and again, Eskom has to come and replace or fix the damage caused by illegal connections”.

The answers of Sample E participants are aligned to literature in that Franks (2014:22) asserts that expensive electricity impacts poor customers who are forced to resort to unsafe means of survival such as paraffin and wood. According to Saini (2017:27), utilities at times are faced with decision to divert funds from other critical aspects of operation to cover for expenses resulted from electricity theft. In the light of participants' views supported in literature, the participants were not able to mention community unrests and high unemployment rate which are partly a repercussion of unstable supply of electricity associated with electricity theft activities as pointed out in literature (Jamil, 2013:268; Yurtseven, 2015:70). Not mentioning electricity theft as contributory to diminished employment opportunities and community unrests may be an indication that the participants lack appreciation of the detrimental effects electricity theft have on communities. Therefore, the participants limited knowledge may obscure a need for intervention in the unknown aspects necessary to efforts of curbing electricity theft.

3.3.5 The motives of electricity theft

Motive is a conscious encouragement driven by personal need to achieve a particular outcome that might result in desirable or undesirable effects (Boskovic, 2019:1). According to Veresha (2016:4749), motive arise from the personal need to achieve a publicly dangerous act that exposes someone to criminal responsibility. The definition of the term 'motive' by Veresha (2016:4749) is best described in a criminal context and has relevance to this study, because electricity theft is a crime (Mbanjwa, 2017:ii).

Jamil (2013:268) indicates that some of the offenders steal electricity because they cannot afford the rising costs of electricity. This implies that the perpetrators are enticed by an opportunity to commit electricity theft that feeds on their interest and will to steal. Furthermore, perpetrators who operates clandestine businesses like cultivating marijuana illegally are likely to conceal their electricity consumption so that they do not attract attention of law enforcement agencies that may lead to prosecution.

More than a decade ago, Depuru et al. (2011:1009), listed the following socio-economic motives for stealing electricity:

- Illegal consumer's belief that it is dishonest to steal something from their neighbour but not from the state or public owned utility company;
- High unemployment rate and harsh economic conditions of customers;
- Lower literacy rate of consumers contributes them being oblivious to the laws against electricity theft and other related matters;
- Weak rule of law or poor enforcement of electricity related laws; and
- Corrupt politicians and employees of utility companies responsible for billing irregularities.

Various authors such as Opperman (2014:10,18) supported the afore mentioned motives, which are still relevant. The latter author pointed out that corruption, weak rule of law and misconception and preferences to steal from government or well-established businesses is usually the driving force for people to steal. In this regard, Shinabarger (2017:156) lamented the low level of literacy as contributory to some people committing to crime because they lacked appreciation that their conduct is punishable by law. On the other hand, Khwela (2019:3) assert that unemployment is

among the motives of people to steal electricity because they cannot afford what they need for survival.

The motive of stealing electricity by customers who use pre-paid accounts and those who use conventional accounts of electricity is the same because they all want to pay less amount of money than the amount of electricity they consumed (Yakubu & Narendra, 2017:171). Only the methods used to steal electricity could differentiate the customers because those with pre-paid accounts pay before utilising energy and customers with conventional accounts pay later.

Stealing of electricity is not only experienced with the less disadvantaged, instead, the wealthy and educated also are illegally using electricity without paying for it. Wealthy people steal electricity to avoid paying huge bills that they mostly incur because of high electricity consumption (Khwela, 2019:8). The motive of electricity theft by educated persons is to secure ambient energy (energy that could have been lost as light, heat, sound and other forms of energy) using the process known as energy harvesting. Energy harvesting is the method used by engineering professionals to collect from the grid and other sources the small amounts of energy that can be stored and used off-grid when there is energy demand (Sagentia, 2015:np). The drawback of energy harvesting is that it is often applied in an unethical and illicit manner that fits the description of electricity theft (Bihl & Hajjar, 2017:6).

The delay of government to electrify other human settlements makes the inhabitants of the affected areas to be impatient and organise to connect themselves to nearby electricity networks. The motive of illegal electricity connections from such impatient inhabitants is to acquire electricity because it is convenient and safe to use as compared to other forms of energy (Mbanjwa, 2017:58; Parbhoo et al., 2011).

Yakubu and Narendra (2017:174) draw attention to the functioning and operations of utilities that could be contributory to detrimental effects such as electricity theft by employees and customers of utilities. Considering the possibility of lacking discipline and corrupt tendencies by some of utilities employees, utilities that are lacking in improving employee service conditions are likely to have employees that are needy and have low morale (Chetty, 2018:37; Yakubu & Narendra, 2017:174). Some utilities' employees' resort to unethical behaviour of helping customers to steal electricity from

utilities networks by lowering consumption readings. The employees' motive of complicit conduct of electricity theft is to get extra illicit payments and customers motive to steal electricity is to pay less amount of money than the energy they consumed (Gaur & Gupta, 2016:131).

Attaining vengeance for the loss suffered from unstable electricity supply and irregular billing of electricity accounts by utilities is among customer motives to steal electricity. Some of the losses associated with frequent outages and billing irregularities incurred by the customers are difficult to be proven when compensation claims against utilities are lodged. The customers then feel a desire to revenge for the losses caused by energy outages (Nkosi & Dikgang, 2018:2; Yakubu & Narendra, 2017:174).

Section 153 of the Constitution of the Republic of South Africa Act 108 of 1996 (South Africa, 1996) entrust municipalities with a duty to structure and manage its administration, budgets and planning processes in order to give priority to basic needs of the community and to promote the social and economic development of the community. Electricity is one of the basic needs that the community feel it is their right to claim, irrespective of them relying on illegitimate means to acquire and utilise it. Therefore, the motive of stealing electricity by community members is to utilise what they presume is rightfully theirs (Kambule, Yessoufou, Nwulu & Mbohwa, 2019:203).

The participants in Sample A2 (Eskom personnel from customer services (CS) and Operations and maintenance (O&M)), Sample A3 (Eskom personnel from energy trading and energy protection) and Sample B (Local municipality personnel responsible for electricity supply) were asked the question:

- “In your opinion, what motivates the stealing of electricity?”

The question was open-ended and required the participants to provide their own answers. All the participants from Sample A2, Sample A3, and Sample B answered the question. Some of the participants provided more than one answer, which may not necessarily tally with the actual number of participants who responded to the question.

The participants' answers are summarised into ten (10) motives behind the stealing of electricity theft and ranked according to the most mentioned as follows:

- Poorness or unaffordability (15 participants);
- Greed (6 participants);
- Criminal motive (5 participants);
- Costs reduction (4 participants);
- Moral issues (4 participants);
- Urgency or necessity (3 participants);
- Political betrayal (2 participants);
- Lack of will power to pay for electricity (1 participant);
- Conformity (1 participant); and
- Irresponsibleness (1 participant).

The following question was posed to the Sample E participants:

- “Do you have any knowledge of electricity theft within your community?”

The participants were provided an answer option of ‘yes’ and ‘no’. All (6) participants answered ‘yes’ to the question. The participants were asked a follow up (second) question:

- “If your answer is ‘yes’, what are the causes of electricity theft in your community area?”

All (6) participants answered the second question, and some provided more than one answer and the number of answers may not tally with the number of participants who answered. The participants’ responses included “poverty” (2 participants); “crime” (3 participants); “greed” (2 participants); “dishonest” (3 participants); “unaffordability” (4 participants); “expensive electricity” (2 participants); and “lack of monitoring” (1 participant).

The participants’ answers point to myriad of issues contributing to electricity theft. Notably, one Sample E participant mentioned a balanced aspect indicating that electricity theft is attributed to multiple factors. The participant’s answer is quoted verbatim as follows:

“Different reasons such as unemployment, however, there are big businesses that steal electricity”.

The summary of participants answers is covered in literature by various authors, such as Afiyah (2023:1098), Kets de Vries (2016:3) and Veresha (2016:4749), all of whom indicate that electricity theft is an outcome of irresponsible behaviour and greed enticing people to commit immoral, dangerous or/and criminal acts. In addition, greed as a driving force for people to steal electricity is observable in that wealthy people are also found among the culprits of electricity theft (Afiyah, 2023:1098; Kets de Vries, 2016:3). Mhaule (2017:27) illuminates further that some of the people involved in stealing electricity are influenced by politicians who tend to use electricity as a campaign strategy to win elections. The latter author further indicated that electricity trends in South Africa increase towards the election period.

Similarly, some perpetrators are conforming to stealing electricity because of the influence they get from their surrounding environments, and that includes poor monitoring of electricity operations by utilities (Afiyah, 2023:1106-1107). Yakubu and Narendra (2017:171) pointed out that other electricity perpetrators are motivated by the need to reduce the costs of buying electricity, whereas some just lack willingness to pay for electricity (Mhaule, 2017:16). Despite various motives to steal electricity, there are persons who commit electricity theft out of necessity such as in newly developed areas which are delayed getting electrified by municipalities. In addition, some perpetrators of electricity theft could not afford to pay electricity because they are impoverished or unemployed (Mbanjwa, 2017:58; Jamil, 2013:26).

Notably, there are other motives found in literature but not mentioned by participants. Some of the motives are deliberated in this section *supra*, and they include corruption that motivates utilities employees and consumers to abuse knowledge and vulnerability of employer internal systems for personal gain (Afiyah, 2023:1101; Bihl and Hajjar; 2017:6). Among the motives not included in the participants' answers is misled belief that it is acceptable to steal from government, advantage to avoid legal accountability because of poor enforcement of law and misplaced justification to steal from government as compared to stealing from neighbours (Afiyah, 2023:1102-1103; Opperman, 2014:10, 18).

In this regard, the participants' answers do not reflect unrealistic entitlement to steal confused with a right to have electricity as found in the Constitution Act of South Africa (Afiyah, 2023:1095; Kambule et al., 2019:203). While the majority of the participants

were able to mention indigent circumstances as a motive to steal electricity, none of all participants mentioned unemployment as a motive. Khwela (2019:3) posits that perpetrators provide unemployment as a reason to steal electricity, hence without source of income, it is unaffordable to buy electricity. Lower literacy level does not appear in the answers of participants as a drive to steal electricity.

Based on the perspectives of authors such as Shinabarger (2017:156), lower literacy level makes some people not have capacity to appreciate between lawful and unlawful way of acquiring electricity. Illiteracy as a motive is observable in instances such as buying electricity from illegal vendors while consumers wrongly believe that the cheapest electricity obtained from illegal vendors is offered based on the best and legal interest perpetrators have about consumers. However, the participants were not able to mention that consumers may steal electricity influenced by vengeance. There are many reasons that may lead to consumers retaliating to utilities by stealing electricity. Among the reasons is load reduction, load shedding and outages which negatively affect businesses and households.

Some of the consumers lose perishables stored in refrigerators that their effectiveness is affected by intermittent lack of electricity supply (Nkosi & Dikgang, 2018:2). The participants' answers indicate that the participants have reasonable knowledge of the motives of electricity theft. However, they need to continuously update themselves where they are lacking knowledge on motives necessary for effective contribution to curbing electricity theft.

3.3.6 Measuring electricity theft

Electricity is tangible and complex to measure because it requires that its magnitude or extent is estimated by values, and that is attainable by using quantities and units that are applicable to measuring tangible things (Karius, 2016:33; Matthews, 2017). Similarly, electricity theft phenomenon can only be estimated taking into consideration a number of factors including but not limited to the area in which it occurs, the reporting behaviour and utility measures to estimate the loss resulting from electricity theft (Khwela, 2019:78; Yakubu & Narendra, 2017:170).

Electricity theft can also be estimated using general broad terms or estimations that represent the loss in percentage rather than exact quantities (Júnior et al., 2016:413;

Mbanjwa, 2017:2; Yakubu and Narendra, 2017:170). Katyora (2019:np) demonstrates that the difficulty of quantifying electricity theft lies in its complexity that often leads to utilities inability to predict the demand of electricity. Literature does not point out to any accurate figures of electricity theft incidents in South Africa, including in Limpopo as the focus area of the study. Various measuring attributes such as number values, percentages and monetary values would be used in this study to reveal the possible magnitude of electricity theft phenomenon in South Africa and Limpopo.

Louw (2019:np) points out that electricity theft is a major contributor of the total 10% losses attributed to non-technical losses experienced by utilities per annum in South Africa. The latter author quantified the financial impact of electricity theft as a major component of non-technical losses on utilities in the country as R19,1 billion, but also ranked electricity theft incidents as the third most incidents that arise from the conduct of stealing as compared to theft of motor vehicles and credit cards. Electricity theft incidents are estimated to cost South Africa R20-billion per annum (Baker & Phillips, 2019:182).

Eskom Customer Care and interaction (CC&I) report indicates that Limpopo Province annually records approximately 590 electricity theft related incidents per month with financial losses estimated at R43, 1 million per annum (Eskom, 2020e:2-3). The financial annual losses are estimated by multiplying the annual number of electricity theft incidents by R6052.60 (lowest amount of fine payable for illegal consumption of electricity) as guided by Eskom schedule of standard fees (Eskom, 2021d:9).

The participants in sample A2 (Eskom personnel from customer services (CS) and Operations and maintenance (O&M)) and Sample A3 (Eskom personnel from energy trading and energy protection) were asked the following question:

- “How many electricity theft incidents are experienced per month on Eskom networks in your working precinct?”

Meanwhile, the Sample B participants (Local municipality personnel responsible for electricity supply) were asked the following question:

- “How many electricity theft incidents are experienced per month on municipal networks in your working precinct?”

Since literature does not provide electricity theft incidents in terms of accurate measurable values but on basis of financial loss estimations, the participants were given five (5) options to select one answer they believed was representing the number of electricity theft incidents reported per month in their employment networks.

The options include A (100 or less), B (101 to 500), C (501 to 1000), D (1000 to 1500) and E (1500 or more) electricity theft incidents per month. All participants (n=18, 100%) selected an answer option which tallied with the number of participants who answered the question. The answers concerning participants’ experience of electricity incidents in their work place are represented in Figure 3.4 below.

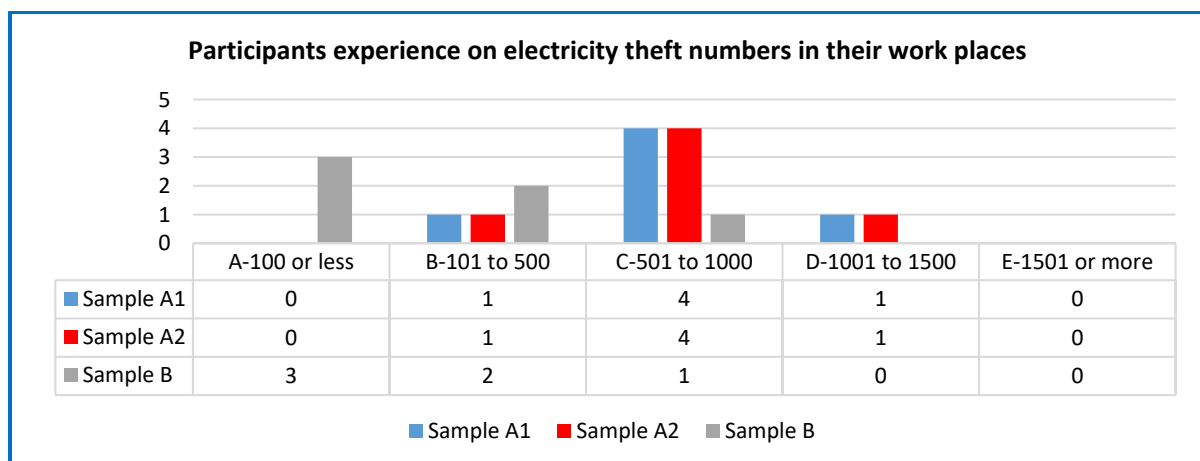


Figure 3.4: Participants’ experiences of electricity theft incidents in their work place
(Source: Feedback from the participants)

Figure 3.4 indicates that the majority of the participants, (n=9, 50%) only selected the answer Option C (501 to 1000), four participants, (n=4, 22%) opted for B (101 to 500), three participants (n=3, 17%) selected A (100 or less) and two participants (n=2, 11%) selected D (1001 to 15000) number of electricity theft incidents reported on monthly basis in their work areas. None of the participants selected Option E (1501 to more) on number of incidents. As alluded in this Sub-Section 3.3.6 *supra*, accurate numbers of incidents could not be found in literature. However, it is indicated in Sections 1.2 and 1.7 (chapter 1 of this study) that out of estimated 590 electricity theft incidents reported monthly on Customer Care and Interaction (CC&I) in the entire Limpopo

Province, Mopani accounted for a significant (209) number of monthly incidents translated to thirty-five (35%) from all (5) municipal districts in Limpopo Province.

The 209 incidents are informed by the total (12521) number of incidents reported from Mopani only during a five (5) year period. It is also worthy to note that the number of incidents were limited to those reported on CC&I. Hence, the incidents found during electricity theft audits and other electricity theft detection initiatives were not considered. Drawing from the selected answers of the participant; it is deductible that only four (4) participants selected an answer aligned with 209 monthly number of electricity theft incidents reported in Mopani municipal district, that is B (101 to 500).

There is a probability that the number of electricity theft incidents at Mopani municipal district can fluctuate between answer B (101 to 500) and C (501 to 1000) given that estimation of electricity theft incidents was limited to CC&I and excluded incidents found during audits and other initiatives in Eskom. Therefore, the indications made by various authors that it is difficult to get accurate numbers of electricity theft incidents is manifested (Karius, 2016:33; Katyora, 2019:np, Matthews, 2017:np).

3.4 SUMMARY

Electricity is a natural phenomenon difficult to explain albeit having meaningful use in the lives of people and is a product of different fuel types and energies. It is characterised by presence or movement of charges. The two distinctive sources of electricity are renewable sources that are replenishable by nature and non-renewable sources made of fossil fuels. The two (2) types of electricity are static electricity and dynamic electricity, and when compared, the most used form of electricity is dynamic electricity. The conventional supply and production of electricity involves a value chain that begins at the power stations (power plants) from where electricity is produced (generated), carried along the transmission infrastructure (sub-stations and lines) to supply various customers through distribution sub-stations.

The modern value chain of electricity is in a network form. Fundamental to the continuous production of electricity is commercialisation process, that is pivotal to maintaining and sustaining the electricity production and maintenance of electricity infrastructure. The commercialisation of electricity is crucial in that the profits gained can be useful to develop and improve the living conditions of poor communities.

Utilities rely on electricity revenue to develop new products and services needed to provide solutions to life problems, effective businesses and growing the economy. The impact associated with lack of electricity supply is that communities in the areas not electrified become impatient and illegally connect themselves to the nearest points of electricity supply.

The conduct of illegal connections results in damaged electrical infrastructure and over loaded networks that will require utilities to reduce load by switching off the electricity supply regularly. Consequently, the reducing of loads from the network contributes to slow businesses, less production, less revenue, slow economy growth and unemployment. Poor collection of revenue is likely to hamper the implementation of electrification projects and services in the areas not electrified, thus resulting in a vicious cycle of lack of electricity supply problems. There are two (2) statutes that are most pertinent to the regulation of generation, transmission and distribution of electricity. The statutes are Electricity Regulation Act, Act 4 of 2006 that determines the tariffs, licencing, trading, importing and exporting electricity.

The Act also guides utilities on matters of disconnecting and reconnecting customers under certain circumstances. Another statute is National Energy Act, Act 32 of 2008 that is concerned with a mix of sustainable, renewable, efficient and environment friendly electricity. The Act also addresses matters of energy in relation to economic growth, poverty alleviation and research. Electricity theft is a form of non-technical loss wherein the electricity produced for commercial purposes is used unlawfully and intentionally without owner's consent, and result in the owner being deprived of the characteristic attached to the supply process. The three methods of stealing electricity are tampering any electrical infrastructure in any manner, billing irregularities and/or evading payment of electricity and vendor fraud or illegal selling and buying of electricity.

Electricity theft can be detected by using data-oriented methods that involves the studying of customers' consumption data, network-oriented methods that involves the measuring and evaluating of the network to detect consumption patterns and hybrid methods that are a combination of data oriented and network-oriented methods. The electricity theft results in utilities being unable to predict a demand of electricity in the country and creates an unexpected burden on the network. The utilities may

implement regular load reductions, which may not be favourable to customers. Electricity theft reduces the utilities' ability to generate revenue, thus utilities may need to recover the losses caused by electricity theft by increasing the tariffs that are likely to weigh heavily on the consumers or customers.

The revenue deficit can render utilities ineffective in investing in improved electricity technology and can contribute to delay implementing electrification projects in settlement not yet electrified. The motives of stealing electricity include unaffordability of electricity caused by increasing tariffs, criminal intentions, misconception that stealing from the state/government is better than stealing from the neighbour, volatile economic conditions, high unemployment rate and weak rule of law. Corrupt intentions by politicians who encourage people to use electricity to gain votes, unethicalness of utility's employees, vengeance for loss incurred during load reductions or load shedding, belief that stealing electricity is a right to have basic electricity and impatience from delays in electrifying new settlements are some of the motives for people to steal electricity.

The quantification of electricity theft incidents should be in consideration of various factors such as reporting trends and utility measures to quantify electricity theft. Literature does not provide accurate quantification of electricity theft but gives an idea that South Africa losses approximately R20 billion per annum from electricity theft. Informed by the number of incidents reported to Eskom in Limpopo Province and the amount of the minimum fine per incident, the electricity theft losses are estimated at not less than 66,7 million per annum.

CHAPTER 4: THE INTERPRETATION OF ELECTRICITY THEFT IN RELATION TO LAWS GOVERNING CRIME IN SOUTH AFRICA

4.1 INTRODUCTION

Interpreting electricity theft is salient to attaining meaningful explanations and determinations helpful to solve the crime (Bhorat, Lilenstein, Monnakgotla, Thornton & Van der Zee, 2017:29). The interpretation of electricity theft should be considerate of the fact that the application of laws governing general crime are not static but continuously improved to meet the changing legal needs of society (University of Cape Town, 2020:7). Khwela (2019:11) points out that an improved understanding of the application of law to general crime is fundamental to direct the current and future attempts of dealing with electricity theft.

The research objective namely 'to determine and evaluate the interpretation of electricity theft in relation to laws governing crime in South Africa (Section 1.4 of this study) is fundamental to this chapter. It is crucial to consider that the interpretation of electricity theft using criminal laws is not different from that of other types of crimes. Hence, the interpretation should consider various principles in criminal law by exploring different legal interpretations and approaches in similar situations (Mujuzi, 2020:85). This chapter explicates the criminal elements and demonstrates the fulfilment of the definitional elements of electricity theft.

The commonly reported electricity theft incidents for purposes of criminal investigation and prosecution are included in this discussion to bring an improved idea of electricity theft reporting behaviour. Furthermore, the modes of operation preferred to steal electricity forms part of the discussion to understand the way in which electricity theft occurs. Also, useful and incorporated in this discussion are the statutes relevant to electricity theft, guidelines for investigating and prosecuting electricity theft, and evidence for investigating and prosecuting electricity. Lastly, this chapter elucidates on the stakeholders in the investigation and prosecution of electricity theft because the researcher believes that their experiences are essential to interpretation of electricity theft in relation to laws governing crime.

4.2 CRIMINAL ELEMENTS OF ELECTRICITY THEFT

The principles of criminal law in South Africa demonstrate that the elements of a crime are constructive means to establish criminal liability of a person (Grant, 2018:19). The elements of a crime are complementary components of the offence that are examinable beyond reasonable doubt to determine criminal liability (Office of the District Attorney, 2012:149). Crime elements are general in nature and provide the basic indication that a particular act is or not conforming to a definition of a crime (Burchell, 2013:3).

Discerning the general elements of a crime is necessary to understand the distinct elements of electricity theft, because the general crime elements could be adapted to various individual offences and categorised into sub-details indicating the specific components of a particular crime (Rautenbach & Matthee, 2011:114). This section provides an outline of the general elements of a crime; namely: conduct, legality, unlawfulness and culpability to obtain an optimal insight of the crime elements unique and fulfilling the definition of electricity theft.

4.2.1 Conduct

Burchell (2013:73) demonstrates that a conduct is an element of crime that relates to human thoughts and deeds. For the element 'conduct' to be compatible with other elements that constitute a crime, it must be indicative of the act deriving from human and must be voluntary (Ahmed, 2019:6). Voluntary means that a person is able to exercise a choice irrespective of whether that person was threatened to make the choice (Grant, 2018:36). For example, there would be no criminal related conduct if a natural phenomenon such as lightning struck the electrical infrastructure and alter the electricity consumption readings on the meter box. However, there would be a criminal related conduct if the tampered electricity meter readings result from deliberate human thoughts converted into actions.

Winther (2012:111) divulges that people voluntary steal electricity because in most instances they have prior knowledge that their actions of consuming energy without paying for it are illegal. The perpetrators' conduct of stealing electricity is deliberate because of implicit acceptance observed from their perpetual excuses of electricity theft. The excuses mostly provided for stealing electricity are high electricity tariffs and

increased cost of living (Yakubu & Narendra, 2017:174). The devious application of various techniques of electricity theft are an explicit indication that the human mental abilities and skills are pivotal to the act of stealing electricity (Karabiber, 2017:123). Therefore, it is evident that a conduct forms an element of electricity theft.

The South African criminal law provides a distinction between two forms of conduct, namely commission and omission. Commission is a positive conduct involving the execution of a legally prohibited act, whereas omission is a negative conduct of failing to perform a legal duty (Ahmed, 2019:5). The tampering of an electrical equipment is an example of a crime in the form of commission (positive conduct) because it involves the execution of an act prohibited by law. Employers and employees failing to implement Occupational Health and Safety Act (Act 85 of 1993) requirements designed to protect people involved in work activities are liable for a crime in the form of omission (negative conduct) (South Africa, 1993).

The researcher could not find evidence in the literature indicating that electricity theft is a conduct related to omission. Electricity theft involves the illegal conduct of *operating* electrical infrastructures or devices (Hu, Yang, Wang, Huang & Cheng, 2020). The concept 'operate' is generally associated with the conduct of engaging actively in a function or a task (Skripak, 2016:215). The way tampering, billing irregularities and vendor fraud occur; as discussed in Section 3.3.2 (chapter 3 of this study); demonstrate that electricity theft is task oriented. The rationale is that the persons cannot perform the act of stealing electricity by ignorance but engage in efforts to secure energy illegally. Hence, various authors such as Jack and Smith (2016:7), Yurtseven (2015:70), Jamil (2013:269) and Redaelli (2013:6) describe electricity as a conduct of commission.

Ross and Rasool (2019:7&10) point out that a crime displays any or both of circumstantial and/or consequential conduct. A condition or process leading to an act demonstrates a circumstantial conduct, whereas an outcome indicates a consequential conduct. For example, the person who steals electricity is engaged in a process or condition of using methods such as cutting and joining the cables to an electrical infrastructure. Such a condition or circumstances of stealing before or excluding theft as a goal, relate to a circumstantial conduct. It becomes immaterial to realise the desired outcome of theft when establishing a circumstantial conduct.

Conversely, the consequential conduct is evidential as the ultimate event of the act; namely, theft or deprivation of ownership.

Informed by the decided case of *Dlamini & Another v State* (A225/2016) [2017] ZAGPPHC 215, electricity theft can assume circumstantial or consequential conduct of theft. The case contributed to a greater understanding of the way in which theft is attainable in terms of the circumstances and consequences. The judge convicted and sentenced two of the three accused in *Dlamini & Another v State* (A225/2016) [2017] ZAGPPHC 215 on theft and attempted theft of a motor vehicle that occurred in 2014. The two accused appealed the conviction and sentencing on reason that the court did not prove the offence beyond reasonable doubt, and that the facts established at court related to attempted theft.

The details of the crime in *Dlamini & Another v State* (A225/2016) [2017] ZAGPPHC 215 is that the accused attempted to steal a vehicle, however, the witness shouted at and interrupted them. The accused left the vehicle positioned differently than the way the owner left it. Based on the circumstances and the consequential events relating to the conduct of the accused, the appeal court judge was satisfied that the accused were convicted correctly on theft and attempted theft of motor vehicle. The judge indicated that the accused attempts to move the vehicle to a new position is sufficient to prove that they intended to deprive the owner control of the vehicle.

Similarly, the persons who attempt to steal electricity may not succeed in completing the offence of theft, but their circumstantial events may prove that they intended to steal. For example, persons tampering the electrical equipment by connecting wires with the intention to disturb the proper reading of electricity consumed would be liable of electricity theft even if the attempts could not succeed in interfering with the reading system. An inference drawn from this discussion is that a 'conduct' constitutes an element of 'electricity theft'. The conduct is 'appropriating' the characteristics attached to the supply of electricity, and ultimately 'depriving' utilities ownership of electricity generated for commercial purposes.

It is sufficient to prove a conduct by establishing that the appropriation of the characteristics attached to the supply of electricity was performed voluntary or discretionary, by human being and without proving whether the person responsible for

the conduct was forced or manipulated by someone. Furthermore, the conduct of electricity theft could be in a form of positive act such as illegally cutting and joining of wires or a deliberate processing of an incorrect billing information by a utility employee in order to give a customer an advantage of consuming electricity without paying for it or fraudulent vending transactions. Electricity theft could reflect the circumstantial or/and the consequential conduct.

The unlawful conduct of appropriating the characteristics attached to the supply of electricity is circumstantial, whereas the utility deprivation of electricity ownership is consequential. Understanding the conduct in isolation from other elements of a crime may create an incomplete representation of electricity theft. It will be more informative to understand an element 'conduct' in association with other crime elements that could be applicable to electricity theft, hence the elucidation of the element 'legality' will be addressed in the following Section 4.2.2.

4.2.2 Legality

Legality is a necessary principle applied in legal matters to enhance adherence to the law by the organs of state and their officials during performance of legal duties. The purpose of legality is to balance the society interests with the law (Stoian & Drăghici, 2015:521). According to Manyika (2016:83), non-adherence to legality subjects the executors and adjudicators of law to scrutiny. In order to determine the way in which legality relates to establishing electricity theft as an offence, it is necessary to understand first the general application of legality to the rule of law.

Legality is important and fundamental to the rule of law including criminal matters because it is entrenched in the Constitution of the Republic of South Africa Act (Act 108 of 1996). Section 35(l) of the Constitution of the Republic of South Africa Act (Act 108 of 1996) protect the accused from being convicted for an act or omission that was not an offence under either national or international law at the time it was committed or omitted (South Africa, 1996). Section 35(n) of the Constitution Act (Act 108 of 1996) entitles an accused to a right of benefitting to the least severe of the prescribed punishments if the prescribed punishment for the offence has been changed between the time that the offence was committed and the time of sentencing (Mzolo, 2016:3; South Africa, 1996).

Legality promotes that a valid law forms a basis to examine a conduct that is clear and unambiguous (Chen, 2015:330). Therefore, electricity theft as a conduct should conform to the principle of legality. Lebeya (2012:8) draws attention to the following requirements to ensure the validity of the law and adherence of legality principle when charging and convicting an accused for an unlawful conduct: The conduct under examination should be:

- Recognized by law as a crime;
- Stated in clear terms;
- Before it is committed or omitted;
- Defined as a crime without extending the meaning of words and concepts to accommodate the conduct; and
- After the conviction, the imposition of the punishment should comply with the four principles mentioned above.

The view aligned with the principle of legality is that the courts cannot develop new offences retrospectively and arbitrarily. Notably, there are inconsistent court judgements about whether electricity is capable of being stolen. The different legal views emanate from lack of recognised law declaring in clear terms the crime of electricity theft and its sanctions. In this regard, the courts have considered the interpretation of legal processes as informed by continuous developments of legal matters including the application of theft even in non-corporeal and intangible things such as ideas, cyber accounts and energy (Njontini, 2016:12). Although the judge presided in *S v Ndebele and Another* (SS16/2010) [2011] ZAGPJHC 41 confirmed that electricity theft falls within the confines of an offence recognised by the common law, there is still a possibility that another court can come with a view different from a belief that electricity theft is capable of being stolen.

Legality principle serves to keep in check the deviations that may arise from the implementation of the law; nonetheless, its application is not rigid in nature (Chen, 2015:331). The essence of legality principle is that the exercise of legal power should be proportional to the purpose intended by the law and should be within the confines of a clearly designed law. The assertion by Chetty (2018:3) that successful investigations and prosecutions of electricity theft should not cease amid the

continuous improvement of legislations associated with electricity theft, is an illustration that electricity theft is a subject of legality and is dealt with in terms of the law. Furthermore, legality serves to mitigate the shortfalls arising from electricity theft legislation.

The South African law combines the application of both substantive and formal requirements to ensure legality. Substantive requirements of law relate to the rationality of facts or merits of the matter, whereas the formal requirements are concerned with procedural fairness in the application of legal principles (Fredman, 2019:730; Răducu, 2019:198). The reasonableness and investigation standards requirements in deciding evidential information relating to electricity theft are necessary to establish legal facts using legal procedures, and ideally manifest that the principle of legality applies to electricity theft (Redaelli, 2013:21).

There is a contest of views on the interpretation and application of legality in South Africa as observed in the case of *Masetlha v President of the Republic of South Africa and Another* (CCT 01/07) [2007] ZACC 20. The synopsis of the case is that during December 2004, the then President of the country appointed Billy Lesedi Masetlha (Masetlha) as the Director General of National Intelligence Agency (NIA) for a three-year term without a contract regulating the employment relationship. Masetlha's appointment was in terms of the Intelligence Service Act 65 of 2002 and Public Service Act 103 of 1994.

Within the period of appointment, there was an investigation into alleged misconduct by Masetlha on request by the minister of Intelligence Services. The Minister of Intelligence sent an investigation report compiled by the Inspector General of Intelligence Services to the President. The investigation reports incriminated Masetlha for the failure to discharge his managerial duties. Masetlha was issued with a letter of suspension signed by the minister of intelligence and there was no indication that the decision to suspend was made by the President. Masetlha contested the legality of suspension at high court, however it emerged that there were recorded minutes indicating that the decision to suspend Masetlha was taken by the President.

In the process of Masetlha's contest to his suspension from duties, the President unilaterally changed the term of Masetlha's appointment to end 21 months before the

expiry of the appointment contract. The President unilaterally amended Masetlha's term of appointment on reason that their relationship was beyond repairable and offered to give him the benefits of the full-term appointment. Masetlha considered the decision taken by the President as a constructive dismissal. Eventually, the high court had to establish the legality of Masetlha's dismissal by the President. Masetlha was not successful with his high court case, and appealed to the Constitutional court.

The different views on the interpretation and application of legality concerning *Masetlha v President of the Republic of South Africa and Another* (CCT 01/07) [2007] ZACC 20 were evident at the Constitutional Court, when Judge Ngcobo dissented from the binding Majority judgement by Judge Moseneke. Judge Moseneke validated the High court decision that the President did not violate the rule of law by dismissing Masetlha. Judge Moseneke demonstrated that the President is empowered by Section 209(2) of the Constitution of the Republic of South Africa Act (Act 108 of 1996) (South Africa, 1996) to appoint the head of intelligence services to discharge responsibilities associated with the appointment.

The Judge indicated that Section 209(2) also informs the legislation regulating the intelligence services and indicated that the power to dismiss is concurrent to the power to appoint a person. Judge Moseneke appreciated that the execution of public power relies on the valid application of the Constitution of the Republic of South Africa Act (Act 108 of 1996) (South Africa, 1996); and procedural fairness is a requisite to restrict the power to dismiss and uphold a right to a hearing when there is a possibility of unfavourable outcome. However, the judge decided that procedural fairness might not restrict an executive power because its application is appropriate in a distinct legal relationship that exists within the executive context. The Judge indicated that the restriction of the executive power should be according to the principles of legality and rationality.

Judge Moseneke believed that the President complied with the principle of legality because his actions were consistent to the law, which is the Constitution Act (Act 108 of 1996) (South Africa, 1996) and interpreted satisfactorily the executive power conferred to him. The judge also believed that the decision of the President was rational because it related to the purpose for which the power was conferred. Judge Moseneke was satisfied that the decision of the President adhered to the rule of law.

Judge Ngcobo concurred with the majority judgement by Judge Moseneke on the decision that the power to dismiss is coexisting with the power to appoint a person; however, he partially held a view that would have led to significant difference in judgement for the same legal dispute between Masetlha and President of South Africa.

Judge Ngcobo based his argument on the reason that legality is fundamental to the rule of law such as the Constitution of the Republic of South Africa Act (Act 108 of 1996) (South Africa, 1996) and its components are rationality and procedural fairness. According to Ngcobo, the majority judgement represented by Judge Moseneke recognised that legality and rationality principles are a requirement to restrict executive power; however, dismissed procedural fairness as part of the restrictive requirement. An inference from the majority judgement by Judge Moseneke and dissenting view by Judge Ngcobo is that the majority judgement compromised the rule of law and misconstrued legality, rationality and procedural fairness as separate requirements.

It is noticeable that the accepted majority judgement contributed more obfuscation and fallacy to the understanding of legality principle. The minority judgement raised feasible legal perspectives on legality principle and in a fair consideration of substantive and formal law. The understanding derived from this case is that the presiding judge interpretation of the matters placed before the court determines the application of legality principle on legal matters including electricity theft. The judgement relating to electricity theft in *S v Ndebele and Another* (SS16/2010) [2011] ZAGPJHC 41 demonstrated notable deliberations on substantive and procedural application of law as complements of legality.

Judge Lamont who presided in the case of *S v Ndebele and Another* (SS16/2010) [2011] ZAGPJHC 41, used amongst others, the decided case of *S v Harper and Another*, 1981(2) SA 638 at 664 and Criminal Procedure Act (Act 51 of 1977) (South Africa, 1977) to procedurally prove that electricity is capable of being stolen. The substantive details brought out by Judge Lamont is that the definition of theft has evolved from regarding only corporeal to including incorporeal as being capable of theft. The judge cited among others the case of *S v Harper and Another*, 1981(2) SA 638 at 664 which involved the two accused who were the sole shareholders and directors of the Holding company namely Harper, Pevsner and Redman (Pty) Ltd (HPR). The HPR was in control of various subsidiary companies.

The two (2) accused faced 74 different criminal charges because some of their subsidiaries collapsed and had to undergo a liquidation process that resulted from financial deficiency. Among the total criminal charges, 19 charges were associated with theft of monies from some of the subsidiaries. To give a justified analysis of theft particularly in *S v Harper and Another*, 1981(2) SA 638 at 664 wherein the stealing of monies did not involve the appropriation conduct but the transfer of funds in a form of credit, the judge adjudicating the case found it necessary to clarify the way 'incorporeal' can be stolen.

The judge who presided in *S v Harper and Another*, 1981(2) SA 638 at 664 departed from the legal understanding and previous judgements that perpetuated the belief that only corporeal (physical, touchable and movable) objects are capable of being stolen'. The deliberations of this case led to the decision that an offence of theft is applicable to incorporeal and pointed out the requirements of theft as follows:

- The accused knowledge of possessing without authorization that which belongs to the other and believing that the owner would have not consented to the possession; and
- The accused should have had an intention to deprive the owner a right to ownership of a possession.

The judge in the case of *S v Harper and Another*, 1981(2) SA 638 at 664 was satisfied that the conduct of the two accused complied with the requirements of theft although they did not physically engage in touching or removing the money from the account of the owner. Both accused received a guilty verdict on charges of money theft.

By citing *S v Harper and Another*, 1981(2) SA 638 at 664 in *S v Ndebele and Another* (SS16/2010) [2011] ZAGPJHC 41, Judge Lamont demonstrated the legality principle as applicable in electricity theft matters and also pointed out that some of the previous judgements such as in *S v Mintoor* 1996(1) SACR 514 (C) fell short of considering all the aspects constituting legality. The court's decision in *S v Mintoor* 1996(1) SACR 514 (C) dismissed the notion that electricity can be stolen because it lacked the requirement of *contrectatio* (having a physical ability to be touched and moved). Judge Lamont indicated that the judges in *S v Mintoor* 1996(1) SACR 514 (C) paid no

attention to the preceding judgements such as in *S v Harper and Another*, 1981(2) SA 638 at 664.

Furthermore, Judge Lamont drew attention to the fact that the judgements disregarding incorporeal as capable of being stolen failed to consider the complications brought by the modern transactions as in financial and energy sectors, where ownership is not only attached to corporeal but also to incorporeal such as credits, characteristics of things and special interests or property. Judge Lamont confirmed procedurally and substantively that electricity theft is an offence committed by depriving the owner the characteristics attached to it. Hence, the judge found two of the three accused guilty on electricity theft and acquitted one accused because there was no substantive suspicion linking her to the electricity theft case.

It is discernible from the discussion that despite numerous factors involved in the principle of legality, the appropriate interpretation of electricity theft depends on the availability of a clearly defined law. In the absence of a legislation prohibiting in clear terms the conduct of electricity theft, the legal arguments on legality of electricity theft may not end.

4.2.3 Unlawfulness

Unlawfulness is the condition of contravening the stipulations of statutory law, common law or customary law (Lebeya, 2012:166). According to Burchell (2013:110), ascertaining the unlawfulness of the conduct is necessary to establish the compliance of a conduct to a definition of a crime. This discussion begins from a broader understanding of what unlawfulness is to the manner it relates to electricity theft. Unlawfulness is one of the basic requirements in criminal law (Wilson, 2013:13). Neethling and Potgieter (2018:147-148) associate unlawfulness with wrongfulness because both provide a standard to impose legal liability on a human conduct. The difference is that unlawfulness is applicable mostly in criminal law, whereas the use of wrongfulness is preferred in the law of delict.

Wessels (2018:113) implies that electricity theft can be legally challenged using either or both criminal law or law of delict to hold accountable the perpetrator and to compensate the victim. Because of criminally oriented nature of this study and declaration by Moshoeu (2017:8) that electricity theft is unlawful, the focus of this study

will be on unlawfulness. Unlawfulness relates to the violation of a right or the failure to observe a law (Loubser, 2015:126). Musungwini (2016:55) signify that electricity theft is unlawful in that it encroaches the rights of utilities by excluding them from having control of the electricity as a product generated for financial gain. The utilities spend exorbitant monies to compensate the undesirable loss and harm created by electricity theft (Shokoya, 2019b:468).

The law permits that a person can be absolved of the unlawful conduct by relying on the grounds of justification. Grounds of justification are unique conditions that occur regularly and ultimately developed as value judgements or normative by courts. Value judgements are helpful to demonstrate and clarify that the law is adaptable to individual circumstances (Lebeya, 2012:166). The grounds of justification apply when are cited within the confines of the rule of law and the principle of legality (Grosvenor Services Group, 2018:5). An indication in Section 4.2.2 *supra* is that the law and legality principle apply in matters related to electricity theft. When establishing unlawfulness in electricity theft matters, the courts take into consideration factors such as unavoidable circumstances guided by the rationality, belief and trustworthy of the evidence presented (Loubser, 2015:122).

Ashworth and Horder (2013:116-117) warn that the use of justification grounds should not be perceived as promoting unlawful conduct but relates to the society belief that there are exceptional circumstances absolving a person from a punishment appropriate for performance of an unlawful conduct. The courts consider the Constitution and the society beliefs about circumstances when developing value judgements or grounds of justifications (Grant, 2018:23-24). It is important to understand the excuses given as justification by energy theft perpetrators to discern when they are oblivious to the knowledge that their conduct is unlawful (Grosvenor Services Group, 2018:5)

In South Africa, the persons accused of crime cannot profess lack of knowledge that their conduct complied with unlawfulness at the time an offence was committed. This was evident at Constitutional court in the case of *Masiya v Director of Public Prosecutions Pretoria (The State) and Another* (CCT54/06) [2007] ZACC 9, wherein the adult male accused namely Masiya appealed a conviction for raping a nine-year-old girl in 2004. The facts of the case are that the accused anally penetrated the victim

with his genital organs. At the time the offence of anal penetration was committed, the rape definition was limited to a penetration of the female vagina by the male genital organs. The Constitutional court upheld the High court decision to amend the rape offence to include an anal penetration and inclusive gender and changed the rape conviction to indecent assault.

Although the Constitutional and High court judgements partly differed, the Constitutional court proved that the accused knew that his conduct of sexually assaulting a young girl was unlawful regardless of being committed before a limited definition of rape was amended. The Constitutional court clarified that the unlawfulness of the conduct does not depend on perpetrators having a prior knowledge that their conduct is unlawful. Similarly, electricity theft has an element unlawfulness as indicated in its conceptualised and operationalised definition in Section 1.8.1 (chapter 1 of this study).

Comparing this discussion and that in Sub-section 3.3.2.3 (chapter 3 of this study), the element of unlawfulness is embedded in electricity theft because it has been established that electricity theft is a subject of criminal processes, is pardonable on the grounds of justification and does not require a person to have a prior knowledge about its commission being unlawful. Therefore, electricity theft complies with the element unlawfulness, because it involves the violation of law and breaching of the right of utilities to control the characteristic attached to the supply of electricity. Legal requirements beyond unlawfulness may be required to hold a person accountable for the crime committed, hence the following Section 4.2.4 deliberates on culpability as an element of crime.

4.2.4 Culpability

Culpability is the competency demonstrating the responsibility and accountability accompanying the conduct of a person. The views by Buell (2015:602), Lamparello (2019:4) and Petrovych (2018:54) serves as an accession that culpability has different terms such as criminal culpability, fault or mens rea when applied in Criminal law. The use of the concept's culpability, criminal culpability, mens rea and fault in this study will be in the context of Criminal law and will have the same meaning relating to an accountable mind of an accused.

According to Dsouza (2015:444), criminal culpability denotes that persons are competent and fit to regulate their conducts but make a choice leading to prohibited acts. Brink (2019:347) indicates that a criminal culpability relates to the factors used to determine if the person is blameful for committing an unlawful conduct. Like all crimes, imposing a sanction for electricity theft without determining the blameworthiness of a person proves to be unfair. It is logical to determine the culpability of the persons who committed electricity theft after establishing their unlawfulness conduct, because that promotes a just a manner of blaming for unlawfulness (Lamparello, 2019:12; Dsouza, 2015:440).

The criminal culpability is subjective and personal in nature because it is concerned with the attitude of the persons (Grant, 2018:240). According to Awa (2019:viii), criminal capacity and reasonableness are prerequisites to ascertain criminal culpability in accused persons. The criminal capacity is an aspect in criminal law used to demonstrate that people have mental capabilities that make them responsible and accountable for the unlawful conduct. Reasonableness is associated with the manner a normal person with fair judgement abilities acts appropriately and fairly to circumstances (Burchell, 2013:247; Reddy, 2019:7). The perpetrators reasonably apply their mental abilities to thwart the prevention measures against theft of electricity that have been institutionalised by utilities.

The efforts of the perpetrators to steal electricity are sufficient to prove that the perpetrators use their mental capacities to steal electricity without being detected (Bihl & Hajjar, 2017:3). The explanation by Grant (2018:170) that the reasonableness and criminal capacity requirements of culpability generally relate to all crimes has tacit reference to electricity theft. The author denotes that to prove culpability in Criminal law; the courts investigate the accused awareness of the prohibited conduct, discretion to avoid the conduct and their ability to exercise mental choice. To hold accountable, the people for committing electricity theft, the courts must prove beyond reasonable doubt that the perpetrators had the capacity to think and appreciate their prohibited conduct (Alge, 2019:20).

Kwanje (2016:1) indicates that the South African criminal law adheres to the principle that culpability of people who committed an offence should be tested before a punishment is imposed for their unlawful conduct. There are two forms of criminal

culpability recognised in South Africa; namely, intention and negligence (Kwanje, 2016:i). According to Alge (2019:20), the intention, recklessness or negligence and the nature of the crime informs the guilty mind of the perpetrator. It is possible that a conduct can have more than one form of culpability (Ashworth & Horder, 2013:138). Indications are that recklessness is another form of culpability that is mostly contended in the legal fraternity (Reddy, 2019:54-55).

Intention is the form of culpability involved and proven in electricity theft (Thompson II, 2016:3). There are crimes that are without culpability, but the perpetrators are found guilty based on strict liability. By its character, the South African Criminal law does not rely on the use of strict liability; nonetheless, the use of strict liability is common in the law of delict such as holding the manufactures accountable for the defects of their products-that might have caused harm to the consumers (Van der Bijl, 2018:1). The rationale is that strict liability is not a suitable requirement to prove electricity theft because theft has criminal element. Nonetheless, there can be aspects relating to the stealing of electricity that may be a subject of private law.

As such, a claim for damaging a property during the activities associated with electricity theft can be filed against the responsible person or institution. Ashworth and Horder (2013:137) and Marchuk (2014:22) appraise the forms of culpability according to the degree of criticalness and from the most to less critical is intention, recklessness and negligence. Alge (2019:20) indicates that the interpretation of culpability differs significantly from one crime to another. Manyika (2016:8) alludes that the South African criminal courts prefer a broader approach that takes into consideration the substantive analysis of the law than strict liability. There is rationality in the points raised by Alge (2019:20) and Manyika (2016:8) in that they embrace the various circumstances of crime, including that of electricity theft, which could remarkably influence the court decisions. Therefore, the criticalness of the forms of culpability rest on the evidence presented before court. The following Sub-sections 4.2.4.1, 4.2.4.2 and 4.2.4.3 provide the summary of intention, negligence and recklessness in relation to electricity theft.

4.2.4.1 Intention

Intention is a component of culpability defined in Criminal law as a will a person has to commit the act while having knowledge that the law prohibits the act (Jubaer,

2019:2). Awa (2019:33-36) distinguishes between four different types of intentions, namely direct intention (***dolus directus***), indirect intention (***dolus indirectus***), legal intention (***dolus eventualis***) and general intention (***dolus indeterminatus***).

- **Direct intention (*Dolus directus*)**

Direct intention is indicative in that the anticipation and desire to carry out an unlawful conduct is realised by the perpetrator. For example, X brought into effect his prediction and desire of illegally connecting the wires to the utility network to consume electricity without paying for it (Govender, 2017:5).

- **Indirect intention (*Dolus indirectus*)**

Indirect intention is observable when perpetrators desire to commit a particular unlawful conduct and foresee that their conduct may lead to a different, non-desired unlawful conduct; and ultimately commit an unlawful conduct that they did not desire to commit (Burchell, 2013:346). For example, X is using a pre-paid meter box and want to continue purchasing pre-paid electricity in a normal way. X want to upgrade his meter box illegally without first making a proper process of applying to energy utility. X's upgraded meter box ended up being faulty by rejecting the purchased energy credits but continuously providing energy not paid for. X committed the crime of illegally consuming energy although his intention was to commit an illegal energy meter upgrading.

- **Legal intention (*Dolus eventualis*)**

Legal intention is evident if it is not the perpetrators' will to cause prohibited conduct, but they foresee a possibility that the attainment of their goals other than unlawful conduct may result in unlawful conduct; nonetheless, reconcile themselves to the possibility that ultimately led to what they foresaw (Du Preez, 2016:5). For example, X requires a private electrical technician to fix his energy distribution box. X had a suspicion that the technician may not be qualified to do the job but failed to verify the qualifications of that technician. X realised when the utility officials visited his residence that his private technician worked beyond the boundary of his private distribution box and tampered with the utility meter box. X foresaw the possibility that the private technician may not be qualified to do the task but reconciled with that probability by failing to ascertain that the technician was or not qualified to perform the task. X can be held liable in terms of legal intention.

- **General intention (*Dolus indeterminatus*)**

General intention involves committing an unlawful conduct against unknown persons, or without a focus on specific persons. When proving general intention, it is sufficient to determine that the accused desired to commit and complete the unlawful conduct even if the act was not directed to a specific target or person (Jubaer, 2019:1). For example, X illegally connects wires to a transformer found at the residential complex without showing concern to know the owner of the transformer.

According to Jubaer (2019:2), it is sufficient to prove in criminal law that a person had an aim to produce the unlawful consequences, particularly if the courts can demonstrate that the perpetrators had an intention in that they foresaw and reconciled with the possibility that the unlawful consequences would arise. Therefore, electricity theft can be in any form of intention and the successful prosecution of perpetrators depends on the presiding Judge responsible for a particular case.

4.2.4.2 Negligence

Negligence is a form of culpability established when persons conduct themselves irrationally and not according to expected degree of standards. Whether the negligent person has or not foreseen the circumstances that led to the offence, the expectation from the law is that the perpetrator could have foreseen the circumstances. Negligence is based on the speculation that something is true in the absence of an evidence (Govender, 2017:1). Dsouza (2015:444-445) indicate that persons who are guilty of negligence exercise choice to conduct themselves in an irresponsible way and not showing required attentiveness to the interests of other persons.

The requirement to prove negligence is ascertainment that persons who have legal duty to act abandon their legal responsibilities; consequently, their failure (which is unlawful conduct) result in others being harmed (Van der Bijl, 2018:4). For example, the employers and self-employed persons who fail to take proper care as required by Section 9 of the Occupational Health and Safety Act (Act 85 of 1993) can be held criminally liable in terms of Section 38 of the Act. Section 9 of the Act entrusts employers and self-employed people with legal duties to ensure that they conduct their work activities in a manner reasonable and practical not to subject employees and

other people affected by the employer activities to health or safety hazards (South Africa, 1993).

When proving negligence, the courts consider the behaviour of an imaginary 'reasonable person' to establish if persons breached legal duties entrusted upon them (Keating, 2015:3). The law test that the perpetrators could have foreseen that their conduct will lead to unlawful outcomes but failed to conduct themselves in a manner to prevent the foreseen outcome. Therefore, it is important to arrive at the answer to the question regarding the reasonable manner in which an individual would have acted if challenged with similar circumstances that led to unlawful conduct (Buell, 2015:602; Neethling & Potgieter, 2018:153). The common test of negligence is inherently objective in that it does not necessitate taking into consideration the individual circumstances of the perpetrator.

However, there are criminal cases that require the testing of negligence be in the continuum of objective and subjective ranges (Keating, 2015:2). Du Preez (2016:16) and Kwanje (2016:ii) postulate that the criminal cases that occasionally require the establishment of blameworthiness by overlapping negligence and intention in persons are because of the difficulty to define and distinguish clearly between intention and negligence by courts. The courts then investigate relevant case law to construct a defensible account of the forms of culpability. The overlapping forms of culpability may not be applicable to electricity theft because the above Sub-section 4.2.4.1 of this chapter provides an indication that electricity theft is intentional.

Furthermore, there is no literature suggesting that electricity theft could be a negligible offence. Dsouza (2015:456) signifies that numerous transgressions are committed through negligence, although many of such transgressions do not meet the requirements of crimes. Okur (2020:25-27) asserts that a perpetrator who committed a negligence conduct that could not be clearly defined and understood in terms of the law, cannot be held criminally liable. In criminal related incidents, there are only few cases that require negligence to be determined to hold a person criminally liable (Lamparello, 2019:17). Williams (2020:120) indicates that there are less cases of negligence in criminal law because most people relate negligence to moral failure, and which may not require the legal punishment. Therefore, electricity theft is not only a

moral act but is an offence punishable by law and difficult to prove using negligence as a form of culpability.

4.2.4.3 Recklessness

Reddy (2019:36) regards recklessness as another form of culpability that is marred by ambiguity. According to Awa (2019:37) and Marchuk (2014:17); it is difficult to distinguish between recklessness and legal intention (*dolus eventualis*), and recklessness and negligence because they appear to have an overlapping and partially similar fault requirement. Recklessness includes 'failure' as a requirement of *mens rea* and is utilised mostly if the law does not provide clear indication to deal with a conduct (Levin, 2019:512). Marchuk (2014:17) indicates that recklessness is an interposed culpability requirement in criminal and civil law. The persons responsible for reckless conduct are considered to have ignored the probable unlawful consequences of their conduct.

The law requires that an intention put a blame on individuals who had a foresight of the possibility of their unlawful consequence but failed to conduct themselves in manner to prevent the consequences. In blaming a person for negligence, the law reasonably intends that in the light of the given circumstances, the perpetrator lacked but could have had a foresight that their conduct will lead to unlawful consequences (Kwanje, 2016:2; Lamparello, 2019:17). The culpability requirement of conscious negligence in recklessness is divided between intention and negligence, thus at times create an interpretation confusion of a conduct (Awa, 2019:69).

Levin (2019:512) describe recklessness as a conscious negligence that is usable to hold accountable a person for engaging in a risky and indefensible conduct. According to Marchuk (2014:42-43), conscious negligence is proven if the perpetrators do not wish to commit an unlawful conduct but foresee that their conduct may give rise to undesired unlawful consequence. The law perspective on reckless conduct requires the perpetrator to think reasonably in the light of potential unlawful consequences (Levin, 2019:512). Prendergast (2020:31) acknowledges that the test of recklessness in Criminal law is premised on the perpetrators' belief that their actions have potential to cause harm to others.

It is not necessary for the actual harm to occur for persons to be criminally accountable for their reckless conduct. A conspicuous and unacceptable deviation from the normal conduct in the view of a reasonable person is sufficient for recklessness (Awa, 2019:69). Reckless conduct associated with electricity theft is in most instances considered in safety to abate human and property harm by utilities and legal institutions (Nkabane, 2017:4). Although there may be an apparent reckless mode of operation linked to electricity theft, it is uncommon for the law enforcers and adjudicators to hold liable the perpetrators of electricity theft using recklessness. The indication is that an intention takes precedence in criminally dealing with matters related to electricity theft.

According to Burchell (2013:352), the requirements of recklessness are foresight, possibility, correlation between foresee and actual manner of consequence, and recklessness. Du Preez (2016:29, 34) calls attention to the point that recklessness is complicated because its interpretation fits both as an intentional and negligent conduct. The author mentions that an intention is a pre-requisite to charge the perpetrator with recklessness.

However, if the courts prove a reconciliation to the unlawful conduct by the perpetrator and the conduct is without a foresight requirement as part of the intention, there is no recklessness. Therefore, the courts will charge the perpetrator with negligence. South Africa seems to be more accommodative of negligence than intention requirement in establishing recklessness in criminal matters (Burchell, 2013:347). The different requirements of intention and negligent forms of culpability fused in a form of reckless conduct may not be feasible to hold a person liable for electricity theft because of their potential to yield indecisive criminal outcomes.

4.2.5 Fulfilment of the definitional elements of electricity theft

A conduct that is partially compliant to the definition of an offence cannot be applied successfully to hold a person liable for a crime (Cernusca, 2018:235-237). A conduct falls short of a crime if one of the elements of crime does not materialise, hence it is necessary for an electricity theft conduct to satisfy the definitional elements of the crime. The fulfilment of the elements of a crime is not an element of an offence by its definition, but a demonstration that a defined unlawful conduct is realised or complete (Marchuk, 2014:410). Van Verseveld (2012:28) reveal that the fulfilment of the

definitional elements of a crime is the ultimate indicator to allow a conclusion that each part constituting an unlawful conduct eventuates.

Electricity theft is not different from other crimes because it requires the attainment of all parts of the unlawful conduct. Furthermore, the realisation of electricity theft may be consequential or inconsequential (Ambos, 2013:153-154). An individual or more persons complicit to the unlawful conduct of electricity theft can be responsible for completing the definitional elements of electricity theft (Du Bois-Pedain, 2020:94). The discussion in this Section *supra* and the operationalised definition of electricity theft in Section 1.8.6 (chapter 1 of this study) manifests electricity theft as a crime consisting of the four elements of crime namely conduct, legality, unlawfulness and culpability. It is only when all the elements of electricity theft are completed that a person could be liable for stealing electricity.

The participants in Sample A1 (Eskom security personnel), Sample C (SAPS Detective police) and Sample D (NPA prosecutors) were asked the question: "Based on your experience, is electricity theft considered a crime in South Africa?" The question asked required a 'yes' or 'no' answer. All the participants from Sample C (10) and Sample D (3) responded with a 'yes' answer. Of the six (6) participants from Sample A1, four (4) opted for a 'yes' answer, and only two (2) selected a 'no' answer. Notably, one (1) of the participants who selected a 'no' answer further stated that "*electricity theft cannot be stolen*". The participant could not provide clarity on the assertion that electricity cannot be stolen.

The participants who selected a 'yes' answer were in majority (17) and were asked a further question "If your answer to the above question is yes, what are the criminal elements entailed in the crime of electricity theft?" Some of the participants provided more than one answer about the elements of electricity theft. The participants' answers indicate that electricity theft comprises of Unlawfulness/Illegalness (13 participants), lack of permission/consent by owner (12 participants), deprive ownership/control (6 participants) and intention/awareness (4 participants).

The participants' answers also include phrases or verb derivatives namely use (9 participants), connect (5 participants), consume (3 participants), operate (3 participants), commit (1 participant), tamper (1 participant), conduct (1 participant),

fiddle (1 participant) and vend/sell (1 participant) as used and associated with illegal or unlawful conduct of stealing electricity. Evident from the answers is that the majority participants have understanding that conduct, unlawfulness and lack of consent are elements of electricity theft, while few participants mentioned deprive ownership and intention. One Sample D participant provided an answer including all the elements describing electricity theft as a crime as follows:

“Unlawful, intention, use without permission and deprive the owner that which is stolen”.

The majority participants demonstrated knowledge of conduct, unlawfulness and consent and that may relate to the understanding that the elements are in most instances determined first in all crimes when establishing the probability that the accused have committed a crime. Only after establishing the unlawful conduct, the court can proceed to determine the mental culpability of the accused to be held accountable for the crime committed (Brink, 2019:347; Dsouza, 2015:440; Lamparello, 2019:12).

Nonetheless, the elements found in the participants answers are covered in literature. In *S v Harper and Another*, 1981(2) SA 638 at 664, the judge described that the persons stealing electricity must have knowledge that their conduct is unlawful, believe that the owner would not have consented to the possession of the stolen characteristic and have intention to deprive the owner of ownership or control of the characteristic stolen. Moreover, various authors relate the way in which electricity theft is premised on the intentional and illegal conduct aimed to take control of ownership without the owners' permission (Jubiber, 2019:1; Karabiber, 2017:123; Musungwini, 2016:55).

Mindful that the understanding of electricity theft elements do not complete the interpretation of electricity theft in relation to laws governing crime, the discussion of commonly reported electricity theft incidents as contributory to the interpretation of electricity theft in the criminal law perspective follows in Section 4.3 below.

4.3 COMMONLY REPORTED ELECTRICITY THEFT INCIDENTS FOR CRIMINAL INVESTIGATION AND PROSECUTION

Electricity theft is among the most serious offences that are under-reported (Bihl & Hajjar, 2017:1; Onat, 2018:174). The inadequacy of reporting may not deter the

construction of an ideal reporting trend of electricity theft from the available reports, because the interpretation of electricity theft in relation to criminal law requires a basic understanding of reporting trends and disposition associated with different types of electricity theft (Chetty, 2018:22). Hence, this discussion deals with the commonly reported incidents of electricity theft for purposes of criminal investigation and prosecution.

4.3.1 Outline reporting of electricity theft incidents

The appeal to report electricity theft constantly made by utilities such as Eskom and municipalities to communities is an indication that the reporting of energy theft is crucial to curbing the offence Ikejamba and Schuur (2018:4). According to Borat et al. (2017:ii), the investigation of reported criminal incidents have a potential to provide a view on the extent of the crime in a particular area, and the way it relates to variables such as socio-economic factors. The electricity theft reports can come from utility customers, non-customers and other parties who have interest in electricity theft matters.

The propensity of reporting electricity theft not only contribute to awareness but also to the interpretation of the offence by utilities and law enforcement institutions. Interpreting the trends of electricity theft can be useful to formulating progressive strategies to curb the crime (Gehl & Plecas, 2016:2). The utilities and law enforcement personnel can also gain an understanding of electricity theft incidents' disposition, and reporters' interpretation of and expectation from reporting such energy theft incidents (Parker, 2015:23). Borat et al. (2017:2), identified a gap of reporting crime by community members to utilities and law enforcement institutions. The authors mention that the data issues plaque the crime reports from SAPS and Statistics South Africa.

Nonetheless, the authors acknowledged that the crime reports by SAPS have improved than those provided by other institutions and embraces all crimes including electricity theft. Poor handling of data, people's unwillingness and inability to report and poor communities who lack resources are among contributing factors of not reporting crime including energy theft incidents (Silber & Geffen, 2016:38-39). An ineffective reporting mechanism of electricity theft may result in unreliable reports and that may obscure the identification of commonly reported types of energy theft for

criminal investigation and prosecution. Literature does not indicate specific numbers but provide a general overview of the commonly reported electricity theft incidents.

The discussion in Section 3.3.2 (chapter 3 of this study) reveals that the different types of electricity theft are clustered into tampering, billing irregularities and vendor fraud. The types of electricity theft reported commonly for criminal investigations and prosecutions are tampering of electrical equipment. Electricity vending fraud and billing irregularities are reported less compared to tampering of electrical infrastructure (Yakubu & Narendra, 2017:171; Shahid, Shahid, Tariq & Saleem, 2019). Chandel, Thakur and Sawale (2016:368) postulate that the tampering of electricity meters are the most reported energy theft incidents, followed by tampering of network line compared to network line and other electrical infrastructures.

4.3.2 Disposition of electricity theft incidents

Like all categories of crimes, electricity theft is greater understood if analysed and interpreted in a context it occurs (Shokoya & Raji, 2019a:97). The disposition of electricity theft incidents commonly reported is inconsistent and influenced by numerous factors such as the mode of supply, the class of people in an area and the politics (Abdullateef, Salami, Musse, Aibinu & Onasanya, 2012:250).

According to Hussain, Memon, Shah, Bhutto and Aljawarneh (2016:2), the occurrence of energy theft cases is observable in most regions of the world. The authors supported their statement by mentioning that about 102 countries experience the electricity theft incidents because of poor infrastructure, political uncertainty, high-level corruption, inefficient governance, appointment of non-qualified personnel, lack of accountability and poor law enforcement. Louw (2019) and Clarke (2016) indicate that the apportionment of energy theft incidents in the South African context is not different from other countries in the world.

The assertions by Hussain et al. (2016:2) and Louw (2019), implicitly indicates that understanding the disposition of electricity theft is complicated in nature and is determined by the dynamic influences in the society. In the study entitled "*Primary cause of high distribution losses in Indian state*", Saini (2018:188) compared the electricity theft incidents in urban, rural and industrial zones. The author discovered that the commonly reported energy theft incidents are found in rural areas and densely

populated settlements with poor socio-economic conditions. The author augments the report by (Eskom, 2016c; Sulla & Zikhali, 2018:xxv) that Limpopo Province is a predominantly rural area and is among the four provinces that are rife with energy theft in a form of tampering electrical infrastructure.

The regular campaigns by Eskom intending to influence communities in Limpopo and other provinces to refrain from stealing electricity are a testament that energy theft incidents are not unique to Limpopo Province (Eskom, 2019d:2). During October 2018 Eskom began an outreach programme to provide an opportunity to its customers who are using pre-paid energy meters and consuming electricity illegally to report themselves to Eskom. The opportunity to report illegal consumption of electricity came with an offer of a 50% discount on the energy consumption debt incurred by offenders and normalisation of offenders' illegal installations at no fee by Eskom (Eskom, 2018a:1-2).

The illegal consumers who during the grace period offered by Eskom failed to report their conduct of illegally utilising energy; and who may be found at a later stage that they were consuming in an illegal manner the electricity would be severely fined or subjected to criminal prosecution processes or have their energy installations removed (Eskom, 2020:2). The participants in Sample A1 (Eskom security personnel) and Sample C (SAPS detectives) were asked the following question: "*Based on your experience, what are the forms or types of electricity theft cases that are commonly received by you for investigation?*" Meanwhile, the Sample D participants (NPA prosecutors) were asked the following question: "*Based on your experience, what are the forms or types of electricity theft cases that are commonly received by you for prosecution?*" The question was open ended, with some of the participants providing more than one answer.

The majority (15) participants comprising of six (6) Sample A1, eight (8) Sample C and one (1) Sample D participants provided answers indicating that tampering with electrical infrastructure is common form of electricity theft reported at their places of work. The answers of the participants are characterised by use of phrases of verb derivatives such as meter or equipment tampering, illegal connection of wires or cables or from lines, bridging and bypass. Only one Sample A1 participant mentioned

an answer consisting of vending fraud as a type of electricity theft commonly reported for investigation, and the answer cited verbatim as follows:

“Bridging of the meter box, illegal connections from lines and ghost vending”.

The answers mentioned by majority participants including the answer about illegal vending are in line with literature. Literature provides that among the three forms of electricity theft namely tampering, vendor fraud and billing irregularities; the most common type is tampering with electrical infrastructure (Blimpo & Cosgrove-Davies, 2019:137; Kambule, 2018:179; Saini, 2017:27; Splynx, 2019:np; Martin, Starace & Tricoire, 2017:17; Yakubu & Narendra, 2017:171-172). Literature indicates that it is common having few reports about billing irregularities and illegal vending because are not the most common methods used by perpetrators to steal electricity, hence, no participant mentioned billing irregularities and only one participant mentioned vending fraud (Yakubu & Narendra, 2017:171; Shahid, Shahid, Tariq & Saleem, 2019).

According to Chandel, Thakur and Sawale (2016:171), tampering of meters and network lines are the most preferred forms of stealing electricity. Different from the provisions of literature, only four participants mentioned answers not relating to theft of electricity but theft of electrical infrastructure. The participant’s answers as quoted verbatim are as follows:

Sample C: *“Theft of meter and cables and Only theft of cables, meter and other electricity equipment”.*

Sample D: *“The cases involve theft of electricity equipment and copper cables but are very few and Mostly, I receive electricity equipment theft cases because electricity theft cases are rare.”*

Nonetheless, the number of participants who could not provide answers contained in literature is significantly low as compared to the answers by majority participants. Sample A1 (6) and Sample C (10) participants were asked the question: “In your opinion, are the types of electricity theft mentioned above unique to your work precinct or are they general to other police precincts in Limpopo Province?” The participants were provided an option to select between ‘unique’ and ‘general’. The participants were further asked to respond to the following statement: “Please give reason/s why you think the types of electricity theft mentioned above are ‘unique’ or ‘general’”. All

participants (n=16, 100%) provided “general” as their preferred answer, and also provided reasons for this chosen option.

The reflection by all participants’ (n=16, 100%) indicating reasons for the choice of ‘unique’ or ‘general’, is a demonstration that the types of electricity theft are general to other police precincts in Limpopo Province, with the majority of participants (n=11, 69%) indicating that the similar forms of electricity theft are observable even beyond the province. The answers of two participants each (n=2, 13%) each from Sample A1 and Sample C provided more comprehensible answers, as shown in the following extracts:

Sample A1: “Electricity theft is a country’s problem and may not be limited to Limpopo Province or certain areas in the province, and the same methods and forms of stealing electricity in our area are seen in other areas as well”.

Sample C: “Electricity theft is a problem of South Africa, same applies with the types of electricity theft. That is why Eskom is continuously disconnecting electricity from areas in Gauteng, Mpumalanga and other provinces”.

The answers of participants are supported in literature in that Hussain, Memon, Shah, Bhutto and Aljawarneh (2016:2) indicate that different forms of electricity theft including tampering are found in numerous places across the world. Furthermore, it is evident in Eskom’s reports that meter bypass and illegal connection on grid are among unsettling issues the utility is dealing with across the country. The report further indicated that perpetrators of electricity theft use different methods to steal electricity (Eskom, 2019a:2).

Recognising the commonly reported incidents makes only a part of the entire interpretation of electricity theft in relation to criminal law because electricity theft is complex in nature (Louw & Bokoro, 2019:209). Hence, it is necessary to understand statutes relevant to electricity theft among the aspects helpful in interpreting the crime as elaborated in the next Section 4.4.

4.4 STATUTES RELEVANT TO ELECTRICITY THEFT

Statutes regulate various activities and are not similar in different continents, countries and states. The importance of available statutes to govern the conduct and relationships of persons underscores the state of lawlessness (United Nations Office on Drugs and Crime (UNODC), 2019:4). Any crime requires the reflection of factors

such as the society views, related laws, control policies and practices (Modern & Palys, 2019:67). Similarly, it is necessary to evaluate electricity theft in terms of the laws governing crime in South Africa and legislations that are pertinent to electricity theft.

Lack of understanding electricity theft in terms of the relevant statutes is likely to hamper an effective interpretation of the crime, and that could lead to designing solutions incompatible to the aims of this study. Although there are gaps in the creation of legislations governing electricity theft, the law creators and implementers in South Africa realise and acknowledge the need to design legal guidelines that are more comprehensible (Botha, 2012:10). The following Sub-Sections from 4.6.1 to 4.6.6 provide the synopsis of the statutes pertinent to electricity theft interpretation in South Africa.

4.4.1 Electricity Regulation Act 4 of 2006 (ERA)

The Electricity Regulation Act (Act 4 of 2006) enables the National Energy Regulator of South Africa (NERSA) to carry its mandate of regulating, licensing, registering and determining tariffs in the electricity industry (South Africa, 2006). The Electricity Regulation Act (4 of 2006) does not provide any explicit phrase dealing with matters relating to electricity theft amid knowledge that electricity theft has a potential to digress the rules, including those provided by this Act (Shokoya & Raji, 2019a:96).

However, Section 23 of Electricity Regulation Act (Act 4 of 2006) permits the authorised representatives of licensed utilities to enter any premises to which the utility supplies electricity for purposes of inspecting the utility equipment. The purpose of conducting inspections is to identify risks posed to electricity infrastructures and possible remedies that include law enforcement. Some of the risks include electricity theft (Safehouse, 2018:1). Furthermore, Section 47(4) of this Act permits the minister to make regulations by notice in the gazette. The notices are not limited but include any other ancillary or administrative matter that it is necessary to prescribe for the proper implementation or administration of this Act. It is conjectural that the ancillary matters entailed in this Act include activities that aim to support utilities on electricity theft matters.

4.4.2 National Energy Act 34 of 2008 (NEA)

The National Energy Act (Act 34 of 2008) entrusts the minister with the duty to adopt measures to provide among other energy services the diverse energy resources, sustainable energy quantities and affordable prices to the people of South Africa (South Africa, 2008). In contrast to the National Energy Act (Act 34 of 2008), electricity theft contributes to difficulties in attaining the objects of the Act in that it increases the generation costs that lead to unaffordable energy tariffs, interrupted supply of energy and posing challenges of providing sustainable electricity (Eskom, 2018b:97).

Section 5(2)(a) of the National Energy Act (Act 34 of 2008) requires that all the supply duties entrusted upon the minister are done in consideration of the safety, health and environmental suitability compliance (South Africa, 2008). Bihl and Hajjar (2017:4) indicate that electricity theft contravenes the rules governing safety in the society. The National Energy Act (Act 34 of 2008) does not provide any description in relation to the way in which electricity theft incidents can be dealt with. Although Section 20(1) of the National Energy Act (Act 34 of 2008) provides for offences and penalties that can be used to hold accountable any person who violates the provisions of the Act, it does not address in precise the manner to deal with electricity theft offenders (South Africa, 2008). Therefore, it would be difficult to prosecute electricity theft offenders using the National Energy Act (Act 34 of 2008).

4.4.3 Criminal Matters Amendment Act 18 of 2015 (CMA)

The purposes of the Criminal Matters Amendment Act (Act 18 of 2015) include to regulate the imposition of discretionary minimum sentences for essential infrastructure-related offences and to create a new offence relating to essential infrastructure (South Africa, 2015). The preamble of the Criminal Matters Amendment Act (Act 18 of 2015) recognises electricity as essential to economic growth and public services and indicate that the Act is fundamental to the protection of electrical infrastructure (South Africa, 2015; Ratshomo & Nembahe, 2018:2).

Section 3(1)(a) of the Criminal Matters Amendment Act (Act 18 of 2015) criminalises and describes the conduct and sanction of a person who tampers, damages or destroys an essential infrastructure. Section 3(1)(b) of the Criminal Matters Amendment Act (Act 18 of 2015) mentions as an offence the conduct of a person who

colludes with or assist another person to commit the offence prescribed in Section 3(1)(a). Section 3(1)(a) and Section 3(1)(b) of the Criminal Matters Amendment Act (Act 18 of 2015) does not address electricity theft; however, a person who commits any of the act prohibited by the Sections may be found guilty of implicit electricity theft. The implication is that the conduct of tampering, damaging or destroying an electrical infrastructure may emanate from the unlawful intention of stealing electricity. Therefore, the Criminal Matters Amendment Act (Act 18 of 2015) proves to be helpful to dealing with electricity theft related matters.

4.4.4 Criminal Procedure Act 51 of 1977 (CPA)

The objective of the Criminal Procedure Act (Act 51 of 1977) is to make provision for procedures and related matters in criminal proceedings (South Africa, 1977). Section 2(1) of the Criminal Procedure Act (Act 51 of 1977) describes the right to prosecute bestowed in the state as being applicable to any offence including electricity theft (South Africa, 1977).

The analysis of Section 286 of the Criminal Procedure Act (Act 51 of 1977) by Hamman, Albertus and Notje (2019:2) brings awareness that South Africa should learn from other countries to adapt the criminal procedures to the changing criminal behaviour. Section 286 of the Criminal Procedure Act (Act 51 of 1977) deals with the discretion of the courts to decide on declaring certain criminals as dangerous. The amendments to the Criminal processes include dealing with electricity theft, which is among the less appreciated offences in a traditional legal system although it presents dynamic challenges during criminal investigation and prosecution (Njotini, 2016:23).

Electricity theft is a crime that continues to be a subject of argument in the legal fraternity. The argument that electricity theft is incorporeal and cannot be stolen has led to the whole amendment of Electricity Act (Act 41 of 1987) by Electricity Regulation Act (Act 4 of 2006) (discussed in Section 4.6.1 *supra*). The amendment of Electricity Act (Act 41 of 1987) resulted in Section 27(2) of the Act being struck off in the Electricity Regulation Act (Act 4 of 2006). Section 27(2) of Electricity Act (Act 41 of 1987) was stating in clear terms that any person without the legal right who unlawfully abstracts or branches or diverts electric current; or consumes the unlawfully abstracted or branched or diverted electric current, knowing it to have been unlawfully

abstracted or branched or diverted, shall be guilty of an offence and liable on conviction to the penalties which may be imposed for theft.

Another remarkable argument is noted in *S v Ndebele and Another* (SS16/2010) [2011] ZAGPJHC 41 when the accused brought at the beginning of a trial an application to have the electricity theft charge be withdrawn completely from the prosecution process. The reason cited by the defence to get the theft related charge withdrawn is that electricity theft was not capable of being stolen. The judge presiding on the case of *S v Ndebele and Another* (SS16/2010) [2011] ZAGPJHC 41 justified that electricity is capable of being stolen by recognising and examining the previous cases relating to the theft of incorporeal including electricity.

Nonetheless, Section 83 of the Criminal Procedure Act (Act 51 of 1977) is useful in the prosecution of electricity theft because it is applied when there is uncertainty on the nature of the charge committed. Section 83 of the Criminal Procedure Act (Act 51 of 1977) stipulates that if for any reason there is doubt to criminal facts to be determined or uncertainty on which of the several offences is constituted by the facts which can be demonstrated, the accused may be charged with the commission of all or any of such offences, and any number of such charges may be tried at once, or the accused may be charged in the alternative with the commission of any number of such offences (South Africa, 1977).

The prosecutors in *S v Ndebele and Another* (SS16/2010) [2011] ZAGPJHC 41 followed the provisions of Section 83 of the Criminal Procedure Act (Act 51 of 1977) because they charged the accused on numerous charges constituted by the facts proven. The accused in *S v Ndebele and Another* (SS16/2010) [2011] ZAGPJHC 41 were charged with charges relating to the Prevention of Organised Crime Act (Act 121 of 1998) (South Africa, 1998), theft of electricity vending machine and theft of electricity. The two of the three accused were found guilty on all the charges including electricity theft. The Criminal Procedure Act (Act 51 of 1977) is therefore not only relevant but also valuable in dealing with electricity theft matters.

4.4.5 Prevention of Organized Crime Act 121 of 1998 (POCA)

Among the objectives of the Prevention of Organised Crime Act (Act 121 of 1998) is to introduce measures to combat organised crime and to provide for the recovery of

the proceeds of unlawful activity (South Africa, 1998). The United Nations Office on Drugs and Crime (2016:4-5) provide a definition of organised crime to involve the criminal acts that include the new offences, and those crimes:

- Are well-coordinated by three or more people;
- Have been existing for a period;
- Have the offenders acting commonly with the intention to commit serious crimes; and
- Are working together to acquire in a direct or indirect manner a financial benefit or any other material benefit.

Electricity theft is an offence that can also be committed in an organised manner. In *S v Ndebele and Another* (SS16/2010) [2011] ZAGPJHC 41, the criminal charges against the three accused who were involved in stealing electricity vending machines from Eskom, included the crimes that were informed by the Prevention of Organised Crime Act (Act 121 of 1998). Two of the three accused were found guilty in accordance with the Prevention of Organised Crime Act (Act 121 of 1998), whereas one was acquitted on the basis that the court could not prove irrefutably that the accused was involved in the commission of organised crime.

4.4.6 Municipal by-laws

Municipal by-laws are legislations emanating from Sections 156(1) and 156(2) of the Constitution of the Republic of South Africa Act (Act 108 of 1996) (South Africa, 1996). The Constitution applied together with the Municipal Systems Act (Act 32 of 2000) (South Africa, 2000) empowers the municipal council to ratify the by-laws and to implement them in their respective municipal jurisdictions for effective administration of the matters it has the right to administer. According to Moshoeu (2017:37), each municipality creates the by-laws to address challenges unique to that municipality.

The enforcement of the by-laws is like that of provincial laws and national laws; however, municipalities should be cautious not to ratify the by-laws that conflict with the National and provincial laws. The municipal council passes the by-laws for different purposes including matters relating to electricity supply (City of Tshwane, 2015). According to Freedman (2014:567), the legislative authority of the municipalities may overlap with the legislative authority of the provincial and National government. The

overlapping of the authority may complicate the operational boundaries in the three spheres of government namely national, provincial and local government. The complication extends to the way municipalities have to create the by-laws protecting electricity against theft.

Electricity supply is among the essential municipality services in the municipalities affected by tampering and illegal connections. Although some of the municipalities do not have the by-laws that addresses electricity theft, the Ba-Phalaborwa municipality is an example of the municipality that has used the authority vested upon the municipalities by the constitution to approve the Ba-Phalaborwa Model Electricity Supply by-laws 2016/2017 (Ba-Phalaborwa Municipality, 2016) to protect energy supply from theft.

Included in the Ba-Phalaborwa Model Electricity Supply by-laws 2016/2017 are the following municipality prescripts:

- Section 41(1) prohibiting the unauthorized use of electricity supplied by the municipality;
- Section 13(1) prohibiting the unauthorized selling of electricity supplied by the municipality to premises under an agreement;
- Section 18 prohibiting the unauthorised tampering of protective devices of the municipality electricity equipment such as seals and locks;
- Section 19(1) prohibiting the unauthorised tampering of the municipality electricity infrastructure such as the metering equipment and service connections;
- Sections 20(1)(d), 22 and 23 prohibiting the unauthorised connection to any part of or diversion of the municipality electricity from the supply mains;
- Section 61(1) and 61(2) of the Phalaborwa Model Electricity Supply by-laws 2016/2017 allow the authorized municipal official to issue infringement notices to persons violating any of the conduct prohibited in the by-law; and
- Section 61(3) of the Ba-Phalaborwa Electricity by-laws provide an option that if the municipal administrative remedies are not adequate to hold accountable the perpetrators of electricity related matters that include electricity theft, the alleged offence should be referred to court.

The participants in Sample A1 (Eskom security and engineering personnel), Sample C (SAPS detectives) and Sample D (NPA prosecutors) were asked the following question: “To your knowledge, does South Africa have specific electricity legislation?” The participants were required to select their responses from a ‘yes’ or ‘no’ option. The participants who answered ‘yes’ were required to list the specific electricity theft legislation in support of their responses. The majority of the participants (n=11, 58%) opted for a ‘no’ answer, while eight participants (n=8, 42%) comprising of two Sample A1 (n=2, 11%), four Sample C (n=4, 21%) and two Sample D participants (n=2, 11%) opted for a ‘yes’ answer. Since the participants who selected a ‘yes’ answer, were required to list the legislations, their answers as quoted verbatim are represented in Table 4.1 below.

Table 4.1: Participants’ understanding of electricity theft legislation

Participants↓	Participants' understanding of electricity theft legislation
Sample A1	Electricity Act.
	Electricity Act.
Sample C	All I know is that there is an Act, but I am not certain on the name of an Act.
	Electricity Act.
	Electricity Act.
	Electricity Act, but I can't remember the Act number and year it was ratified.
Sample D	Electricity Act.
	Electricity Act.

(Source: Feedback from the participants)

Table 4.1 demonstrate that out of eight (8) participants who opted for a ‘yes’ answer, seven (7) mentioned electricity Act as an answer while one was not certain of the name of an Act. The answers of the eight (8) participants are in contrast with literature which indicates that there is currently no legislation governing electricity theft (Moshoeu, 2017:37).

Notably, two (2) among the eleven (11) participants who selected a ‘no’ answer elaborated on this choice without the researcher's request to do so. The assertions of the two (2) participants are cited verbatim as follows:

SAMPLE A1: “*Electricity related legislations in existence are not specific to electricity theft.*”

SAMPLE C: “*There is always an argument that electricity cannot be stolen and no legislation supporting that.*”

The responses of eleven (11) participants who opted for a ‘no’ answer and elaboration made by two (2) of the participants as cited above is in line with literature. The discussion in this Section *supra* points to various legislations that can be adapted to deal with electricity theft, however, such legislations are not specifically created to deal with electricity theft. The legislations include Electricity Regulation Act 4 of 2006, National Energy Act 34 of 2008, Criminal Matters Amendment Act 18 of 2015, Prevention of Organised Crime Act 121 of 1998 and Municipal by-laws. Moreover, in *S v Ndebele and Another* (SS16/2010) [2011] ZAGPJHC 41, the court relied on common law, previous judgements, and the Prevention of Organised Crime Act, No. 121 of 1998 to convict the accused who were charged with electricity theft.

Hence, Chetty (2018:3) mentions the way in which the prosecution of electricity theft in South Africa is complicated by the absence of a legislation created to deal with electricity theft. Despite lack of legislation specific to electricity theft matters and reliance on other legal prescripts to deal with electricity theft, it remains important for law enforcers, prosecutors and utilities to be guided within the parameters of law on ways to deal with electricity theft cases reported for purposes of investigations and prosecutions. Hence, the discussion on guidelines for investigating and prosecuting electricity theft in the following Sub-Section 4.5.

4.5 GUIDELINES FOR INVESTIGATING AND PROSECUTING ELECTRICITY THEFT

Investigations and prosecutions of crime require a legally justified course of action in gathering information, collecting evidence, interviewing witnesses and interrogating suspects (National Prosecuting Authority, 2019:11). The justification is attainable by practising carefully considered criminal processes; guided by the procedures, rules and policies useful to realise fairness and reasonableness in the performance of legal duties. These criminal processes encompass investigations and prosecutions of crime (including electricity theft), which according to Broughton (2020:1) are adverse in nature. Accordingly, the adversarial effects of electricity theft should be dealt with as guided by the law, and without causing unwarranted harm to consumers and entire

community members (Varney, De Silva & Raleigh, 2019:20). Hence, this section determines and assess the guidelines and procedures applied in the investigation and prosecution of electricity theft.

South Africa has laws such as the Criminal Procedure Act (Act 51 of 1977) (South Africa, 1977) guiding the investigations and prosecutions of crimes; nonetheless, numerous challenges such as inadequate state resources and political influence or societal dynamics impede the successful implementation of the laws, including the laws useful in the investigation and prosecution of electricity theft (Congressional Research Service, 2020:16). These adversarial effects persist despite the acknowledgement that electricity theft is one of the crimes detrimental to a larger society (Mujuzi, 2020:78).

The guidelines for investigating and prosecuting a criminal offence (including electricity theft) are necessary to ascertain a sound and just legal course of action in both effortless and complex situations (United Nations Office on Drugs and Crime, 2014:26). The objectives of the rule-guided processes of investigations and prosecutions are to establish the facts and prevent the recurrence of events and are applicable to both criminal and non-criminal settings (Infrastructure Health and Safety Association (IHSA), 2019:1). In a similar way, the rules and procedures providing assurance that the investigations of other crimes occur in a legally defensible manner would apply to the investigation and prosecution of electricity theft. According to Gehl and Plecas (2016:1), it is crucial to learn the investigation and prosecution processes so that the outcome of the legal process sustains beyond legal scrutiny.

In accordance with the discussion in Section 1.1 (chapter 1 of this study), municipalities and Independent Power Producers (IPPs) are utilities contributing to electricity supply, although they have less responsibilities and scope of generating and distributing electricity than that of Eskom. Section 4.6.6 *supra* involves a discussion of the municipal by-laws, which are an indication that some of the municipalities have guidelines to legally deal with electricity theft and other matters related to electricity supply. However, an indication by Chetty (2018:3-4) is that Eskom lacks a clear policy to deal with electricity theft; and that creates a gap in policing, preventing and investigating electricity by law enforcement. The researcher could not find literature indicating the IPPs guidelines on legally dealing with electricity theft.

The National Regulatory Services (2014) provides a code of practice guiding the audits and investigations of electricity theft by utilities, for purposes of protecting energy and/or securing successful prosecutions of offenders in South Africa. Eskom and municipalities participated in the compilation and ratification of the code of practice by the National Regulatory Services, guiding the electricity utilities on dealing with energy theft. The following is a summary of the code of practice obtained from National Regulatory Services (2014:8-10):

- The electricity protection procedures should determine the legal action relevant to the situation.
- The investigations should be in line with the relevant legislations, by-laws or service level agreements.
- A trained staff should carry out technical investigations, and it is advisable that another employee who may serve as a witness and for safety (security) reasons accompanies the investigator. The person assigned to conduct crime investigation should be the person (employee) with relevant authority and necessary investigation experience.
- On identification of illegal consumption of electricity, the investigator should preserve evidence using evidence management procedure. National Regulatory Services recommends that the electricity utilities incorporate the custody and preservation of evidence in the policies or by-laws intended to protect energy against theft. If practical, the technical investigator should install a second off-site meter for purposes of recording the actual consumption while the investigation continues. In the event a criminal case is registered, the investigator should preserve evidence until the case is legally finalized.
- The use of electronic or digital photographs as evidence shall be accompanied by a sworn statement or affidavit confirming the photograph's authenticity. To preserve the original pixel count, the custodian of evidence should protect all electronic or digital photographs handed in as evidence from any form of alteration or enhancement. The photographs for use during hearings should be printed in the presence of at least two witnesses who shall submit sworn statements confirming that the photographs were not tampered with.
- The investigator should seal the exhibits such as meter boxes in a marked container or plastic in the presence of not less than two witnesses who shall submit

sworn statements relating to the handling of the evidence. The meter number, consumer's name and address, the date of the incident, the investigator's details and the police and utility case numbers should be on the label of the evidence container or plastic. The sealed exhibit shall be kept in a locked room or safe, and only one person must be responsible for the safekeeping of the key.

- If necessary, the investigator should advise the affected consumer on the next procedure following the conduct related to electricity theft.
- On suspicion that the utility staff and contractors are involved in the conduct of electricity theft, investigators may conduct a confidential investigation.
- Investigators may assist and support the technical staff to report criminal cases associated with electricity theft at the nearest police station. Investigators should follow the progress of the criminal cases with the law enforcement and court, and report feedback to the utilities management.
- Investigators should involve themselves in relevant crime related initiatives and projects in their area of operation and advise the utilities management on crime aspects relevant to the electricity industry.
- For a successful prosecution, the investigator and witnesses should present in court the evidence that will prove the intentional and unlawful commission of electricity theft.
- The investigators should constantly consult the prosecutors and the prosecutor should advise investigators on evidential information relevant to the successful prosecution of electricity theft.

The participants in Sample A1 (Eskom security personnel) were asked the question: "Based on your knowledge, is there a formal protocol, guideline, procedure or policy that guides the investigation of electricity theft cases within Eskom? The Sample C participants (SAPS detectives) were asked the question: "Based on your knowledge, is there a formal protocol, guideline, procedure or policy in SAPS that guides the investigation of electricity theft cases?" Meanwhile, Sample D participants (NPA prosecutors) were asked the question: "Based on your knowledge, is there a formal protocol, guideline, procedure or policy that guides the prosecution of electricity theft cases?" The participants were provided with a 'yes' or 'no' answer option. A 'no' answer was selected by all (6) Sample A1 participants, nine (9) Sample C participants

and all (3) Sample D participants. Only one (1) Sample C participant opted for a 'yes' answer.

Furthering the question, the participants from Sample A1 and C who opted for a 'yes' answer were required to "list the protocols, guidelines, procedures or policies that guide the investigation of electricity theft" and were asked "how useful is formal protocols, guidelines, procedures or policies that guide the investigation of electricity theft?" The participants were provided with five (5) options to select from wherein Option A represents 'not useful', Option B is 'less useful', Option C is 'useful', Option D is 'more useful', and Option E is 'very useful'. Similarly, the Sample D participants who selected a 'yes' answer were required "to list the protocols, guidelines, procedures or policies that guide the prosecution of electricity theft" and were asked a further question "how useful is formal protocols, guidelines, procedures or policies that guide the prosecution of electricity theft?"

The participants were provided with five (5) options from which to select their responses, and Option A is 'not useful', Option B is 'less useful', Option C is 'useful', Option D is 'more useful', and Option E is 'very useful'. Since only one (1) participant from Sample C answered 'yes', this particular participant responded to the following further part of the question: "*List the protocols, guidelines, procedures or policies that guide the investigation of electricity theft*". Accordingly, the participant responded thus: "The procedures in place are not specific to electricity theft, but are applicable to all crimes". Regarding the question: "*How useful is formal protocols, guidelines, procedures or policies that guide the investigation of electricity theft?*", the participant selected "more useful" (option D).

Since eighteen (18) participants opted for a 'no' answer, they were not required to further respond to the question: "List the protocols, guidelines, procedures or policies that guide the investigation of electricity theft", and "How useful is formal protocols, guidelines, procedures or policies that guide the investigation of electricity theft?" Notably, two (2) from eighteen (18) participants who opted for a 'no' answer substantiated their choice of responses without being asked to do so. The statements made by the participants are quoted verbatim as follows:

SAMPLE A1: *"...everyone uses own discretion. I don't remember coming across any policy document that tells how to investigate electricity theft. Since I was in Eskom, I was not told that I should follow a particular procedure in investigating electricity theft. Most of the time I apply the skills and knowledge of investigation I acquired while I was in SAPS."*

SAMPLE D: *"... the criminal processes apply similar to all criminal cases, no specific guideline for electricity theft and each case has its own merits"*.

The answers of eighteen (participants) who opted for a 'no' answer and an elaboration by one participant who selected the 'yes' answer are supported in literature. According to Nkashe (2015:34,40), there may be rules and procedures governing the investigation and prosecution of crimes in general. However, the investigators and prosecutors use their discretion within the confines of the law to investigate and prosecute the crime. Furthermore, each case is unique and may require a different legal approach from others. Similarly, the guidelines and procedures to investigate and prosecute electricity theft are adapted from criminal law principles and criminal procedures.

Nonetheless, investigation operations within Eskom and municipalities are extensively lagging in implementing the code of practice offered by National Regulatory Services (2014:8-10). Informed by Olaborede and Meintjes-van der Walt (2020:2) and discerning from the contents of this Section, the attainment of fair legal processes mostly depends on the evidence sought and presented to prove the crime. Hence, the following Section 4.6 includes the discussion of evidence for investigating and prosecuting electricity theft.

4.6 EVIDENCE FOR INVESTIGATING AND PROSECUTING ELECTRICITY THEFT

Van Tonder (2013:1) describes evidence as anything that is helpful to prove or disprove a fact in law. The quality of demonstrating evidence depends on the people responsible for finding facts in a particular matter. Evidence provides the probative facts that substantiate the accounts of events, its collection and presentation focus is to attain as accurate basic information as possible and can be in any form or presented at different levels of a legal matter (Pardo, 2015:290).

The basis of this study is on the crime of electricity theft; thus, the premise of evidence for investigating and prosecuting electricity theft is on the criminal perspective. Unlike

the evidence collected in civil matters that seeks to resolve disputes and relationships between private persons, gathering and presenting evidence in criminal matters deals with the rights and responsibilities of individuals as public subjects before the law (South African Law Reform Commission, 2015:15). Maintaining integrity during the collection of evidence relating to electricity theft is crucial to strengthen the chances of successful prosecution of accused at court. As indicated in Section 4.8 *supra*, the persons responsible for handling evidence should maintain the proper custody of evidence. The evidence should be marked and include the date and time of collection or transfer from one handler to another (Gehl & Plecas, 2016:111).

Recognition of criminal evidence should be accommodative of the evolving technological processes that encompasses the production and supply of electricity (Swales, 2018a:2; Smart Energy International, 2018). The consideration of the changing technology does not create the basis to deviate from the legal principles of collecting, processing and presenting evidence in matters relating to electricity theft. Bekink (2017:186) emphasises that the admissibility and relevance of facts placed before court, and the interest of justice are fundamental to the provision of evidence. Section 35(3)(i) of the Constitution permits a right to challenge evidence (South Africa, 1996), hence it is important for persons to be legally conscious when gathering or presenting evidential information relating to electricity theft.

There is no difference between a legal examination of matters relating to electricity theft and matters of all other crimes, because the standard of proof in criminal matters is that evidence provided should be beyond reasonable doubt (Mhlanga, 2016:54). The only distinctive aspects in establishing evidence are the facts pertaining a specific crime hence each crime has unique traits. Therefore, the classes of evidence that distinguish one form of evidence from another are applicable during investigations and prosecutions of electricity theft as they apply in other crimes (Chetty, 2018:55).

There are two classes of evidence; namely, direct evidence and indirect (circumstantial) evidence (Sage Publications, 2017:41). Direct evidence connects to an immediate proof that does not require inferences for the determination of facts. For an example, a witness who observed a crime being committed can provide direct evidence. Conversely, indirect evidence involves establishing proof using probable circumstances and deductions to conclude on a fact. For an example, a witness who

did not see the actual crime event occurring might have seen a suspect entering the crime scene before the crime is committed and leaving the scene immediately after the commission of a crime (Immigration Enforcement, 2020:11-12).

It is discernible from discussions by Mbanjwa (2017:64-65) that people are confessing their involvement to the commission of electricity theft in a manner showing that the conduct of electricity theft is direct or indirect. Some of the people were able to mention themselves as perpetrators who can provide direct evidence, while others provided information usable to draw conclusions that certain individuals are perpetrators of electricity theft.

Evidence regarding electricity theft can take any form of the different types of evidence used in criminal matters. Depending on various perspectives that different authors and sources have about evidence, the types of criminal evidence range from three to twenty in number. Some of the types of evidence are real, documentary, testimonial, demonstrative, digital, technical, expert, exculpatory, forensic, corroborating and derived evidence (Cheng & Nunn, 2019:1101; Ncube, 2015:40; Phiri, 2014:9; Nortjé & Myburgh, 2018:3). Examination of the different types of evidence provide an understanding that they overlap and culminate into four common types of evidence namely real, documentary, testimonial and demonstrative (Brown, 2019:1). The four common types of evidence are described in the next Sub-Sections 4.8.1, 4.8.2, 4.8.3 and 4.8.4 to understand their usefulness and relation to electricity theft investigations and prosecutions.

4.6.1 Real evidence

Real evidence is also known as physical evidence because it encompasses material objects of physical nature that can be examined, assessed, touched and seen when presented as evidence in court (Aschendorf, 2013:39-40). Lee, Palmbach, Primorac and Andelinović (2014:7-8) provide examples of real evidence as weapons, wine or beer or water bottles, cigarette butts and many other physical items found at the scene of crime.

Bashford (2019:72-73) indicates that the tampered energy meters are an example of physical evidence associated with electricity theft. The meters used to steal electricity can be collected by SAPS crime scene experts, secured in the evidence bag and send

for analysis to forensic department. Furthermore, the prosecutors can be consulted for advice on the technicalities that may arise from electricity theft evidence collection during the investigation phase and evidence presentation during the prosecution stage at court (Bashford, 2019:72).

Motlagh, Mohammadrezaei and Hunt (2020:494) express real evidence as the kind of evidence that can be represented in the form of information records generated by the automatic process of computer information systems (CIS). However, the technology generated or computerised information is legally acceptable on condition that it involves the retrieving process that is free from human interference. Van Tonder (2013:23) clarifies that the phrase 'without human intervention or interference' is based on acknowledging that the process of designing and programming computers emanates from the application of human mind. The consideration of evidence obtained from automated computer technology should be that the computer did not require the help of human being to create or generate a report.

Similarly, the energy smart grid involves a reliable and automated computerised system that can generate records for purposes of presenting evidence during criminal investigations and prosecutions of electricity theft (Govindarajan, Meikandasivam & Vijayakumar, 2019:186). When examining the charges relating to electricity theft, the judge who presided in the case of *S v Ndebele and Another* (SS16/2010) [2011] ZAGPJHC 41 accepted the electricity credit vouchers as physical evidence used to determine the guiltiness of the accused. The serial numbers of the credit vouchers were able to assist the investigation and prosecution team to establish that they were linked to stolen vending machines. Although the accused were able to use the vending machines fraudulently to sell electricity, the accused could not amend some of the programmed details such as the serial numbers indicating the sources (vending machines) from which the vouchers were printed. Therefore, it is discernible from this discussion that electricity theft can be proven using real evidence.

4.6.2 Documentary evidence

Brown (2019:2) describes documentary evidence as the kind of evidence presentable in a form of document, mostly comprises of physical evidence and legally requires to be presented based on the best evidence rule. Van Tonder (2013:20) describes the best evidence rule as the principle based on eliminating inaccurate copies and

ascertain the presentation of the most reliable evidence. The examples of documentary evidence are paper documents and computer (electronic) records (Immigration Enforcement, 2020:29).

According to Mufassirin, Hanees and Shafana (2016:123), electricity theft evidence can be adduced in a form of documentary evidence in a criminal court. The documentary evidence that can be used in criminal investigations and prosecutions include paper records and electronic records. Like all other documentary evidence provided in other criminal matters, the paper documentary evidence and electronic evidence relating to electricity theft requires to be tested for authenticity or originality (Swales, 2018a:4). Ndlovu (2014:8-9) guides that the authenticity of the documentary evidence in papers requires to be signed by the author and that the person who signed the paper document must witness during the court proceedings wherein the signed paper document will be presented. The author of the document can be excused to attend a court only if that person is dead, or unfit due to mental condition or bodily condition or is outside the borders of the country and it is not feasible to secure the person's attendance or all the reasonable attempts to find the person have failed (Van Tonder, 2013:4).

The authenticity of the documentary evidence produced electronically and cannot be admissible as real evidence or paper evidence capable of being signed by human, should be presented according to Electronic Communications and Transactions Act, (Act 25 of 2002). Section 13, 14 and 15 of the Electronic Communications and Transactions Act (Act 25 of 2002) indicates that the documentary evidence generated electronically is allowed during criminal investigations and prosecutions provided the evidence meets the requirements of electronic data signature, electronic data original print, and admissibility and evidential weight of data messages. Furthermore, electronic evidence must be assessed to determine if its integrity from the time it was first generated in its final form was not compromised (South Africa, 2002). Therefore, the discussion provides proof that documentary evidence is more pertinent to the investigations and prosecutions of electricity theft.

4.6.3 Testimonial evidence

Testimonial evidence requires that a person provide oral evidential information before court and it is the most common type of evidence applied in criminal trials (Sage

publications, 2017:45). Testimonial evidence is also known as witness evidence and its presentation should in most instances be carried out before the documentary evidence could be presented (Neculcea, 2017:75-76). According to Brown (2019:1), expert evidence forms another type of testimonial evidence because the evidence is verbally provided by witnesses who have exceptional knowledge in a special field. Furthermore, the expert witnesses present the details about the processes and conclusions drawn on the matter under investigation or prosecution.

In the South African legal environment, the cases of *S v Mintoor* 1996(1) SACR 514 (C) and *S v Ndebele and Another* (SS16/2010) [2011] ZAGPJHC 41 are the most notable and relevant to augment that testimonial evidence applies in matters relating to the investigation and prosecution of electricity theft. Testimonial evidence was used together with other forms of evidence led during the trial and the outcomes of both cases were determined with among others the contribution of a testimonial evidence.

4.6.4 Demonstrative evidence

Errickson, Fawcett, Thompson and Campbell (2020:1452) indicate that demonstrative evidence is presented in a form of charts, diagrams, maps and other similar methods. Furthermore, demonstrative evidence is not a real evidence or factual evidence but provide an idea of how actual evidence looks like and helps in corroborating or refuting the evidence mostly presented orally by witnesses in courts. The courts are warned to treat the application of demonstrative evidence with caution, hence according to Baier, Warnet, Payne and Williams (2018:1302) such evidence may influence the unreasonable and impartial decision making in criminal processes. Demonstrative evidence should only be used for clarification purposes; hence it is mostly subjected to less rigorous legal measures (Santee, 2012:109).

O'Brien and Rantis (2012:1) consider visual presentations such as photographs as the form of demonstrative evidence, which is necessary in court trials, to provide the judiciary with better insights of the events under prosecution. During electricity theft investigations and prosecutions, photographs make the most valuable form of evidence because they can be used to reconstruct the crime scene (Czechowski & Kosek, 2016:2; Mokwena, 2012:47). Bashford (2019:73) substantiates that Eskom utilises the SAPS investigation experts to take all sorts of evidence including photographs as demonstrative form of evidence at the scene of crime relating to

electricity theft. Informed by this discussion, it is apparent that demonstrative evidence is applicable during the investigations and prosecutions of electricity theft matters.

There has been an evolution from the delivery of criminal judgements by mere ascertainment of the procedural fairness in evidence collection techniques to the rationality of the legal arguments (Mhlanga, 2016:14). Section 3(1) of Criminal matters amendment Act (Act 18 of 2015) details and prohibit the tampering conduct like the description of evidence determined in electricity theft (South Africa, 2015). The prohibited tampering conduct includes the damaging and destroying of essential infrastructure (including electricity infrastructure). Although the purpose of Criminal matters amendment Act (Act 18 of 2015) is to protect the infrastructure, its application has implication on electricity theft because in most instances theft cannot be realised without interfering, damaging or destroying the infrastructure.

Section 3(2) of the Criminal matters amendment Act (Act 18 of 2015) provides guidance that the collection and presentation of evidence should show that the persons accused of tampering, damaging or destroying energy infrastructure had reasonable knowledge or suspicion about their conduct (South Africa, 2015). Furthermore, the accused persons had reasonable ability to conduct themselves in the same manner diligent and vigilant persons could have conducted themselves under the same circumstances. General knowledge, skill, training and experience that are reasonably expected from accused persons in their positions and they in fact have, are taken into consideration when determining evidential information of electricity theft.

The evidence usable to investigate and prosecute electricity theft relates mostly to physical evidence that is observable in an electrical infrastructure, or detectable by means of cyber methods commonly applied in smart grids. The evidence could be in a form of damaged, interfered or tampered, cut and intercepted network communication or misrepresented consumer profile. The interference of electricity infrastructure or misrepresentation of the customer consumption profile is done to illegally change the accurate data recording or lessen the energy consumption reading (Utility Regulator, 2018:A1-6; Zheng, Wang, Chen & Li, 2017:1).

Electricity theft is an offence that is difficult to prove in the legal fraternity (International Conference on Electricity Distribution (CIRED), 2017:70). Most of the methods used

to steal electricity are technical in nature and require utilisation of the energy technical experts to provide evidence in criminal investigations and prosecutions (Onat, 2018:166).

The participants in Sample A1 (Eskom security personnel) and Sample C (SAPS detectives) were asked the question: “Based on your knowledge, what evidential information is needed in your statements regarding electricity theft cases to have reasonable ground that there is a crime of electricity theft?” Meanwhile, the Sample D participants (NPA prosecutors) were asked: “Based on your knowledge, what evidence should be contained in the statements to prosecute the cases of electricity theft?” All the participants answered the questions, and some provided more than one answer. The participants’ answers are clustered and summarised in Table 4.2 below.

Table 4.2: Participants’ answers on evidential information to believe that electricity theft has occurred and necessary to prosecute the crime

Evidential information necessary to have reasonable belief that electricity theft has occurred	Number of participants in a sample who mentioned an answer
Time when the crime was committed	3 Sample A1, 8 Sample C
Place where crime occurred	1 Sample A1, 4 Sample C
Description of crime	1 Sample A1
Description of events of a crime	2 Sample A1, 6 Sample C
Elements of the crime	2 Sample C
Details/description of suspect/s or persons involved in a crime	1 Sample A1, 7 Sample C
Details of complainant/s or persons reporting the crime	5 Sample C
Details of witnesses	1 Sample A1, 4 Sample C
Description of evidence involved in the crime	2 Sample A1, 3 Sample C
Description of law contravened by commission of crime	1 Sample C
Impact of the crime	2 Sample A1, 2 Sample C
Loss value of the crime	1 Sample A1, 4 Sample C
Description of suspects' benefit to the crime	1 Sample C
Reason/Motive of the crime	Sample A1, 2 Sample C
Purpose of reporting the crime (insurance/prosecution/ etcetera.)	Sample C

Evidential information necessary to have reasonable belief that electricity theft has occurred	Number of participants in a sample who mentioned an answer
Description/state of scene before and after the crime	2 Sample C
Manner of discovering the crime was discovered	1 Sample A1
Details of person/s who discovered the crime	1 Sample A1
Evidential information necessary for prosecution of electricity theft	Number of participants in a sample who mentioned an answer
Time when the crime was committed	3 Sample D
Place where crime occurred	1 Sample D
Elements of the crime	2 Sample D
Description of the crime	2 Sample D
Description of law contravened by commission of crime	1 Sample D
Details/description of suspect/s or persons involved in a crime	1 Sample D
Description of complainant/s or persons reporting the crime	1 Sample D
Details of witnesses	2 Sample D
Impact of a crime	1 Sample D
Loss value of a crime	1 Sample D

(Source: Feedback from the participants)

Table 4.2 above, demonstrates that the answers of Sample A1 and Sample C participants point to various information necessary to believe that electricity theft has occurred. Similarly, the answers of Sample D participants show information necessary for prosecution of the crime. The answers of all participants outline a need to respond to questions seeking to answer what, where, when, who, why and how questions about electricity theft. The way in which all participants responded to the question is aligned to literature which clarifies that an effective police statement is characterised by detailing crime information accurately, completely, holistically, objectively and comprehensively (Viljoen, 2018:2). Van Tonder (2013:1) elucidate that the purpose of information contained in the statement is to prove or refute legal issues presented for prosecution, and the provision of such information is determined by the nature of the

crime and ability of the investigators in identifying and addressing aspects necessary for court prosecution.

4.7 STAKEHOLDERS IN THE INVESTIGATION AND PROSECUTION OF ELECTRICITY THEFT

Stakeholders consist of individuals or groups who can affect or be affected by the objectives of an organisation or project; and can be natural persons or legal persons (Benn, Abratt & O'Leary, 2016:1). The effects of stakeholders on objectives of projects or objectives of projects on stakeholders can be in a positive or negative manner. Electricity theft is among the aspects affecting in a negative manner the effective supply of electricity and dealing with the offence in terms of the laws governing crime requires the involvement of various stakeholders (African Centre of Excellence for Inequality Research (ACEIR), 2020:42). It is crucial for persons dealing with electricity theft matters to identify the stakeholders and their roles in the investigations and prosecutions of electricity theft.

Organisations and individuals that are likely to attain their business goals do not underestimate the importance and influence stakeholders have on the operations of the organisations or business. Derakhshanalavijeh, Turner and Mancini (2019:35) assert that the failure to address the issues raised by stakeholders in an amicable manner could lead to undesirable outcomes. The appreciation of the views and expectations of stakeholders in electricity supply matters is necessary for planning and executing the business operations by considering their interests and needs (Department of Public enterprises, 2019:32; Deloitte Touche Tohmatsu Limited, 2020:2).

Matuleviciene and Stravinskiene (2015:81) indicate that the identification of stakeholders is in most instances described according to various groups, namely internal, external, primary and secondary stakeholders. However, the authors warned that assigning stakeholders to group names does not necessarily indicate influence consistent to that of the assigned group on objectives of organisations or projects. The underpinning aspect when identifying stakeholders is noticeable on the impact they have on the objectives of organisations. Hence, this study deals with the identification and the role of stakeholders relevant to the successful investigations and prosecutions of electricity theft.

The role players in the prevention, investigation and prosecution of electricity theft include government; investigators; intelligence; witness protection; informers, courts, National Prosecuting Authority (NPA); security services; revenue protection; assurance; Customer Network Centres (CNC); Safety, Health, Environment and quality (SHEQ); contractors; energy utilities; municipalities; South African Police Service (SAPS); Community Policing Forum (CPF); community members; traditional leaders; religious leaders; councillors; business; farmers; media and politicians (Chetty, 2018:3, 12, 73). However, the stakeholders' pertinence on curbing electricity using the laws governing crime may differ on the extent of influence each stakeholder has. During the stakeholder engagement in the Northern Cape and Western Cape, Eskom (2020b:1) drew attention to the fact that utilities such as Eskom and municipalities in partnership with communities are key role players to supporting initiatives that encourages stability in electricity supply matters. The inference drawn is that many stakeholders are influential to matters connected to energy theft; however, the influence of some stakeholders is favourable and significant to the successful investigation and prosecution of electricity theft (City Power Johannesburg, 2019:95).

It may not always be possible to regard each of the stakeholders identified as separate from others, because they have interrelated activities or share similar objectives. For an example: government is a broad stakeholder consisting of local government (municipalities), SAPS, courts and other departments. The decisions of government and activities of communities are in most instances influenced by politicians. Another example is that of investigators, intelligence officers, witness protection officials and security services who may differ in their roles embedded in the functions of police or law enforcement institutions.

Guided by (City Power Johannesburg, 2019:95) and to refrain from superfluous identification of stakeholders; the stakeholders were identified into clusters (according to interrelated roles) and direct relevance to the investigation and prosecution of electricity theft. The relevant stakeholders are law enforcement (police), prosecutors, electricity utilities (Eskom and municipalities) and community members. The roles of the identified stakeholders and their effect in the investigation and prosecution of electricity theft are outlined in the following Sub-Sections 4.7.1 to 4.7.4.

4.7.1 Law Enforcement (Police)

The police are required to uphold the law of the country they serve when performing their duties (Kusumawati et al., 2020:2494). Kusumawati, Atmadja, Hasanah and Cahyati (2020:2496) indicate that the role of law enforcement is dynamic and is realised when there is a need to secure the social welfare and social justice by applying the existing legal principles. To recognise the significance of police role in a society depends on the various settings, perceptions and beliefs of people on police functions (Manning, 2014:1). The role of police generally applies to all crime activities and can be adapted to specific crimes (Chetty, 2018:3-4; Islam, 2019:48). The protection of the electricity equipment is not excluded in the roles of protecting the property by police as entrenched in the Constitution of the Republic of South Africa Act (Act 108 of 1996) and effected in the form of responsibilities of police members as in Section 13 of Police Service Act (Act 68 Of 1995) (South Africa, 1995; South Africa, 1996).

Law enforcement encompasses a variety of duties that relates to security, prevention, investigations and intelligence functions (United Nations Office on Drugs and Crime (UNODC), 2011:5). The police functionaries are established in all spheres of government; namely, national, provincial and local government as informed by Section 205(1) and Section 206(7) of the Constitution of the Republic of South Africa Act (Act 108 of 1996), and Section 64 of the South African Police Service Act (Act 68 of 1995) (South Africa, 1995; South Africa, 1996). Hence, the South African Police Service (SAPS) is operating across all the spheres of government and metro police (municipal police) is limited to municipal jurisdiction.

Law enforcement institutions are helpful to enforce the laws governing electricity theft and investigate energy theft related offences (Depuru, Wang & Devabhaktuni, 2011:1013-1014). The role of police in the investigation and prosecution of crime (electricity theft) as entrenched in Section 205(3) of the Constitution of the Republic of South Africa Act (Act 108 of 1996) (South Africa, 1996) encompasses the following duties: prevent, combat and investigate crime; maintain public order; protect and secure the inhabitants of the republic and their property; and uphold and enforce the law. Arisukwu, Igbolekwu, Oye, Oyeyipo, Asamu, Rasak and Oyekola (2020:1) regards the role played by law enforcement in the investigation of crime as pivotal to

other functions of the police such as arresting perpetrators, enforcing the law, preventing and investigating the crimes.

The role of police (SAPS) in the criminal justice system is critical because it influences processes in the administration of justice (Department of Justice & Constitutional Development, 2016:75). According to Agirre, Bergsmo, De Smet and Stahn (2020:2), the role of police in the investigations of any crime (including electricity theft) precede the activities of prosecuting that crime at court, and that manifests the significant influence the police role has on the prosecution outcome. Among the roles of law enforcement personnel in the investigation and prosecution of electricity theft, is consulting with the prosecutors on the matters related to the case under investigation (UNODC, 2014:15).

4.7.2 Prosecutors

There are various court functionaries' instrumental in the administration of justice and upholding the rule of law. The functionaries include the prosecutors, magistrates or judges and clerks of court (Solomon, 2015:427). The focus in this Sub-Section is on prosecutors (among other court functionaries), because their role is immediate and pivotal to the investigation and prosecution of crime (includes electricity theft). The existence of prosecutors is premised on chapter 8 of the Constitution of the Republic of South Africa Act (Act 108 of 1996) (South Africa, 1996), which deals with the courts and administration of justice. Section 179(2) of the Constitution of the Republic of South Africa Act (Act 108 of 1996) (South Africa, 1996), Section 25(1) of the National Prosecuting Authority Act (Act 32 of 1998) (South Africa, 1998) and Section 4 of the Criminal Procedure Act (Act 51 of 1977) (South Africa, 1977) give prosecutors the power to act on behalf of the state by instituting criminal proceedings and carrying out functions necessary to establishment of criminal proceedings.

Broughton (2020:3) presents prosecutors as essential actors in the criminal justice system, who are empowered and authorised by the law to perform prosecution duties. According to Manning (2014:9-10), from the time a crime is reported to the police for investigation it becomes apparent that the intention of reporters is to have their cases proceed to prosecution. Among the roles of prosecutors is to act on behalf of the complainant and state on criminal matters (including electricity theft) (Broughton, 2020:3-4). Prosecutors serves as wardens in the investigation and prosecution of

electricity theft because they apply legal discretion to observe, direct, pursue and promote justice in the interest of persons whom their legal rights are deemed to have been encroached (Schönreich, 2014:1).

Swanepoel and Meiring (2018:453) reflect on the remarkable roles of prosecutors that are pertinent to the investigation and prosecution of electricity theft as follows:

- Evaluate the evidence of crime;
- Preserve the evidence collected during investigation of crime;
- Protect the rights of victims and offenders; and
- Prove the crime beyond reasonable doubt.

The prosecution roles are indispensable and useful in enhancing the utilities practices to curb electricity theft, hence Mujuzi (2020:79) evaluated the possibility of a need to empower utilities to conduct private prosecution. The prosecution teams or individuals are known to work closely with the crime investigators and advise them on legal ways to close the gaps and strengthen the prospects of convicting crimes (including energy theft) (Kusumawati et al., 2020:2496). Part of the role of prosecutors is the duty to interact and consult with other participants involved in the entire court processes. The participants include general police, magistrates or judges and legal practitioners (UNODC, 2014:39).

According to Schönreich (2014:1), it is imperative to have prosecutors in the criminal justice system because they assess whether a criminal case is eligible to be presented in court. On receipt of an electricity theft case from the police, the prosecutors analyse it as informed by legal protocols and evidence presented, and thereafter decide on whether to prosecute, decline to prosecute or require further investigation (Du Toit & Ferreira, 2015:1507; Swanepoel & Meiring, 2018:453). Upon satisfaction that a particular conduct conforms to a crime, the prosecutors perform a role to prove a criminal case against the accused persons beyond a reasonable doubt (Grant, 2018:21).

During a criminal trial, the role of a prosecutor is to lead and examine evidence (Nordier, 2020:8). Mutingh and Redpath (2020:10) consider the role of prosecutors beyond leading and examining evidence during a criminal trial, to playing a crucial role

in recovering the losses incurred because of the crime tried in court. The role of prosecuting electricity theft is underscored by Mujuzi (2020:81), who clarifies that the contradicting court verdicts impairing the trial outcomes of electricity theft cases do not necessarily mean that the prosecution of those cases was not effective but may relate to lack of a clearly defined statutory offence of electricity theft.

4.7.3 Electricity Utilities

Electricity utilities are organisations responsible for generating, distributing and supplying electricity to communities. As per discussion in Sub-Section 3.2.4.2, utilities are established and regulated in terms of laws such as National Energy Act (Act 34 of 2008) (South Africa, 2008) and Electricity Regulation Act (Act 4 of 2006) (South Africa, 2006). The utilities can be under government or private ownership (Department of Energy, 2017:13). It is demonstrated in Section 1.1 (chapter 1 of this study) that South Africa has three types of electricity utilities namely Eskom, municipalities and Independent Power Producers (IPPs).

The South African government owns both Eskom and municipalities. In comparison to municipalities, Eskom is generating and supplying energy to a significant number (90%) of public consumers (Ratshomo & Nembahe, 2018:18). Private individuals own IPPs and their role of generating and supplying electricity is mainly for the commercial and business sector. The generation and supply of electricity to the public by IPPs is limited and mostly depends on agreements signed with the government to supplement Eskom and municipalities (Nel, 2018:38-39; Green Cape, 2020:4). Electricity theft affects IPPs on a less significant scale as compared to Eskom and municipalities, because IPPs are mostly involved in generating and feeding electricity to the grid than distributing directly to the public (Jamil, 2013:269). Hence, the focus of this discussion is on Eskom and municipalities as electricity utilities that dominate a significant scale of energy supply services and are much prone to the effects of electricity theft.

4.7.3.1 Eskom

Eskom has sub-components pivotal to the role of protecting energy and securing revenue and investigating and prosecuting electricity theft. The components include Energy Protection -responsible for auditing illegal activities on Eskom network, Energy Trading-ensures that the energy produced and used result in revenue, Customer Services-maximise productive interaction with customers, Operations and

Maintenance (O&M)-ensures that the energy equipment is effective and Security Investigations -protect the Eskom assets and investigate crimes against the utility (Eskom, 2020b:4). However, an indication by Eskom (2019c:45) is that there is lack of synergy among various Eskom components, processes and procedures established to protect energy against theft.

The incoherent nature of operations may not be useful even if Eskom employs advance approaches of investigating and prosecuting electricity theft, and that may not be useful to avert the substantial energy losses incurred by virtue of the huge customer base served by the utility (Department of Energy, 2019:10). Mujuzi (2020:78) points out that Eskom lacks effective ways to criminally investigate and prosecute electricity theft because of, among other reasons, a lack of a statutory law prohibiting in clear terms the conduct of electricity theft in South Africa.

4.7.3.2 Municipalities

Municipalities are service utilities capable of directing the will of politicians to help in solving problems such as electricity theft (Baker & Phillips, 2019:179-180). Baker and Phillips (2019:178) describe municipalities as spheres of government operating in the proximity of community and holding an immediate responsibility of ensuring that the community is receiving basic services, including electricity. In the process of ensuring electricity services, municipalities have a responsibility to protect the electricity against theft, which is realised by performing audits or investigations that may ultimately lead to prosecutions (Jiyane-Tshikomba, 2019:14-15).

The crucial role by municipalities is to augment the processes and procedures useful to dealing with electricity theft, by creating and administering electricity by-laws. The electricity by-laws are useful in guiding electricity theft investigations and prosecutions (Freedman, 2014:568-569; Phalatse, 2020:19). The Ba-Phalaborwa Model Electricity Supply by-laws 2016/2017 as discussed in Sub-Section 4.6.6 *supra*, Greater Tzaneen Municipality electricity by-laws (Greater Tzaneen Municipality, 2013) which contains similar provisions as Ba-Phalaborwa Municipality Model electricity by-laws and other municipal electricity by-laws in South Africa provide legal guidance on the way in which the roles of municipalities in the investigations and prosecutions of electricity theft should be executed.

4.7.4 Community members

Cobigo, Martin and Mcheimech (2016:195) depict community as a group comprising of individuals, families, businesses and organisations that share common interests, characteristics and experiences. Community serves as a focal point capable of great influence on the decisions and activities of all other stakeholders and affected by the activities of stakeholders (Laybourn-Langton, 2016:5). The considerable command and advocacy possessed by community is necessary and imperative to criminal matters such as prevention, reporting, investigations and prosecutions of crimes including electricity theft (Arisukwu, Igbolekwu, Oye, Oyeyipo, Asamu, Rasak & Oyekola, 2020:2).

Ikejamba and Schuur (2018:9) indicate that influential community members, community leaders or/and politicians can either be helpful in curbing electricity theft or destructive by promoting electricity theft, and that depends on the electricity supply related interests pursued by the influential community individuals or groups. In an undesirable situation, the influential community members such as politicians can treat energy utilities as battlegrounds for political power, social needs and economic needs. These influential community members may overlook the electricity needs of those communities that are not aligned to their views and prioritise areas of their political interest. In turn, the ignored communities may resort to vandalism and electricity theft (Baker & Phillips, 2019:183; Golden & Min, 2012:31).

Joint effort from communities and utilities is essential to combatting electricity theft and creating stable supply of energy. The involvement of community in various initiatives not limited to investigations and prosecutions of electricity theft is in most instances motivated by a mutual benefit from all the parties involved. The community members would support energy utilities in the same manner they support various organisations or stakeholders that are considerate of community needs. However, utilities that are responsible for supplying electricity often receive blame that they fail to involve communities when making decisions affecting the communities. According to Botshe (2016:75), members of community may feel that the electricity supply projects initiated in their communities do not improve their livelihood, because most of these projects financially benefit people outside the areas where the projects are taking place. The

following Figure 4.1 demonstrate the clustering of the stakeholders relevant to the investigation and prosecution of electricity theft.

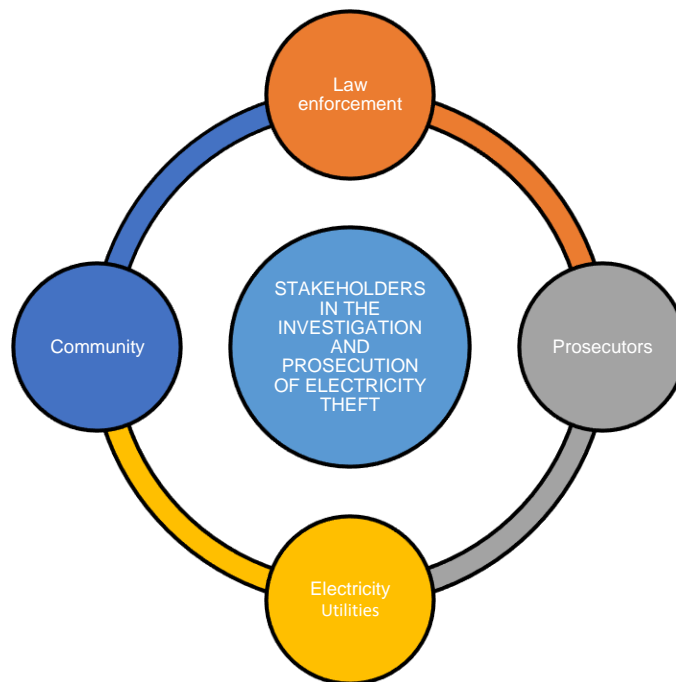


Figure 4.1: The stakeholders in the investigation and prosecution of electricity theft
(Source: Compiled by the researcher)

Musungwini (2016:55) points out that the provision of information by the public (as a stakeholder) is pivotal to the effectiveness of curbing electricity theft by other stakeholders relevant to the investigation and prosecution of the crime. The information provided can be useful to courts as they are involved in the interpretation of laws governing electricity theft and other laws of South Africa (Guided by Academy of International Humanitarian Law and Human Rights, 2019:3).

The participants from Sample A1 (Eskom security personnel) and Sample C (SAPS detectives) were asked questions:

- “In your opinion, who are the stakeholders relevant to the successful investigation of electricity theft cases?” and
- “What support do you need from the stakeholders you mentioned above?”

Similarly, Sample D (NPA prosecutors) participants were asked questions

- “In your opinion, who are the stakeholders relevant to the successful prosecution of electricity theft cases?”
- “What support do you need from the stakeholders you mentioned above?” The questions were open-ended, and the participants were not provided with answer options to select from.

All (19) the participants answered the questions, and some provided more than one answer that may not tally with the number of participants. The answers by Sample A1 participants indicating relevant stakeholders in the investigation of electricity theft include (6 participants) from Operations and Management; (6 participants) from energy protection; (4 participants) from customer services; (4 participants) from security, investigations and intelligence; (1 participant) from credit management; (1 participant) from legal services; (2 participants) from police; as well as (2 participants) from prosecutors.

The Sample C participants mentioned police (9 participants), prosecutors (6 participants), electricity utilities employees (10 participants), community members (7 participants), and councilors (1 participant). The Sample D participants mentioned electricity utilities (3 participants), police (3 participants), electrical engineering experts (2 participants), witnesses (2 participants), prosecutors (1 participant), magistrates (1 participant) and community members (1 participant) as relevant stakeholders to the prosecution of electricity theft. Some of the participants answers on the question “what support do you need from the stakeholders you mentioned above?” have been clustered to reflect one answer.

The participants’ answers *supra* demonstrate that majority participants regard police, prosecutors, electricity utilities’ employees and community members as relevant stakeholders to investigation and prosecution of electricity theft. Notably, from all the participants who mentioned utilities’ employees as stakeholders, majority participants from Sample A1 point to various departments in Eskom (internal stakeholders), while Sample C and Sample D answers reflects an inclusive mention of utilities’ employees. An indication is that the participants mentioning of stakeholders is influenced by different circumstances and the extent of experience or interaction they had with the stakeholders (Matuleviciene & Stravinskiene, 2015:81). Nonetheless, the answers of

all participants are in line with literature in that Agirre et al. (2020:2), Arusukwu et al. (2020:1), Chetty (2018:12) and Schönteich (2014:1) inclusively mentioned utilities personnel, police, prosecutors, community members and electricity experts as relevant stakeholders to investigation and prosecution of electricity theft.

The answers of majority participants reflect that the provision of evidence in different forms (oral, written and physical) is the main support required from stakeholders in the investigation and prosecution of electricity theft. Only one Sample A1 participant provided an answer which does not point to any manner of proving a case or supporting evidence. As quoted verbatim, the Sample A1 participant's response is:

"To educate [the] community about the dangers of electricity theft".

Despite that the answer is not incorrect, it is, however, not relevant to supporting the investigation or prosecution of electricity theft. The responses of most participants are in tandem with dominant literature perspectives in that they demonstrate police and prosecutors as pivotal to collecting, facilitating, processing and presenting evidence for court purposes. Moreover, the participants' responses are indicative of the requirement for the employees of utilities and community members to support the investigations and prosecutions of electricity theft with evidence and testimony (Broughton, 2020:3; Eskom, 2020c:1; Swanepoel & Mering, 2018:453).

4.8 SUMMARY

This chapter deliberated on the interpretation of electricity theft in relation to laws governing the crime in South Africa. The focus is on the criminal elements that constitute electricity theft, commonly reported incidents for purpose of investigation and prosecution of the crime, relevant statutes and their applicability to the crime, stakeholders in the investigation and prosecution of the crime and their pertinence to criminal processes aimed to deal with the crime, guidelines and evidence for investigating and prosecuting the crime.

The legality of electricity theft is disputable because there is no clearly defined statute describing electricity theft as a crime. Alternative legislations created to deal with other aspects relating to electricity theft or court decisions are relied upon to legally hold accountable persons involved in the crime. Electricity theft involves voluntary and intentional human conduct of appropriating the characteristics attached to the

production of electricity, and it is an unlawful conduct encroaching and depriving the utilities ownership of the produced energy. Persons involved in the commission of electricity theft displays an attitude that can be tested for culpability or blameful state of mind to commit the crime. All elements of electricity theft are to be attained to fulfil that a person has committed the crime.

Reporting of electricity theft form basis of having an improved interpretation of electricity theft phenomenon because it provides knowledge on the extent of the crime. There are low reports of electricity theft albeit the detrimental effects the crime has on utilities and public. Many factors such as poor data handling, public's lack of will to report and resource constraints contribute to insufficient reports of electricity theft. Common cases reported for purpose of investigation and prosecution are of tampering with electrical infrastructure whereas vending fraud and billing irregularities are the least reported forms of electricity theft. Electricity theft is a phenomenon causing distress to South Africa and major parts of the world; therefore, it is not limited to Limpopo Province. Disposition of electricity theft incidents is complicated and influenced by dynamic societal factors. Notably, electricity theft is observable in areas affected by socio-economic problems such as poverty, densely populated and rural settings.

Lack of clearly defined statutes necessary to hold accountable perpetrators of electricity theft contribute to poor understanding of the crime, and that may lead to ineffective investigation and prosecution of the crime. The legal gaps in matters of electricity theft limit actors in the South African Criminal Justice System to deal with the crime using alternative legislations and decided court judgements, and that may not always be helpful to successfully prosecute the crime. In addition, there is a need for guidelines to direct sound and just legal process in the investigation of electricity theft. Despite National Regulator Services provision of guidelines to investigate and audit electricity irregularities, the guidelines are not comprehensive on dealing with electricity theft criminal investigation and prosecution. Hence each case of electricity theft is unique and may require investigators and prosecutors' discretion within the confines of the law.

Electricity theft evidence can take any form from real, documentary, testimonial and demonstrative evidence. Like other crimes, the standard to prove electricity theft is not

easy in that the evidential processes are premised on criminal procedures and may require the support from stakeholders. There are many stakeholders that can play a role in the investigation and prosecution of electricity theft. Despite other forms of support, stakeholders such as police, prosecutors, utilities' employees and community members are common to supporting with securing and presenting evidence at court.

CHAPTER 5: DYNAMICS OF REPORTING, INVESTIGATING AND PROSECUTING ELECTRICITY THEFT

5.1 INTRODUCTION

Examining the dynamics likely to influence the way electricity theft is dealt with in criminal processes is crucial as understanding the dynamics affecting any other crime. According to Niu, Elsisy, Derzsy and Szymanski (2019:2), an acquisition of knowledge on various dimensions about a crime serves as a basic tool to deter and react to the crime.

The importance of understanding crime dynamics is prompted by having knowledge that various changes ranging from social conditions to governance have influence on occurrences and solutions of different crimes (Rosenfeld & Weisburd, 2016:329). The research objective namely 'to explore the dynamics of reporting, investigating and prosecuting electricity theft' (in Section 1.4 of this study) is fundamental to this chapter. Considering that dynamic situations are multifaceted; the focus and deliberation of this chapter is premised on the dynamics pertinent to attaining criminal liability and they are reporting, investigating and prosecuting of electricity theft. Hence, the examination of the dynamics influencing criminal processes in electricity theft matters will be guided by basic criminal procedures and processes.

This deliberation in this chapter is formulated on studying the extent of electricity theft in Limpopo Province; and the dynamics of investigating and prosecuting electricity theft. The extent of electricity theft is synthesised into an understanding of hot spots areas, reporting trends and reporting system utilised by energy electricity utilities and law enforcement. In addition to discussion on the dynamics, the partnership of investigating and prosecuting electricity theft will also be examined in this chapter. Therefore, the extent of electricity theft is elaborated in the following Section 5.2.

5.2 THE EXTENT OF ELECTRICITY THEFT IN LIMPOPO PROVINCE

Determining the extent of a crime is among the critical aspects useful to augment an understanding of a particular crime (Wang & Zhang, 2020:339). Similarly, understanding the magnitude of electricity theft incidents occurring in a particular area is useful in providing workable and reasonable measures to curb the crime. Hence,

Eskom and municipalities recognise the importance of encouraging communities to report the crime in their efforts to curb electricity theft (Eskom, 2016b:8; Shokoya & Raji, 2019a:98).

The magnitude of electricity theft is highlighted in Section 1.1 (Chapter 1 of this study) in that the discussion indicates that there is considerable number of electricity theft incidents affecting utilities, and further provides indication that the municipalities are contributing two third of losses associated to electricity theft. The fact that Limpopo Province was counted among the 6 (six) provinces that showed concerning trends of electricity theft, is an indication that the province has enormous number of electricity theft incidents that cannot be ignored by Eskom National Office (Eskom, 2019a:12).

The exasperating incidents of electricity theft propelled Eskom to buy public cooperation by exercising clemency in situations that required stringent measures to ascertain legitimate use of electricity. Between the 15th of October and 31st of December 2018, Eskom offered customers an opportunity to report their illegal acquisition of electricity to get a 50% discount of the total amount of fine and without having to pay for electricity already consumed using illegal methods (Eskom, 2019a:12).

Various sources and authors across different boundaries ranging from global to local perspective, described electricity theft is expansive in nature (Mercury, 2016; Shokoya & Raji, 2019a; Eskom, 2016b). Mercury (2016:4) counts electricity theft among the top five crimes bordering the world and ranked it as the third highest following illegal bank account debits and car theft. Shokoya and Raji (2019a:96) explain the extent of electricity theft departing from the world perspective to South African context. The authors articulated that electricity theft causes severe and extensive damage to Eskom and municipalities' revenue. Eskom revealed the extent of electricity theft at the level of provinces, including Limpopo Province. According to Eskom initiative namely Operation Khanyisa, Limpopo is among the top four provinces showing significant levels of electricity theft (Eskom, 2016b:1).

Sample A1 participants comprising of six (6) Eskom security personnel (n=6, 38%) and Sample C participants constituting ten (10) SAPS detectives (n=10, 62%) were asked the following question:

- “In your own opinion, how much likely is the crime of “electricity theft” to be committed within your work precinct?”

The participants were required to answer the question asked by selecting the most relevant among five (5) options namely likely, less-likely, likely, more-likely and most-likely.

All 16 participants (n=16, 100%) from both Sample A1 and Sample C have answered the question asked. There is no participant from both samples who selected ‘not likely’ or ‘less likely’. Three (3) (n=3, 19%) participants from Sample A selected ‘likely’ option and the other three (3) participants (n=3, 19%) from the same sample chose ‘more likely’ option. Five (5) participants from Sample C (n=5, 31%) opted ‘more likely’ option, whereas the other five (5) participants (n=5, 31%) of the same sample chose ‘most likely’ option. The combined number of selected options from participants of both Sample A1 and Sample C is 16 (n=16, 100%), and that is an indication that each participant selected one option. The answers of both Sample A1 and Sample C are represented in Figure 5.1 below.

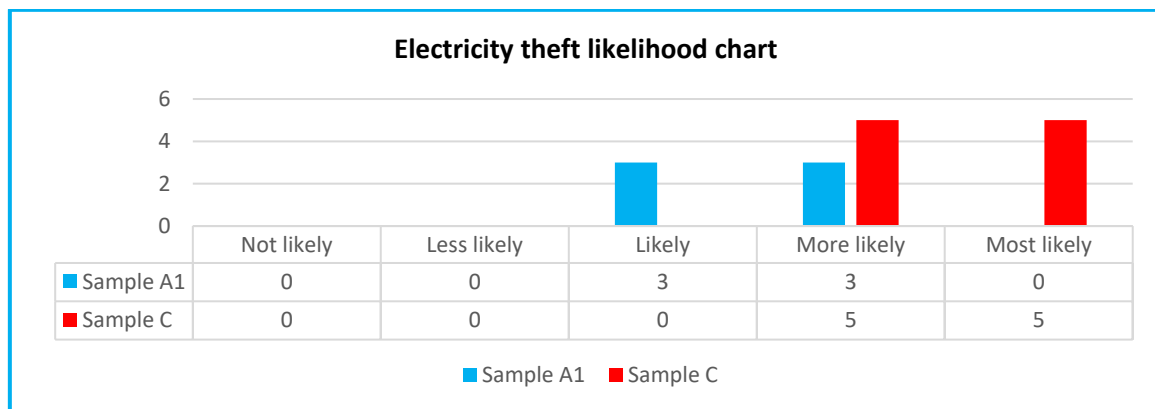


Figure 5.1: Aspects depicting the extent of electricity theft

(Source: Feedback from the participants)

Figure 5.1 indicates that most of the Sample A1 and Sample C participants combined believe that the likelihood of electricity theft being committed in their work places is significantly high. The belief of the participants is underpinned by their selection of likely, more-likely and most-likely answer options, while omitting not-likely and less-likely options. Notably, the answers of Sample C participants provide an escalated

perception about the extent of electricity theft as compared to Sample A1 whom their working environment and duties reasonably expose them to most theft incidents.

In comparison to the responses of the 16 participants from Sample A1 and Sample C, it is apparent that their perception of the extent of electricity theft align to the literature as hinted in this section *supra*. It is drawn from Mercury (2016:4), Shokoya and Raji (2019b:96), and Eskom (2016b:1) that the likelihood of electricity theft is huge in Limpopo, South Africa and the world. Furthermore, the high levels of electricity theft in Limpopo and South Africa have been mentioned in Sections 1.1. and 1.2 of Chapter 1 in this study (Saini, 2017:26; Moshoeu, 2017:13; Eskom, 2016b:1).

The appreciation of electricity theft expansive levels indicated in the literature and the participants' answers requires a further insight on how the levels are determined. According to Curiel, Delmar and Bishop (2018:776), establishing the extent of a crime is multifaceted and require various approaches. Hence, it is crucial to delve into aspects useful to understand the extent of electricity theft in Limpopo Province namely hot spot areas, reporting trends and reporting system as depicted in the Figure 5.2 and discussed in the next Sub Sections 5.2.1, 5.2.2 and 5.2.3 below.

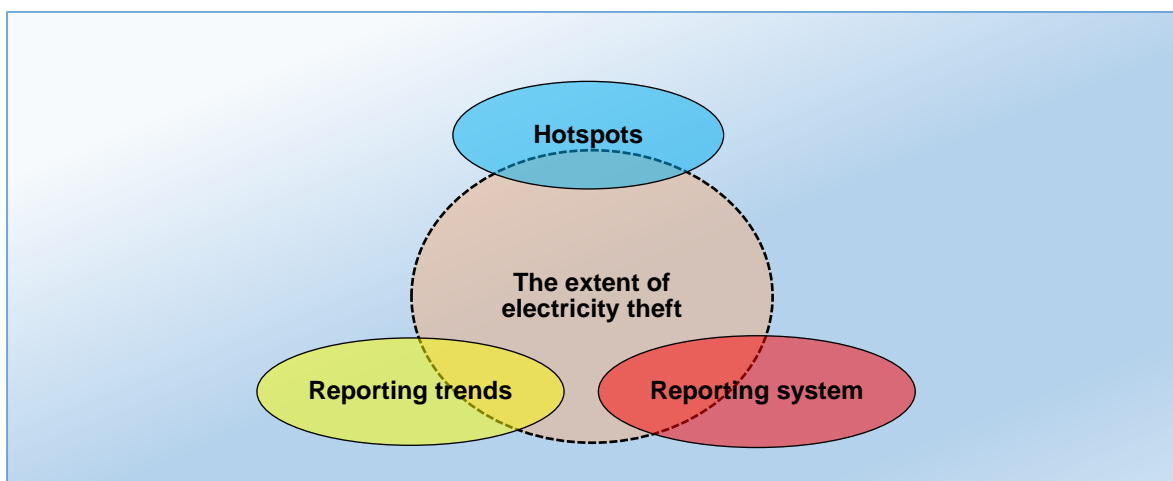


Figure 5.2: Hot spot areas, reporting trends and reporting system of electricity theft
(Source: Compiled by the researcher)

5.2.1 Hotspot areas of electricity theft incidents in Limpopo Province

Monyeki (2021:102) manifests that establishing the enormity of a phenomenon can be attained using various measures such as studying the recurrence and concentration of incidents in certain areas or hot spots. Incident hot spot analysis is among the

effective and organised methods of establishing the extent of a crime by studying its pattern in relation to time and space of occurrence (Hajela, Chawla & Rasool, 2021:1058). A special attention is drawn to the fact that irrespective of a smaller size a hotspot zone is, the culmination of crime incidents from hot spot clusters contribute to a substantial number of crime incidents in a larger geographical area (Telep & Hibdon, 2019:4).

In the same way, utilities such as Eskom and municipalities use the information obtained from studying the buying and consumption patterns of consumers (customers and non-customers) in certain smaller areas supplied by a particular energy transformer, to determine the probability and extent of electricity theft (Mazibuko, 2015:9; Eskom, 2020b:11). During the year 2019, Limpopo recorded 304 000 customers who were found to be using electricity without paying for it. Most of the customers were from Mopani and Sekhukhune districts in Limpopo Province, which is an indication that Eskom was guided by its analysis of electricity consumption patterns in questionable areas. The recorded number of customers not paying for the usage of electricity excluded the non-customers who do not have an account with Eskom (Eskom, 2020b:11).

To curb the identified electricity theft incidents at certain areas of interest; Eskom solicited support from various stakeholders such as municipalities, police, media, communities and traditional leaders to assist in influencing and enforcing legitimate use of electricity by consumers. The involvement of stakeholders emanated from the Eskom National programme Operation-Tima, which aimed at protecting the electricity equipment and preventing massive energy losses resulting from illegal operations such as electricity theft (Eskom, 2020a:14; Capricorn FM, 2021). The problem of electricity theft in Limpopo Province is spread across all the five districts namely Vhembe, Capricorn, Mopani, Waterberg and Greater Sekhukhune.

However, the outcome of Operation Tima in Limpopo Province indicates that in a total of 322 illegal connections removed across all the districts in the province, 242 (75% of 322) were from municipal villages resorting to Greater Tzaneen municipality in Mopani District and 25% was attributed to the other four (4) districts (Eskom, 2020e:2). The Eskom approach was to first deal with the areas that have been identified as possible electricity theft hot spots. The electricity theft hotspot areas identified in Limpopo

Province during Operation Tima were residential places and businesses in the Greater Tzaneen (Mopani District) areas of Botlokwa, Lenyenye, Nkowankowa, Mokgolobotho, Relela, Rasebalane and Motupa (Eskom, 2020a:13-15).

Operation Tima was preceded by other initiatives to curb illegal use of electricity theft such as 'Operation Khanyisa' and 'Come clean' campaigns (Eskom, 2016a:10; Eskom, 2019d:13). The campaigns were targeting areas that have shown high concentration of electricity theft related incidents. According to Khwela (2019:22), Limpopo Province was also counted among the provinces which were identified as having areas susceptible to electricity theft incidents. Notwithstanding that electricity theft hot spots are spread across various districts in Limpopo Province, the areas in Mopani district were the most notable in almost all the operations to curb electricity theft initiated by Eskom.

GaKgapanne, Rasewana, Moshage, Mavele and Nkambako Villages in the Greater Letaba municipality (in Mopani District) were among the areas targeted by Eskom during Operation Khanyisa, Operation come clean and Operation Tima (Eskom, 2016b:3; Herald, 2018:np). Other areas which were identified by Eskom as electricity theft hotspots in the Mopani district include Namakgale and Lulekani in the Ba-Phalaborwa municipality (Eskom, 2019d:1; Sibuyi, 2021:np).

The Samples A1 and Sample C were asked the following question:

- “From which specific areas, villages, suburbs or towns within your working precinct you often receive high number of electricity theft cases for investigation?” and to list up to a maximum of five areas.

On the other hand, the Sample D participants were asked the following question:

- “From which 5 areas, villages, suburbs or towns within your working precinct do you receive high number of electricity theft reports for prosecution or decision?” List up to a maximum of five areas.

In this regard, six (6) participants in Sample A1 and ten (10) participants in Sample C were required to answer about reports received for investigation purposes, whereas three (3) Sample D participants were required to answer for cases received for

prosecution or decision purposes. On that note, only 17 participants out of a total of 19 participants responded to the question. From those who answered the question, only 9 participants were each able to mention 5 areas. The other answers of the other participants ranged between one (1) and four (4) areas. Two (2) participants from Sample C and D did not provide an answer and their non-response added to the 78 total count of responses.

The actual number of responses from Sample A1, C and D participants is 76 (78 minus 2 who did not respond). The areas forming part of participants responses are Blinkwater, Dan Village, GaKgapane, Giyani (no specific sections), Giyani A to D, Haenertsburg, Ha-Ribungwani, Hlanganani, Hluphekani, Informal settlement, Khobo, Kurhula, Kurhuleni, Lenyenye, Lephepane, Letsitele, Lulekani, Lusaka, Majeje, Majosi, Makhasa, Malamulele, Mariveni, Masakona, Mokgoba, Mokgolobotho, Mokwakwaila, Nkomanini, Nkomo, Nkuzana, Nwamita, Patenenge, Pondo, Rhulani, Selwane, Talana Hostel, Tambo, Tiyani and Tzaneen areas (no specific village or suburb). The participants' responses are represented in Table 5.1 below.

Table 5.1: Participant's' answers indicating areas or villages or suburbs or towns from which high number of "electricity theft" cases are received

SAMPLES INTERVIEW	ANSWERS FROM PARTICIPANTS																															Sub Total																		
	Blinkwater	Dan village	GaKgapane	Giyani	Giyani A	Giyani B	Giyani C	Giyani D	Haenertsburg	Ha-Ribungwani	Hlanganani	Hluphekani	Informal settlement	Khobo	Kurhula	Kurhuleni	Lenyenye	Lephepane	Letsitele	Lulekani	Lusaka	Majeje	Majosi	Makhasa	Malamulele	Mariveni	Masakona	Mokgoba	Mokgolobotho	Mokwakwaila	Nkomanini		Nkomo	Nkuzana	No response	Nondweni	Nwamita	Patenenge	Pondo	Rhulani	Selwane	Senwamokgope	Shawela	Talana Hostel	Tambo	Tiyani	Tzaneen areas			
A1	0	0	2	1	1	1	1	1	0	0	1	0	0	0	0	0	1	0	1	2	0	0	0	0	1	0	0	1	0	1	0	0	0	2	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	21
C	1	2	0	2	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	2	1	1	1	1	1	1	1	1	0	1	0	1	1	1	2	1	1	0	1	0	1	0	1	0	1	2	1	2	0	44
D	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	1	1	1	0	0	1	0	1	0	0	0	1	0	0	0	1	11
Total																															78																			

(Source: Feedback from the participants)

Table 5.1 above depicts participants' responses indicating that Sample C and Sample A1 participants respectively provided the greatest number of areas that are contributory to electricity theft in the Mopani region (Limpopo Province). The combined answers from Samples A1, C and D indicate that Lulekani and Nkowankowa were each listed (5 times) more than other areas which were mentioned by the participants. The multiple mentioning of the two areas, position Lulekani and Nkowankowa at the top of the areas forming part of participants list. Other areas that have been identified

as hotspot zones by not less than two (2) participants from Samples A1, C and D are Dan village, Giyani, GaKgapane, Nondweni, Talana Hostel, Mokgolobotho and Tiyani. The areas identified by these three (3) Samples A1, C and D as hotspots zones in the Mopani region (Limpopo Province) are represented in Figure 5.3 below.

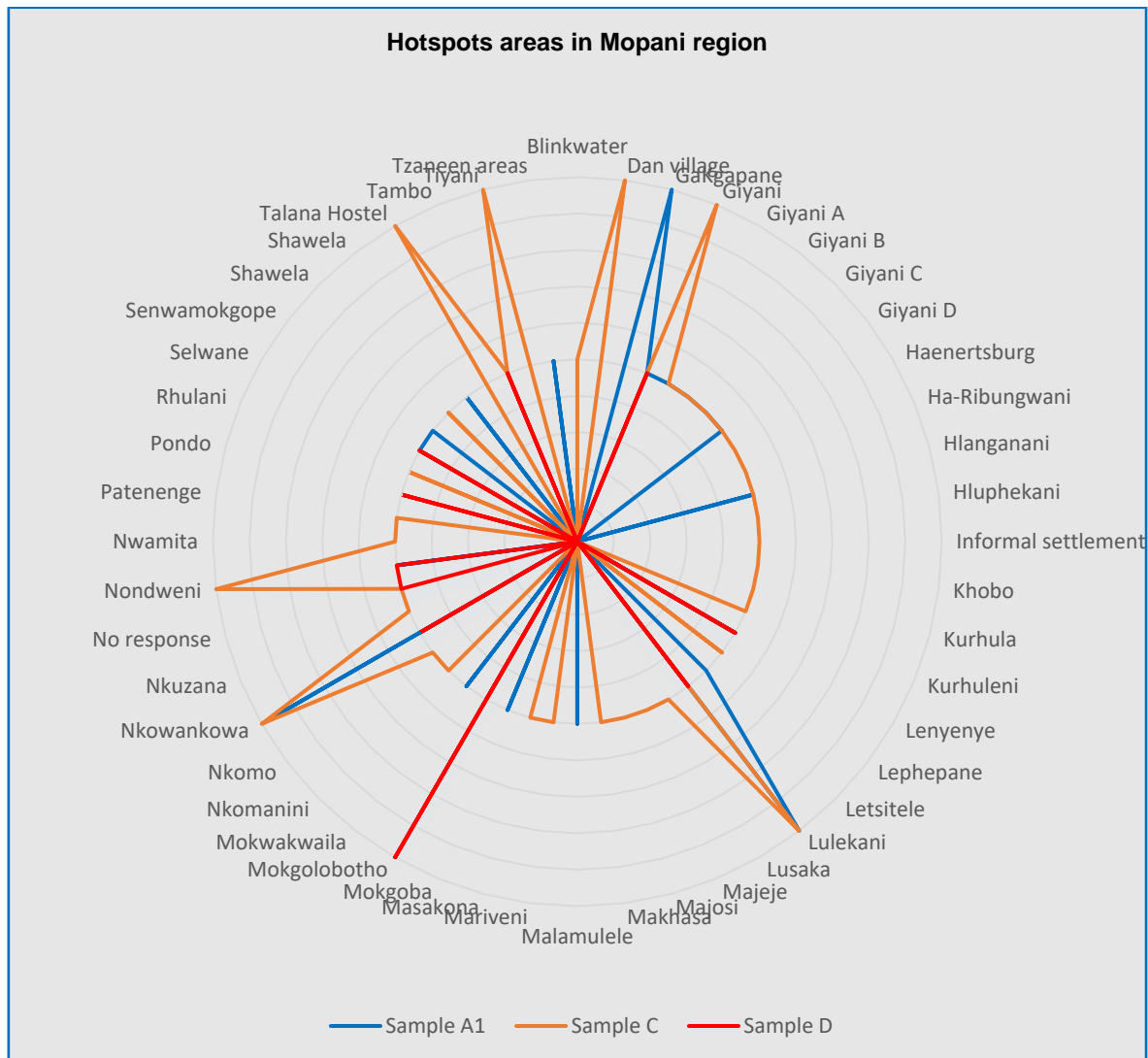


Figure 5.3: Representation of Hotspot areas in Mopani region (Limpopo Province)
 (Source: Feedback from the participants)

Despite the differences in some hotspot areas mentioned by the participants and in the literature, there is an indication that the participants' responses are in concurrence with the literature as deliberated in this section of the study. The literature revealed Nkowankowa, Mokgolobotho, GaKgapane and Lulekani as hotspot areas of electricity theft (Eskom, 2016a; Eskom, 2016b; Herald, 2018; Sibuyi, 2021). In situations where there is variance in reporting, it can be drawn from Marx and Mohammadali-Haji

(2014:231) who mentioned that the variation may be attributed to a changing environment over a period. Hence, the reporting trends of electricity theft are deliberated in the next Sub-Section 5.2.2.

5.2.2 Reporting trends of electricity theft incidents in Limpopo Province

The trend of reporting crimes is influenced by various factors such as the reporting practices in a particular area, perception of a particular crime by people in an affected area and importance attached to reporting the crime (Yoon, 2015:4-5). These factors affecting the reporting of crimes are applicable to reporting electricity theft offences because any crime is analysed based on prevailing developments and characteristics useful to predict its occurrence (Kemp, Buil-Gil, Moneva, Miro-Llinares & Diaz-Castano, 2021:484-485). Hence, a similar approach to understand the reporting trends of general crimes is applied to grasp reporting trends of electricity theft in Limpopo Province.

Reporting of crime (including electricity theft) is regarded crucial by various public and private agencies because it enables organisations to plan effective strategies and resources to curb the crimes identified (Boateng, 2016:2). According to Louw (2019:np), a detailed understanding of electricity theft crime trends is necessary to establish the extent of a crime and determine the possible leading factor for the occurrence of such crimes. Having a detailed knowledge of electricity theft trends enable utilities to reasonably forecast future crime related events and adjust their plans to overcome the threats posed by the crime (Monyeki, 2021:16).

To identify reliable trends of crime not limited to electricity theft requires lot of involvement, efforts and multiple approaches adaptable to rapid crime developments (Lewis, 2013:9). The numerous approaches assist in determining the authenticity of crime trends identified using a single method or approach and serve as a mitigant to distorted crime trends caused by inaccurate reporting (Telep & Hibdon, 2019:2). The various approaches necessary to establish electricity theft trends include conducting community interviews and research; engaging customers, competitors and crime experts; and obtaining legitimate crime reports and crime statistics (Dodge & Rennison, 2022:35).

Khwela (2019:1) points that the probability of reporting electricity theft is less despite awareness that the offence leads to atrocious consequences. According to Eskom Limpopo, there is an indication that community members are reluctant to report electricity theft incidents because of belief that electricity theft is a victimless crime. It is only when there is loss of human life resulting from illegal activities associated with electricity theft that community members recognise the dire consequences of electricity theft (Sibuyi, 2021:np). The statement by Eskom Limpopo accentuates the assertion by Yoon (2015:4) that the prospect of having a crime reported may not be more than 50%.

In addition, the Eskom Limpopo assertions corroborates the findings by Chetty (2018:59) in the study “The combating of unauthorised electrical connections in KwaZulu-Natal, South Africa” indicating that community members have greater knowledge of different types of illegal activities associated with electricity theft taking place in their areas. However, 70% of community members neglect to report the crime. Conversely, Mbanjwa (2017:40) reveals that community members have shown interest to report electricity theft but lack response from Eskom and municipalities due to corrupt conduct of utilities employees. The author cited a scenario of Thaba Chweu municipality in Mpumalanga wherein the community members took upon themselves to expose the electricity theft conducted by Eskom employees and Local government councillors.

The Thaba Chweu scenario augment the allusion by Lewis (2013:2-3) that utilities may have inaccurate electricity theft trends not attributed to inadequate reporting but to improper execution of their internal controls. Sample E (Community leaders or representatives) participants were asked three questions with a first question:

- “In your experience, is electricity theft reported within your community area?”

The participants were provided with an answer option of ‘yes’ and ‘no’. All (6) participants opted for a ‘yes’ answer and were asked a second question:

- “If the answer to the above question is ‘yes’, to whom is electricity theft reported within your community area?”

All the participants answered the second question with some provided more than one answer that may not tally with the total number of participants. The participants' answers to a second question collectively indicate three (3) institutions or/and officials to which they report electricity theft namely six (6) participants from Eskom, two (2) participants' councillors and one (1) police participant. The Sample E participants were asked a third question:

- “How is electricity theft reported within your community area?”

All the participants responded to the question, and some provided more than one answer that may not tally with number of participants. The summary of six (6) participants' responses includes call centre or phone, one (1) participant short message service (sms), one (1) participant during community meetings, one (1) participant visiting police community service centre and one (1) participant visiting Eskom or municipal offices. The participants' answers to the first question are consistent with literature because there is an indication that communities have shown willingness, and in most instances took initiatives to report electricity theft.

However, certain discouraging factors such as unreliable reporting systems, poor control measures and corrupt employees within utilities dispose the reporting efforts undertaken by communities (Lewis, 2013:2-3; Mbanjwa, 2017:40). Since the researcher is in the employment of Eskom and has dealt with investigation duties that include electricity theft, the researcher has experienced that some of the Eskom employees and contractors were found to be involved in electricity theft activities. The employees and contractors involved in electricity theft were likely to frustrate or deviate the processes to detect and deal with the crime. Such corrupt employees would provide inaccurate reports to mislead the internal control measures to curb electricity theft.

Therefore, it is on this understanding that various authors such as Chetty (2018:59), Khwela (2019:1) and Sibuyi (2021:np) hold a view that there are few reports of electricity theft. The participants' answers to the second question are also aligned with literature. According to Lewis (2013:9), it takes various persons, institutions and initiatives to curb electricity theft; and reporting the crime to utilities and various authorities in society is among the necessary initiatives. Lastly, the participants'

answers to a third question are supported in literature in that utilities such as Eskom and SAPS encourage people to report electricity matters and provided various contact details that may be used by reporters (Eskom, 2022b:np; South African Government, 2023:np).

Sample A1 (6) participants and Sample C (10) participants were asked the following question:

- “Based on your experience, how many cases of electricity theft you receive for investigation in a month?”

The question was open-ended in nature to allow participants free expression of their responses. The participants were not provided with a list of responses to select from to avoid suggestive responses. All 16 (n=16, 100%) participants responded to the question, with some participants provided a further explanation to their answer. The responses of the participants were grouped according to their similar nature and an indication made as to which sample participants responded to a certain question. The responses of the participants are represented in Figure 5.4 below.

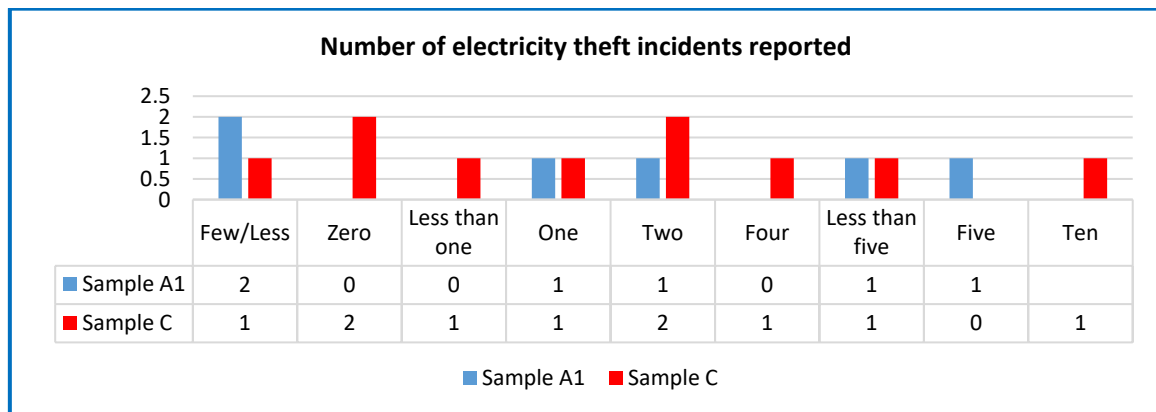


Figure 5.4: Number of electricity theft incidents reported to SAPS in Mopani region
(Source: Feedback from the participants)

Based on Figure 5.4 above, the majority of Sample A1 and Sample C participants hold similar views that there are few incidents of electricity theft reported at South African Police Service. Three (3) Sample C participants made notable remarks when responding to the question as follows:

SAMPLE C PARTICIPANT 2: *“The reporting of electricity theft crimes is very less, and at times is zero per month. This is because Eskom relies on its employees to report electricity theft, and most of them lack a will to report. I have also realised that most Eskom employees do not want anything that lead them to be witnesses at court”.*

SAMPLE C PARTICIPANT 3: *“In my experience I have observed six months or even a year passing without receiving an electricity theft report”.*

SAMPLE C PARTICIPANT 7: *“There are no cases reported, the only time I saw Eskom reporting a case is when there is theft of electrical infrastructure or equipment”.*

The Sample D participants were asked the following question:

- “Based on your experience, how many cases of electricity theft you receive for prosecution in a month?”

All three (3) participants answered the question describing without being precise on the number of cases. The Sample D participants responded thus:

“Rare”

“Sometimes zero per month or 3 in a year period”

“Very rare in a month, I can estimate plus minus 7 in a year”

It is evident from the responses of all participants from Sample A1, Sample C and Sample D that few cases of electricity theft are reported to SAPS. The participants’ responses are aligned to the literature. Khwela (2019:1) and Sibuyi (2021:np) pointed to less likelihood of community reporting electricity theft because they believe the crime is victimless and only report when there is loss of life caused by electricity theft related incidents. Mbanjwa (2017:40) put accountability for poor reporting on corrupt utility employees who do not follow up and support the community members who are willing to report the crime. While there is an expression of unjust poor reporting, there is also the question on whether there is a reporting mechanism befitting for electricity theft. Hence, the reporting system of electricity theft is deliberated in the ensuing section.

5.2.3 Reporting system of electricity theft incidents in Limpopo Province

Reporting system encompasses tools, processes and procedures used to gather, collate and manage information; and is applicable to every organisation and project (Groenewald, 2019:5). In the same way most institutions thrive and sustain their

businesses from implementing appropriate reporting processes, electricity utilities need to have appropriate electricity theft reporting mechanism. A well-coordinated reporting system keeps organisations accountable in their operations and informed about critical matters necessary to plan and organise their activities. Institutions can use the information received as a warning to potential threats, to make critical decisions and to notify stakeholders or interested parties about developments (Oprisor, Tiron-Tudor & Nostor, 2016:752-753).

Hence, this section seeks to understand a reporting system of electricity theft in Limpopo Province. Jayasinghe and Perera (2021:1) describe a reporting system as a critical determinant of incident reports that should be convenient to everyone willing to report or draw reports of reported incidents or crime. Like in every organisation with activities influenced by public interest, the appropriateness of electricity theft reporting processes employed by electricity utilities should be streamlined to accommodate everyone across social status, literacy level and communication proficiency (Eskom, 2021b:115-116; Wang, Chen & Zhang, 2020:2-3).

The reporting system should be simple, precise, flexible, content related, consistent, with prompt responses; and provide comparable and analytical information (Abe, Sato & Nakamura, 2022:1; Acuvate, 2022:np). Informed by this study which focuses on electricity theft control using South African laws governing crime and electricity utilities as hubs of electricity business, particular attention on electricity theft reporting system is on utilities and law enforcement as in sub-Section 5.2.3.1 and 5.2.3.2 below.

5.2.3.1 Reporting system of electricity theft by electricity utilities

Acquisition of information regarding electricity theft incidents occurring in electricity industry domain is of paramount importance to utilities such as Eskom and municipalities. The acquired information can help utilities to plan measures necessary to counter the illegal acts contributing to the destruction of electricity equipment and loss of revenue (Eskom, 2022b:np). Despite an indication that utilities value the reports from communities about illegal operations of electricity equipment, in most instances utilities seem not to clarify the effectiveness of their reporting systems as expected by the public (Polokwane Municipality, 2020:np).

The expectation of the public is that electricity utilities should be among the institutions with improved electricity theft reporting mechanism informed by the need to protect electricity supply as their core business. However, Oprisor et al. (2016:753), contend that the reporting system of utilities is occasionally plagued by ineffectiveness and intricacies relating to handling and processing the reports received from various sources. Eskom conceded in their integrated report released on 31 March 2021 that their customer service performance is impacted negatively by compromised reporting systems in that certain incidents are captured using improper description.

Furthermore, the utility has shown discontent about their reporting system that casually lacks prompt response to supply interruptions and queries (Eskom, 2021b:99, 116). In certain instances, electricity theft reports are not given the necessary attention as expected by the electricity theft reporters and the public. This is revealed in the study entitled “An analysis of electricity theft: the case study of Kwa-Ximba in Ethekwini, KwaZulu-Natal” that the utilities reporting system is pointless because substantial reports about electricity illegal connections from community members are not followed up, and lead to potential reporters being complicit to electricity related conduct (Mbanjwa, 2017:54).

An indication made is that the reporting system of utilities is in cohesive despite having reasonable reporting processes such as contact centres, emails and short message service that can be utilised to report and trace electricity theft incidents. In addition to the available reporting processes, there are departments and human resources specialising in dealing with illegal acquisition of electricity (Mzini & Lukamba-Muhiya, 2014:20; Eskom, 2022:np). The discussion in Section 1.2 (Chapter 1 of this study) incidentally revealed that the reporting mechanism of electricity theft related incidents is fragmented in that some of the incidents are picked up from the Customer Care Interaction (CC&I), during audits and possibly from other sources of incidents not mentioned.

Chetty (2018:19) asserts with special reference to Eskom that it has ineffective reporting mechanism of electricity theft and other incidents attributed to lack of well-defined reporting procedures and high number of Eskom call centre employees leaving the utility. On the other side, Masiya, Davids and Mangai (2019:34) mentioned the ineffective reporting system from the municipal perspective. In the study entitled

“Assessing service delivery: public perception of municipal service delivery in South Africa”, the authors mentioned that the official reports are not aligned with real incidents associated with general service delivery.

The context of the statement by authors encompasses electricity incidents which forms part of the reports associated with interruptions of municipal service delivery (Masiya, Davids & Mangai, 2019:34). Inferentially, the standard of electricity theft reporting systems in municipalities is compromised. Sibuyi (2021:np) highlights that the reporting system applied by utilities have in many instances failed to pick up the electricity theft incidents timeously, but only when the utilities’ attention is drawn to a serious and notable crisis such as fatality. The authors’ indication concurs with the discussion in Sub-Section 5.2.2 *supra* that deliberated on the way in which the inappropriate controls within utilities contribute to unreliable electricity theft trends.

The improper controls have a potential to discourage potential reporters of electricity theft incidents, particularly if they feel that their efforts of reporting are not valued by utilities. This should be understood in the context that potential reporters of electricity theft incidents are likely to provide information if they stand to benefit from their efforts of reporting the crimes. The expected benefits can be tangible or intangible; and vary from incentives, rebates, tariff reduction, assurance and confidence that the electricity supply will be uninterrupted (Raji & Shokoya, 2019a:98). Six (6) participants of Sample A1 were asked the question:

- “Based on your knowledge, does Eskom have a reporting mechanism in place that can be used to track electricity theft cases?”

The participants were required to respond with ‘yes’ or ‘no’ answer. The participants who responded with a yes answer were required to further describe the reporting mechanism used to trace cases of electricity theft. All the Sample A1 participants responded to the first part of the question. Five (5) of the participants responded with a “yes” answer and only one with “no” answer. The 5 participants were required to respond to the second part of the question which seeks the description of reporting mechanism. Three (3) of the five (5) participants each mentioned and described one mechanism, two (2) of the five (5) participants each mentioned and described two (2)

mechanisms and one (1) among the five (5) participants mentioned and described one (1) mechanism.

Hence the total number eight (8) of responses may not tally with the numbers of participants. The responses of the 5 participants culminated into three (3) responses grouped as Customer Care and Interaction (CC&I) system (3 participants), Eskom Case Register (ECR) (4 participants) and Governance, Risk and Compliance (CURA) system (1 participant); and they are represented in Figure 5.5 below.

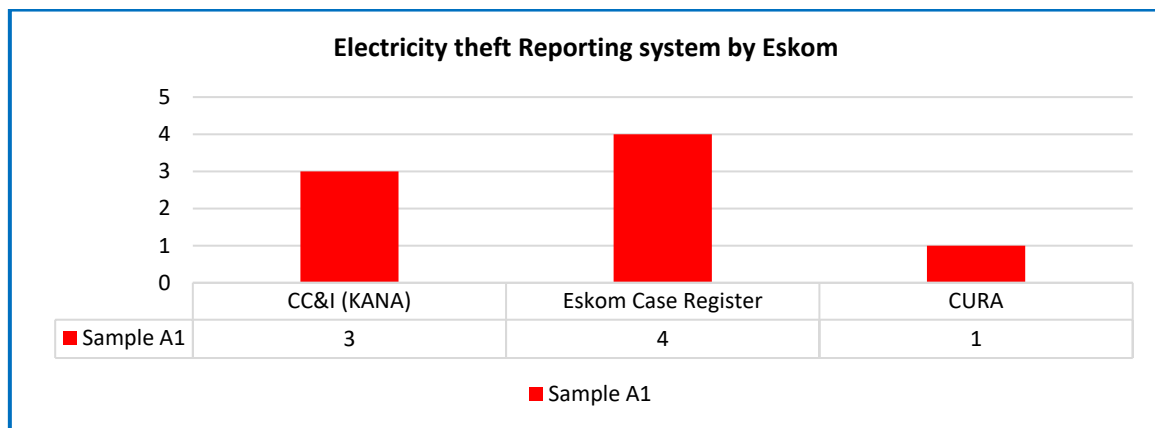


Figure 5.5: Electricity theft reporting mechanism by utilities (Eskom)

(Source: Feedback from the participants)

The majority of the participants had knowledge of existing reporting mechanisms within their working environment. However, there was one (1) participant who raised concern about the way in which the existing systems are disintegrated. The following verbatim statement attests to the participant’s views in this regard:

“I am just worried because we have a duplication of the systems used to report the same thing in different departments from within. Some of the systems are just not assisting the organisation to deal effectively with electricity theft. I have noted many times an incident is logged with a wrong description, only when one follows it up with a customer it is then you pick up the discrepancy. You are then expected to reallocate it to the relevant department, and very few employees do that”.

It is notable from the participants’ responses and literature that there is a point of agreement and acknowledgement that electricity theft mechanism is in existence. However, there are certain impediments to getting the maximal benefits intended by the utilisation of the system. Hence, there is a need for utilities to identify the gaps with intention to address them. Raji and Shokoya (2019a:98), Sibuyi (2021:np) and Masiya

et al. (2019:34), lamented the ineffective controls of reporting system used by utilities which occasionally cannot assist utilities to know of electricity theft incidents in time, but only when there is a trigger event that draws attention to the incident.

It can be surmised from both literature and participants' responses that the existing reporting system of utilities encourages non-proactive approaches to electricity theft. The necessity of understanding a reporting system of electricity theft is necessary not only to utilities, but also to the law enforcement. It is on this basis the reporting system of law enforcement is deliberated in the next Sub-Section 5.2.3.2.

5.2.3.2 Reporting system of electricity theft by law enforcement

Reporting of crime is a necessary service presenting an opportunity to accurately predict non-reported electricity theft and other crimes within the law enforcement (Jayasinghe & Perera, 2021:1). Monyeki (2021:13) points out that an improved idea of crime tendencies provides police with opportunities to understand the cause of crime and its contributing factors. Furthermore, the police can use the information obtained to involve the relevant institutions and parties to address the factors contributing to identified crimes. Hence, there is a need to understand the way electricity theft reports are being dealt with by law enforcement.

Police are generally entrusted with the role of capturing crime trends and statistics in their areas (Hajela et al., 2021:1060). However, the police acknowledgement that they do not always know all the crimes occurring in their policing precincts, dispels the belief that the law enforcement agencies are a better repository of accurate crime data (Lewis, 2013:3). Curiel, Delmar and Bishop (2018:775) warn of reporting measures that may be conventional and inappropriate to enable an accurate projection of crime. The inappropriate reporting systems may give the impression that there are rare incidents of crime where a particular crime is underreported or more incidents where the system is designed in a way to duplicate incidents.

Hence, Kumar (2017:3) recommends that an accurate crime reporting system should be based on a well-coordinated and cohesive reporting system, and such practice can be applied to include electricity theft reports. Jiyane-Tshikomba (2019:75) asserts that about 60% of general crimes are not reported to the law enforcement. Some of the crimes reported lack crucial details necessary to derive effective response to them.

Consequently, that attributes to police missing significant information of crimes (including electricity theft).

The South African Police Service (SAPS) acknowledged in their assessment of crime management information system held across the country that poor data has detrimental effects to their performance in terms of dealing with a crime. Furthermore, the police service confirmed that a gap exists in terms of measures needed to attain accurate data capturing particularly at the initial stages of registering a crime (South African Police Service, 2021:15). The concession by SAPS is an indication that the law enforcement reporting systems need to be appraised to meet the crime reporting needs including that of electricity theft.

A deliberation in Section 1.2 (Chapter 1 of this study) hinted on intricacies of SAPS crime reporting system that do not give a clear segregation of theft category namely 'other thefts', and that may subject persons reading the crime report to presume whether electricity theft is included under the 'other theft' category or not recognised as a crime (SAPS, 2018:87). Furthermore, the discussion provided an indication that the reporting intricacies may be attributed to inconsistent recognition and definition of 'electricity theft' offence within the legal fraternity. Nonetheless, a substantiation of electricity theft as a crime is covered in Section 1.8.6 (Chapter 1 of this study).

Deductively, there is a need for a legislation stating in clear terms and enhancing that electricity theft is an offence punishable by law. A well-defined statute declaring electricity theft as a crime will eliminate different views, approaches and reports pertaining electricity theft. Furthermore, the clearly stated legislation would be useful to incorporating the precise statutes prohibiting the conduct of electricity theft in the police reporting system. Mbewu, Ebioha and Mugari (2021:14) allude that there are various reasons contributing to crimes being underreported particularly to law enforcement. Among the reasons of underreporting is the affordability factor, in that the people who cannot afford to pay for electricity services may not see a value in reporting because these people are benefitting from the crimes.

Some potential reporters decide not to report because they dread about police negative attitude or hostility as perceived from previous law enforcement encounters (Mathias, 2016:19). Other reasons of poor reports of electricity theft and other crimes

include that the people experiencing or witnessing the crimes, regard reporting criminal incidents to police as either one or a combination of the following discouraging factors: reporting a crime is voluntary exercise without coercion; inconvenient; tedious; stressful; time consuming; insignificant either to police or potential reporters; non-beneficial, neither compensating nor rewarding; attracts intimidation or victimisation by perpetrators; affected by lack of faith to law enforcers; an initiative that may conflict with personal interests, cultural influences, societal convictions; and likely to attract enemies or hatred (Mbewu et al., 2021:14; Shively, Subramanian, Drucker, Edgerton, McDevitt, Farrell & Iwama, 2014:46; Yoon, 2015:19-21).

Mathias (2016:17) cites public relations as a contributing factor carrying much weight in contributing to effective reporting systems of law enforcement. However, the author is concerned about the way in which law enforcement agencies do not prioritise building the relations with communities they serve. Such inadequate police public relations deprive the police a basic understanding of electricity theft problems (Boateng, 2016:16-17). Consequently, the public may develop antagonism to police and not find a reason to form policing partnership to deal with various crimes. The views of the author are relatable to South African contexts and in Limpopo Province as the focus of this study.

A typical example wherein the public disregarded the law enforcement is observable in the developments at Eldorado Park in Gauteng, wherein the community did not find a need to report electricity related crime to police but took upon themselves to protect the electricity infrastructure from the suspects (Ledwaba, 2022:np). A similar approach was also observed at Seshego in Limpopo Province, with the community taking an initiative to address a crime without involving the police. Seshego residents resorted to vigilantism after numerous attempts to engage the police about crime in the area have not been given the necessary attention (Molefe, 2022:np; Herald, 2019:np).

In all the attempts (legal and non-legal) shown by community to tackle crime in their environments, the police are determined to encourage communities to report their complaints to the authorities without recognising and addressing the gaps in the reporting systems that led to community resorting to street law in the first place. According to Jayasinghe and Perera (2021:3), the police ability to practise good public relations enhance communication process necessary to encourage the public to report

crimes (including electricity theft). Community members are likely to feel a sense of importance, and in turn reciprocate by reporting crimes and helping law enforcers to resolve the crimes. Evidence of such public cooperation emanating from well-established public relations is evident from the way in which the Tzaneen community identified a need to form a crime combatting forum comprising of police and community members (Herald, 2019:np).

Sample C ten (10) participants were asked the question:

- “Based on your knowledge, does SAPS have a reporting mechanism in place that can be used to track electricity theft cases?”

The participants were required to respond with yes or no answer. The participants who responded ‘yes’, were further required to describe the reporting mechanism used to trace cases of electricity theft. All the Sample C participants responded to the first part of the question with a “yes” answer and none responded with “no” answer. The 10 participants were required to respond to the second part of the question which seeks the description of reporting mechanism. Five (5) participants each mentioned and described crime case register (CCR), ten (10) participants mentioned and described crime administration system (CAS) and two (2) participants mentioned and described occurrence book (OB) as forms of reporting mechanisms in SAPS.

Hence, the total number of seventeen (17) responses may not tally with the numbers of participants. The Sample C participants provided direct answers without any additional comments to note. The responses of 10 Sample C participants culminated into three (3) similar responses namely crime case register, crime administration system (CAS) and occurrence book (OB). The answers of the participants are represented in Figure 5.6 below.

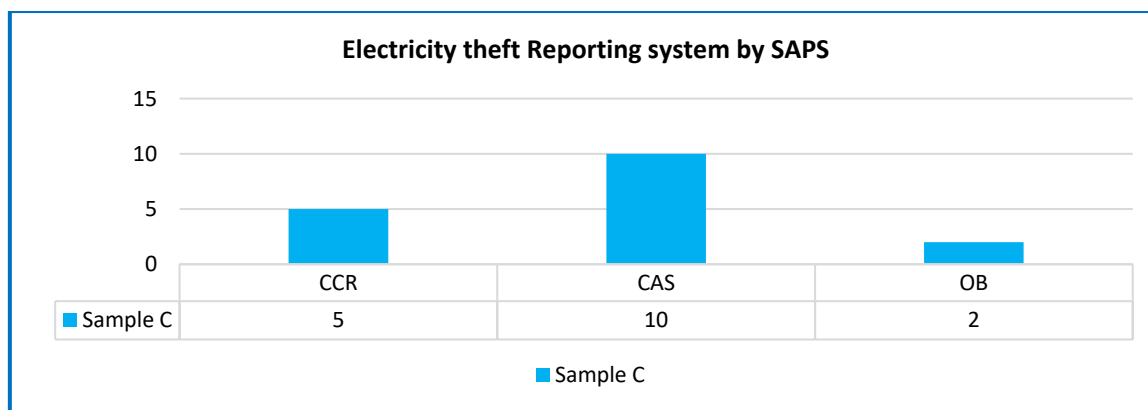


Figure 5.6: Electricity theft reporting mechanism by Law enforcement (SAPS)

(Source: Compiled by the researcher)

The participants' responses depicted in Figure 5.6 manifests an understanding that SAPS has a reporting mechanism in place. It is noteworthy that all Sample C participants were able to mention crime administration system (CAS) as a reporting system in SAPS. In addition to that, five (5) participants mentioned a document version of crime administration register, which is a crime case register. This is an indication that the participants have undisputed knowledge of their work environment reporting mechanism, which is acknowledged in the literature in this section of the study (SAPS, 2018:87). Informed by SAPS Standing Order 303, there may be an argument that the occurrence book (OB) as mentioned by two (2) participants, is used to record regular general events in the law enforcement environment (SAPS, 2012:np). Nonetheless, the general view of the participants' responses is aligned with the provisions of the literature.

5.3 DYNAMICS OF INVESTIGATING AND PROSECUTING ELECTRICITY THEFT

Investigations and prosecutions are crucial criminal processes preceded by awareness or report of a crime. In consideration of the fact that the activities involved during criminal processes are subjected to legal scrutiny, there is an appreciation from the legal fraternity that investigations and prosecutions of crime are dynamic (Feola, Mizio, Sala, Giordano & Pietra, 2021:2). According to Ebrahimi, Hossein-Yazdavar, Sheth (2017:2), the dynamics of any situation can lead to positive (desired) or negative (undesired) outcomes. The changing attribute of criminal processes is influenced by various factors, and the most common factor is different interpretations of the law (Jaars, 2021:9). Similarly, the investigations and prosecution of electricity theft are not

consistent and cannot be ascertained. Hence, the dynamics of investigating and prosecuting electricity theft are deliberated in Sub-Sections 5.3.1 and 5.3.2 below.

5.3.1 Understanding the investigation of electricity theft

Criminal investigation is a complex function necessary to establish the facts and involves a series of varying activities guided by the law. Depending on the circumstances around an alleged offence, the process of investigation can have agreeable or/and adverse course of actions (De Silva, Dharmasiri, Buddhadasa & Ranaweera, 2021:10). The process of acquiring information is general to all types of crime; however, dynamics of various crimes may require investigation techniques unique to a specific crime (Van Graan & Van Der Watt, 2014:149).

The general basics of investigating a crime are applicable to the investigation of electricity theft. According to Gehl and Plecas (2017:113) the prospects of investigating any crime are based on the context in which the crime occurs, and the forensic analysis required to supplement the evidence. Similarly, crime investigators need to first establish the context in which electricity theft occurs; and such determination can be attained with the assistance of a person conversant with the electricity supply environment. In most instances, technical personnel are placed correctly to guide the investigation despite a discussion in Section 5.2.2 indicating that corrupt employees are contributory to the problems faced by utilities and are likely to mislead the investigations (Mbanjwa, 2017:40).

Utilities have investigators permissible to conduct investigation on matters affecting their business (Eskom, 2022a:3). However, the investigation activities of utilities support the South African Police Service (SAPS) detective members who are authorised by Section 205 of the Constitution Act 108 of 1996 (South Africa, 1996) to investigate crime in South Africa. The total reliance on SAPS detectives to investigate electricity theft for purposes of prosecution and limited utility investigators' role to supporting SAPS detectives may deny the utilities the justice needed. Some of the police detectives may not feel a need to put more effort of investigating with purpose of criminally holding accountable the electricity theft perpetrators, but to conduct a mediocre investigation and giving impression that the crime is receiving the necessary attention (Gehl & Plecas, 2017:3-4).

Sample A1 (6) and Sample C (10) participants were asked the following question:

- “Describe your experience in investigating cases of electricity theft”.

The question was open ended in its design and required expressive answers. All (16) participants answered the question and each participant provided one descriptive answer.

A reasonable number of participants’ answers manifest the investigation of electricity theft as complex task, and the following are extracts or part of some answers of participants:

SAMPLE A1: *“Electricity theft is difficult to investigate”.*

SAMPLE A1: *“Investigating electricity theft is not easy”.*

SAMPLE A1: *“Investigating electricity theft is challenging”.*

SAMPLE C: *“Electricity theft is very complicated crime to investigate”.*

The belief that electricity theft is a complicated crime to investigate is found in the literature. However, Gehl and Plecas (2017:113) *supra* indicate that all types of crimes can be complex; and that depends on circumstances surrounding their occurrences and forensic technical aspects involved to prove them. The complexity of investigation process is not limited to electricity theft but can also be observed in other crimes. Hence, the participants’ answers are partly in consensus with the literature. Drawing from seven (7) participants of Sample C, respond to reports of electricity theft for investigation purposes which are significantly low.

Consequently, SAPS investigators are likely to have little experience of investigating electricity theft cases because the less reporting of the crime deprive them an opportunity to learn from the dynamics of the crime. The participants’ answers on low reporting of electricity theft cases are consistent with the literature. According to Dileep (2016:56), the significant underreporting of electricity theft in South Africa is an indication that the law enforcement has very few cases of electricity theft that can be used as sources of reference to improve investigations of new reported cases. Having an insight on precise and comparative records of electricity theft incidents is necessary to form a basis of possible solutions (Khan, Adil, Javaid, Saqib, Shafiq & Choi, 2020:8023).

Furthermore, the researcher as the former investigator at SAPS and current security department investigator at Eskom, is familiar and relates with the answers indicating that there are few reports of electricity theft for investigation. The majority of electricity theft incidents go unreported to the police, as they are typically observed by utility technical employees who often lack the inclination to become involved in criminal matters. Another distinctive aspect from responses of two (2) Sample A1 participants is that electricity theft incidents require evidence. The answers in verbatim are as follows:

“Electricity theft requires well-obtained evidence because is difficult to prove”
“Electricity theft requires evidence from various internal stakeholders who have different roles in the supply of electricity”.

The answers of the two (2) participants are pertinent to the issue of electricity theft and are in part supported in the literature. Arguably, the literature clarifies that obtaining evidence forms basis of general crime investigation. Hence, it is not only electricity theft that is difficult to prove and require the involvement of other pertinent parties to investigation. All categories of crimes need an involvement of other role players such as witnesses necessary to support the investigation or induce evidence (De Silva et al., 2021:8; Govender, 2019:31-33).

The answer from one Sample C participants alluding a need of persons with technical knowledge of electricity matters to assist in the investigation of electricity theft is in line with the provisions of literature. The answer is quoted as:

“Investigating electricity theft require technical experts and very often cases do not convert into a conviction”.

In a report about irregularities in Transnet and Eskom tender processes, Nekhavhambe (2018:95) revealed the importance of technical experts who were necessary in the investigation of coal sampling. Although the contents of the report were based on ascertaining quality of the coal procured, it is deduced from the context of the report that it would be impossible to handle matters of a specialised field without persons with knowledge and skills in that field. Similarly, the same approach of needing specialised personnel in matters of electricity distribution is critical to the investigation of electricity theft.

One Sample C participant intimated that the probabilities of securing a conviction for people charged with electricity theft are minimal considering that evidence is tested at court. The answer of the participant quoted verbatim is as follows:

“The chances of convicting electricity theft accused are small because the evidence is always questioned by courts”.

The answer of the participant is partly correct because extremely few decided cases such as in *S v Ndebele* ascertained that the accused involved in electricity theft are convicted. However, the part that repeatedly refers to evidence of electricity cannot only be stated for cases of electricity theft. It is the duty of the court to subject all sorts of evidence to scrutiny and Section 35 of the Constitution Act, Act 108 of 1996 indicate that any evidence obtained in a manner violating the bill of rights must be excluded in the admission of that evidence because it would be detrimental to the administration of justice (Monyakane, 2015:137; South Africa, 1996).

Lastly, the participants’ answers point to the corrupt conduct of utility employees colluding with the suspects to be part of electricity theft investigation activities (Mbanjwa, 2017:40). Two Sample A1 participants responded thus:

“Investigating electricity theft is not easy because at times Eskom employees are involved in helping the customers and non-customers to steal electricity. The involved employees will mislead or derail the investigation by providing wrong information”.

“Lack of co-operation from internal stakeholders who some of them are contributing to electricity theft”.

The answers of the two participants are in line with the literature as in 5.2.2 *supra*, Mbanjwa (2017:40) hinted on the corrupt conduct of utility employees in matters of electricity theft. Geyevu and Mbandlwa (2022:11073) demonstrated the discontent expression by community members lamenting the illegal conduct of municipal employees in failing to investigate and curb electricity theft.

Following question was asked to Sample C participants:

- “Based on your experience, can you suggest practical guidelines on how to investigate cases of electricity theft?”,

On the other hand, Sample D participants were asked the following question:

- “Based on your experience, can you suggest practical guidelines on how to prosecute cases of electricity theft?”.

All (10) participants answered the question directed to them and some provided more than one answer that may not tally with the number of participants. The participants’ answers are summarised in Table 5.2 below.

Table 5.2: Practical guidelines to investigation and prosecution of electricity theft

Practical guidelines to investigation of electricity theft	Number of participants in a sample who mentioned an answer
Obtain detailed and accurate statements	6 Sample C
Secure supporting evidence	7 Sample C
Secure scene of crime	1 Sample C
The investigation should be based on relevant legislation	3 Sample C
There should be proforma created to guide the investigation	1 Sample C
Interview witnesses, complainants and suspects	5 Sample C
Arrest the suspects	1 Sample C
Use expert witnesses to support evidence	1 Sample C

(Source: Feedback from the participants)

Table 5.2 above demonstrates that Sample C participants mentioned four guidelines that can be applied practically during investigation of electricity theft. The mentioned guidelines include a need to secure supporting evidence, reliance on relevant legislation, securing the scene of crime and using expert witnesses to corroborate or support evidence. In addition to the guidelines common to investigation, it is drawn from the answers of Sample C participants that the other practical guidelines in the investigation of electricity theft relate to the acquisition of detailed and accurate statements, use of proforma to guide the investigation, interviewing of witnesses, complainants and suspects; and arresting the suspects.

It is deduced that the answers of Sample C participants are aligned to literature in that Gehl and Plecas (2017:5-6) clarified that investigation of crime take into consideration many activities and evidence necessary to prove a crime by police and courts. Among the activities in the investigation mentioned by the author is preservation of the

evidence, securing the suspects and witnesses, and analysis skills to discern and link the crime to suspects. Furthermore, all these multiple activities performed at an investigation level are aimed to assist the court in taking a proper and justified criminal decision.

5.3.1.1 The dynamics of quantifying electricity theft reports for investigation

Khan, Adil, Javaid, Saqib, Shafiq and Choi (2020:8023) assert that an insight on precise and comparative records of electricity theft incidents is necessary to form a basis of possible solutions. It is alluded in Sub-Section 5.3.1.1 *supra* that the reported incidents of electricity theft are necessary to formulate a workable approach to the investigations of electricity theft (Dileep, 2016:56). However, the researcher could not find evidence of accurate numbers of electricity theft cases in the literature. Informed by various reasons articulated in Sub-Section 5.2.3.2 *supra*, most community members who have knowledge about incidents associated to electricity theft in their communities are not willing to co-operate during investigations of the crime.

The investigator of electricity theft may be left with an option of relying on evidence provided by utilities' technical experts, of which most of them may opt not to co-operate with the investigator because of not being comfortable about the adversarial setup of courts and uncertainty about their safety. According to Davies and Cook (2020:18-19), the witness protection laws in place are not effective to allay fears and threats perceived by potential reporters (witnesses). Therefore, similar to other crimes, the increased level of co-operation in electricity theft investigation can be enhanced by increased level of protection to the reporters of the crime. Availability of resources not limited to finances, human resources and material resources plays a critical role in the investigation of electricity theft and other crimes (Kotwal & Manhas, 2017:1).

However, the public investigation institutions are often burdened by enormous number of general cases, which may require more than the allocated resources in a specific period. On the other hand, the private institutions which are in most instances resourced are profit driven and caters for insignificant quota of society based on affordability. The investigators can be left with a dilemma to prioritise the cases under investigations according to their criticalness. In most instances, electricity theft does not make it into the top of priority lists in that utilities prefer to put technical resources to counter the crime than criminally investigating it (Khwela, 2019:26). The Sample A1

and Sample C participants were each asked three (3) sets of questions to understand their knowledge on number of cases received at various stages from reporting to court processes involving electricity theft.

The first set of questions were:

- “Based on your knowledge, how many electricity theft cases that you receive per month are closed before they could reach a court decision and/or court prosecution stage?” and
- “Based on your experience, what are the reasons for cases mentioned above are closed before they could reach a court decision and/or court prosecution stage?”

The second set of questions were:

- “How many cases of electricity theft that you receive per month reach a prosecution stage but are dismissed or withdrawn before trial stage or on nolle-proseque?” and
- “Based on your experience, what are the reasons for cases mentioned above reach a prosecution stage but are dismissed or withdrawn before trial stage or on nolle-proseque?”

The third set of questions were:

- “How many cases of electricity theft that you receive per month reach the prosecution and trial stage but end in a ‘not guilty’ verdict and without a conviction?” and
- “Based on your experience, what are the reasons for cases mentioned above reach the prosecution and trial stage but end in a ‘not guilty’ verdict and without a conviction?”

All (16) participants (n=16, 100%) responded to the initial question requiring number of cases in each set. However, a total of twelve (12) participants (n=12, 75%) provided a ‘no answer’ when asked about reasons for answers provided to initial questions in each set as follows: Three (3) Sample C participants (n=3, 19%) gave a ‘no answer’ when required to provide reasons for an answer to initial question in first set of questions:

- “Based on your experience, what are the reasons for cases mentioned above are closed before they could reach a court decision and/or court prosecution stage?”

One (1) Sample A1 participant (n=1, 6%) and five (5) Sample C participants (n=5, 31%) provided a ‘no answer’ when required to provide reasons for an answer to initial question in second set of questions mentioned below:

- Based on your experience, what are the reasons for cases mentioned above reach a prosecution stage but are dismissed or withdrawn before trial stage or on nolle-proseque?

Three (3) Sample C participants (n=3, 19%) provided a ‘no answer’ when required to provide reasons for an answer to initial question in third set of questions:

- Based on your experience, what are the reasons for cases mentioned above reach the prosecution and trial stage but end in a ‘not guilty’ verdict and without a conviction?

The majority participants from Sample A1 and Sample C provided answers ranging from zero (0) to five (5) cases for initial question in first (cases closed before they reach court decision or prosecution), second (cases reaching the court process but closed on nolle-prosequi) and third (cases reaching trial stage but without conviction) set of questions. A total of eight (8) participants (n=8, 50%) provided a descriptive answer instead of number answers to initial questions in first, second and third set of answers as follows:

Sample A1 (2) and Sample C (2) participants provided descriptive answers to initial question in first set of questions, one (1) Sample A1 participant (n=1, 6%) and two (2) Sample C participants (n=2, 12%) provided descriptive answers to initial question in second set of questions and one (1) Sample A1 (n=1, 6%) participant provided a descriptive answer to initial question in third set of questions. The descriptive answers from participants are quoted verbatim as follows:

SAMPLE A1: *“Difficult to estimate, no consistent reporting, months can pass without a case reported to police”.*

SAMPLE A1: *“Each month varies, but most cases reported do not reach the prosecution stage”.*

SAMPLE C: "Six months can pass without a case reported".
SAMPLE C: "Few".
SAMPLE A1: "Extremely rare".
SAMPLE C: "Very rare".
SAMPLE AC: "Less".
SAMPLE A1: "Rare".

Notably, one Sample A1 participant responded to the initial question in second set of questions with both numbers and description. The answer is "0-3 (in special operations, the cases could be more than 10). Although the participants used both the numbers and description to answer the initial question in first, second and third set of questions; it is evident from the participants' answers that the number of electricity theft cases reported in a month is significantly low. Only in exceptional circumstances such as those described by Sample A1 participant *supra* that the electricity theft cases can be higher during special operations.

The answers of the participants are aligned to the literature. Dileep (2016:56) and Jiyane-Tshikomba (2019:75) expressed a concern on significantly low cases of electricity theft being reported for investigation. Twelve (12) participants (n=12, 75%) responded to the second question requiring reasons in first, second and third set of questions point to lack of evidence or poor evidence as the leading cause for electricity cases not reaching the court decision or prosecution process, withdrawn on nolle prosequi during a court decision and not securing a conviction at trial stage. The issue relating to poor evidence is depicted in a total of 23 answers from both Sample A1 participants and Sample C participants.

The participants' answers indicating evidential challenges depict phrases with similar meaning and may not tally with the number of participants, because other responses indicate more than one phrase or are repeated in different answers of the participants. The phrases relating to evidential challenges as extracted from participants' answers include poor evidential information (3), lack of evidence (1), do not want to give evidence (1), lack of sufficient evidence (4), difficult to prove (1), acquiring evidence is a problem (1) and unwillingness to testify in court (2).

Remarkably, four (4) Sample A1 participants and one Sample C participant provided answers relating to poor evidence resulting from lacklustre approach to electricity theft cases by utilities, law enforcement and courts. The answers in verbatim are as follows:

SAMPLE A1: *“Police often close the dockets without visiting the crime scene. No support from Eskom internal departments. Employees with technical expertise will always avoid to file statements because they avoid testifying at court”.*

SAMPLE A1: *“Lack of co-operation from internal stakeholders, who some of them are experts in technical matters. Most of them are not willing to attend court”.*

SAMPLE A1: *“Technical experts do not want to give evidence to support the cases of electricity theft”.*

SAMPLE A1: *“Most of the time Eskom employees are not available to provide expert evidence and training”.*

SAMPLE C: *“Lack of will to prosecute electricity theft by law enforcement and courts”.*

Furthermore, four (4) answers from Sample C participants demonstrate that the preferences of utilities to deal with electricity theft are contributory to few cases not reported for investigation and be dealt with using criminal processes. Instead, utilities only utilise the police services for protection against possible harm from hostile communities. The answers of the participants relating to utilities’ preferences in dealing with electricity theft are depicted verbatim below:

SAMPLE C: *“Electricity company conduct their own operations of removing illegal connections and fining the offenders”.*

SAMPLE C: *“Electricity companies prefer not to report the electricity theft crimes”.*

SAMPLE C: *“Eskom prefers to issue fines and fix or remove the illegal connections. They in most instances require the police to protect them against community attacks during illegal connections removal operations”.*

SAMPLE C: *“Electricity companies do not report electricity theft”.*

Nonetheless, the answer from one Sample A1 participant deviates from the point indicating preferences of utilities not reporting crimes for investigation. The answer relates to reasons of complicated nature of crime electricity theft is and not invigorating the parties affected by the crime to consider it for criminal investigation. The answer of the participant quoted verbatim is:

SAMPLE A1: *“Electricity theft is regarded a complex crime which is discouraging to report for criminal investigation purposes”.*

When comparing the answers of the participants about reasons of electricity theft cases not reaching the prosecution or court decision, cases subjected to court decision but dismissed on nolle prosequi, and cases subjected to trial but end without a conviction; it is discernible that the participants coincide with literature. Yakubu and Narendra (2017:173) provide an illustration of poor evidence emanating from using

contractors to audit the areas under their jurisdiction. The contractors' employees are likely to collude with the customers knowing that at the time utilities become aware, the contract obligations shall have come to pass.

It may not be easy for investigators to link the contractors with electricity theft incidents identified after the perpetrators are no longer in the service of the contractor. The authors also point to the preferences of utilities to use the service of contractors to investigate and fine electricity theft incidents than to subject the crime to criminal processes. Literature also indicate that electricity theft is multifaceted and complicated, hence utilities lack courage to pursue the crime using criminal procedures (Gaur & Gupta, 2016:135; Mbanjwa, 2017:ii). Lastly, the answers of the participants indicating lack of will to investigate and prosecute electricity theft by police and courts are embedded in the literature.

The discussion *supra* pointed to the adversarial nature of criminal justice system contributing to employees of utilities not willing to take part in criminal proceedings (Davies & Cook, 2020:18-19). Nonetheless, none of the participants mentioned the issue of resources as pivotal to the investigations and prosecutions of electricity theft. Literature indicates that limited resources are likely to affect the way law enforcement and courts prioritise the cases, and electricity theft may not get the attention as compared to the way other crimes are prioritised (Lawrence, Gourdet, Banks, Planty, Woods & Jackson, 2019:1; Khwela, 2019:26).

5.3.1.2 Approaches and practices to electricity theft investigations

Musafiri (2021:35) points out that the rule of law to investigations and prosecutions of electricity theft is necessary, however, its application is ineffective and demoralising. While acknowledging a need to revisit the laws governing electricity theft, the author believes that more efforts by investigators and prosecutors in handling matters of electricity theft have potential to eliminate the crime. South Africa has varying strategies to curb electricity theft. Among the strategies are different policies intended to curb electricity theft implemented by Eskom and municipalities. However, these strategies are weakened by lack of a clearly defined statute to strengthen the efforts of criminally investigating the crime for successful prosecution (Bolhuis, 2021:np).

The process of obtaining information for investigation purposes is general and can only be customised to a specific crime (Van Graan & Van Der Watt, 2014:149). Accordingly, electricity theft as a crime cannot be separated from the principles of criminal investigation. The fact that electricity theft investigations are possible by obtaining evidential information from persons, is a testament that the investigation of the crime require evidence and witnesses in the same manner other crimes are investigated. Hence, all suspects including those involved in electricity theft conduct leave traces of evidence that can be subjected to forensic analysis and determination of the facts (Zhang & Liao, 2022:488-489).

The Sample A1 (6) and Sample C (10) participants were asked the following question:

- “Based on your experience, does the investigation of electricity theft cases require an investigation approach different from other criminal cases within your work precincts?”

The participants were required to provide a ‘yes’ or ‘no’ response. The participants who responded ‘yes’, were required to explain the distinction between investigation approaches to electricity theft cases and other criminal cases. Five (5) Sample A1 participants (n=5, 31%) and nine (9) Sample C participants (n=9, 56%) answered with a ‘no’, whereas Two (2) participants (n=12%) each from Sample A1 and Sample C answered with a ‘yes’.

The answers of the participants show that the majority of (14) participants (n=14, 88%) believe that electricity theft does not require a different investigation approach. The answers of the majority participants are consistent with the literature. An indication from literature is that electricity theft requires to be investigated using the basic principles of investigation (Zhang & Liao, 2022:488-489). The outstanding point from literature is a need for well-defined electricity theft legislation (Bolhuis, 2021:np; Musafiri, 2021:35).

The two (2) participants (n=2, 12%) who answered with a ‘Yes’ deviated from the majority answers as their explanations for choice of their answer are noted below:

SAMPLE A1: “Other crimes have evidence that is easy to prove the crime as compared to proving electricity theft”, and

SAMPLE C: *“It is easy to measure other crimes, while with electricity theft one cannot even measure or see it”.*

The answer of Sample A1 participant indicating that the evidence of other crimes is easy to prove than that of electricity theft is not in line with the literature as it has been dealt with in Sub-Section 5.3.1.1 *supra* and according to literature that the complexity of all crimes is determined by the circumstances in which each crime occurs (Gehl, 2017:113). The answer of Sample C participant indicating that electricity theft cannot be measured has been deliberated in Sub-Section 3.3.6 (Chapter 3 of this study) and in terms of literature, electricity theft is estimated because of its complex immeasurable nature (Ye, Koch & Zhang, 2018:2). The fact that the answer provided by Sample C participant is in line with literature does not indicate that electricity theft requires an investigation approach different from other cases.

Six (6) participants of Sample A1 (n=6, 38%) and ten (10) participants of Sample C (n=10, 62%) were asked the following questions:

- “Based on your experience, what are the investigation practices you have implemented in the past during the investigation of electricity theft cases?”, and a follow up question
- “What were the outcomes of the investigation practices mentioned in the previous question?”

The majority of fifteen (15) participants (n=15, 94%) answered the question and the follow up question on investigation practices. Only one (1) Sample A1 participant (n=1, 6%) did not answer the question and follow up question. The participants’ answers may not tally with the total number of participants who answered the questions because some participants provided compound answers and which their meaning overlap with other answers.

Due to the compound and overlapping nature of the participants’ answers, the answers of participants are grouped into themes depicting same meaning and similar key words used. The researcher grouped the responses to the question that explored understanding on past implemented investigation practices into three themes, namely: ‘application of basic principles of crime investigation’, ‘no answer’ and ‘did not experience electricity theft cases. Application of basic principles of crime investigation

is further split into different statements with defining similar key words used by participants. Following Table 5.3 below, indicates the themed participants' responses.

Table 5.3: Participants' answers on investigation practices grouped into themes

Participants answers grouped into themes	Answers grouped into statements with defining key words	Number of Sample A1 participants who used the key word answer	Number of Sample C participants who used the key word answer
Application of basic principles of crime investigation	Interview complainants, witnesses or/and suspects.	01	05
	Obtain evidential statements/information.	04	06
	Obtain warning statements.	0	02
	Obtain/take photos.	03	01
	Register a case with police (SAPS).	01	0
	Secure/summon witnesses to attend court.	01	01
	Determine the elements of a crime.	0	01
	Send a case docket for court decision.	0	04
	Secure exhibits/evidence.	03	03
	Obtain/take fingerprints.	0	01
	Use crime scene experts/LCRC.	0	02
	Visit a crime scene.	0	01
	Trace/arrest the suspect/s.	0	03
No answer		01	0
Did not experience electricity theft cases.		0	01

(Source: Feedback from the participants)

Table 5.3 above demonstrates the participants' understanding of the investigation practices as in literature, and not only with electricity theft but with general crimes. The most mentioned investigation practice is 'obtaining evidential statements or/and information' mentioned by the majority of (10) participants (n=10, 63%) comprising of four (4) Sample A1 participants (n=4, 25%) and six (6) Sample C participants (n=6, 38%). The second mentioned practices are 'interview complainants, witnesses or/and suspects' and 'Secure exhibits/evidence', each mentioned by six (6) participants (n=6,

38%) from both Samples A1 and C. All other investigation practices are each mentioned by less than five (5) participants.

According to Chung, Ng, Ding (2021:248), interviewing victims, suspects and witnesses forms a critical component of the investigation practices by the police. Not only the police interview the complainants, suspects and witnesses; but they also ensure that the version of the complainant or witnesses is captured in a record form known as statement. Furthermore, the obtained statement may be used to register a case with the law enforcement and serve as evidence at the court of law (Viljoen, 2018:1). It is drawn from SAPS (2019:3-4) that part of the investigation practices includes that the police arrest and obtain a warning statement from the suspect (s).

In the performance of their investigation duties, the investigators ensure that all elements of a crime are determined, a crime scene is visited and protected from contamination, chain of evidence is maintained, and exhibits confiscated, fingerprints are obtained, and crime scene experts are summoned to the scene (Singh, 2021:642). Swales (2018:53) indicates that in the process of investigation, photos are obtained to supplement the evidence and efforts are done to secure witnesses. All the investigation efforts and practices lead to a presentation of a criminal case docket to court for decision or trial (Ngobane, 2019:53).

The participants' answers to the question on understanding the outcomes of past investigation practices depicted in Table 5.6 *supra* point to a despondent experience from both Sample A1 and Sample C participants. Despite mentioning the investigation practices, the participants' answers indicate that the outcomes of investigation practices yielded few arrests, few cases reaching a prosecution and extremely low convictions. The following answers of Sample C participants quoted verbatim substantiate the unpleasant outcomes amid implementation of practices in the investigation of electricity theft.

“Due to few numbers of electricity theft cases reported, it is difficult to estimate the outcome”,
“I had three cases in my career that I know were successfully prosecuted. however, after a longer period of time or many years”,
“Hence, I indicated that I never had a case to investigate electricity theft”,
“Absence of electricity theft incidents reports make it difficult to determine the outcome”.

“Queries about evidential information will come from the prosecutor, for example: impact of crime, value of property or damage caused by crime”.
and
“The outcomes vary but most of the cases come back from court with queries that are difficult to attend, and that very often leads to electricity theft cases withdrawn without securing a conviction”.

The participants’ answers also point to a problem of few reports of electricity theft and failure to respond to prosecution queries as contributory to low arrests and conviction of electricity theft suspects. The implication is not far from the literature which indicates that albeit rife incidents of electricity theft, only few reports are reported (Khwela, 2019:1). According to Mbanjwa (2017:40), utilities are always uncooperative and unsupportive to investigators and prosecutors when required to provide evidence.

5.3.1.3 Challenges and possible solutions to investigation of electricity theft

The initial impediment to electricity theft investigations is unawareness of the crime by law enforcement. Lack of reporting and/or poor reporting is contributory to lack of electricity awareness because it makes impossible for police to have knowledge of every crime occurring in their neighbourhood (Manaliyo, 2016:281-282; Yoon, 2015:5). Some of the possible solutions to poor reporting are deliberated in Sub-section 5.2.3.2 *supra*. According to Mathias (2016:17), the law enforcement and utilities can encourage the public to report electricity theft by improving community public relations. Again, the crime reporting system of police and utilities should be reviewed to enable a co-ordinated and cohesive reporting system (Kumar, 2017:3; South African Police Service, 2021:15).

Electricity theft is classified as an economic crime because it has devastating effects on the economy of the country (Arango, Deccache, Bonatto, Arango, Ribeiro, & Silveira, 2016:np). Hence, Swanepoel & Meiring (2018:459-460) mention a myriad of challenges affecting the investigation of economic crimes which is adaptable to electricity theft as follows:

- Utilities and law enforcement lack commitment and effectiveness in investigating electricity theft;
- There is a shortage of skilled manpower necessary to investigate electricity theft because many experts in the field of crime leave the public institutions for private sectors;

- Bribery, fraud and corruption embedded as a norm and culture in the institutions such as utilities and police. Low remuneration benefits make law enforcers and officials susceptible to unethical conduct and neglect their duties of conducting proper investigations of electricity theft;
- Political interference leading to inconsistent application of law to persons involved in electricity thefts and economic crimes;
- The general public's reluctance to assist law enforcement in providing evidential information and testimony necessary to prosecute the crime; and
- Classification of information as secret is often abused by institutions and individuals avoiding investigations to economic crimes (electricity theft).

Furthermore, Swanepoel and Meiring, 2018 (459-460) suggest effective training of law enforcement and utility personnel responsible for investigation as a remedial to improving the investigations of electricity theft. The training should empower the investigators with abilities to implement investigation techniques, exercise discretion and discern legal technicalities associated with electricity theft (Swanepoel & Meiring, 2018:463-464). According to Hussainy (2019:764-765), allowing open communication, constructive criticism and friendly working relationship has a potential to retain the human resources (skilled employees) who may be tempted to look out for better job opportunities.

Van Graan (2014:145) finds it challenging that the police institutions lack investigation analysts particularly at local level where crimes are reported. Van Graan (2014:145) points to the importance of having docket analyses among the requirements necessary to enhance investigations that would enable successful prosecution of crimes (including electricity theft). Notably, there are still legislation hindrances experienced in the prosecution of electricity theft despite having court decisions such as in *S v Ndebele* assuring that electricity is capable of being stolen. Hence, various authors highlighted on the need for a legislation governing electricity theft (Bolhuis, 2021:np; Chetty, 2018:3; Musafiri, 2021:35).

The following question was asked to Sample A1 (6) and Sample C (10) participants:

- “What are the challenges of investigating electricity theft?”

The follow-up question was:

- “What do you think might be helpful in overcoming the challenges of investigating electricity theft?”

Five (5) Sample A1 participants and all (10) Sample C participants responded to the question and provided possible solutions to the challenges of investigating electricity theft. One participant in Sample A1 did not answer the question nor provided a solution to challenges of investigating electricity theft. Some of the participants provided an answer containing more than one challenge and possible solutions to investigating electricity theft, hence the total numbers of answers may not tally with the number of participants who answered the question.

Due to the compound nature of some participants' answers; the researcher clustered responses relating to challenges and solutions of electricity theft according to different themes namely legislation, evidence, employee and contractors' conduct, employees' attitude, investigation resources, misconception of rights, and difficulty in investigating the invisibles and tangibles. Two (2) participants responded to the question by relating to difficulty in obtaining evidence and lack of well-defined electricity theft legislation are the most mentioned as challenges to investigation of electricity theft, and each by (5) participants. Other responses include inept attitude of utility employees mentioned by four (4) participants, corrupt employees and contractors mentioned by two (2) participants, limited resources mentioned by one (1) participant, misconception of rights mentioned by one (1) participant, electricity as invisible mentioned by one (1) and electricity as intangible mentioned by one (1). Following Figure 5.7 below indicates the clustered and summarised participants' answers indicating challenges and solutions to electricity theft investigations.

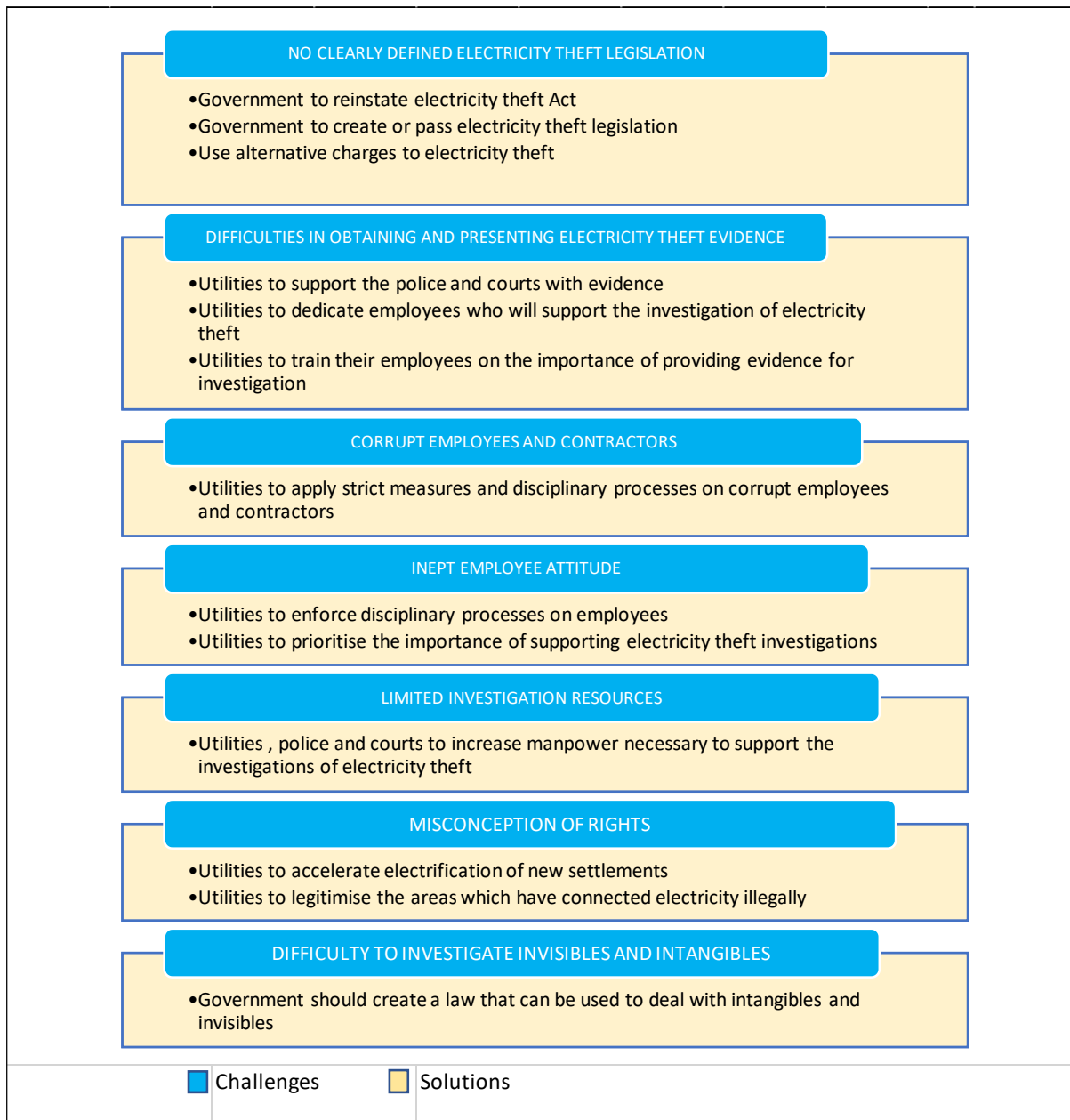


Figure 5.7: Summary of the participants’ answers to challenges and solutions of electricity theft

(Source: Feedback from the participants)

An indication from participants’ responses is that a reasonable number of participants believe that the creation of a clearly defined legislation dealing with electricity theft is a practical and reasonable solution to the investigation of electricity theft derailed by lack of well-defined electricity theft law. The participant’s belief is supported in literature in that Bolhuis (2021:np), Chetty (2018:3) and Musafiri (2021:35) *supra* clearly articulated that the effective way to legally deal with electricity theft is by enacting a well-defined legislation governing electricity. Differently to the view

stressing the need for electricity theft legislation, one (1) Sample C participant believes that electricity theft investigation can be dealt with by using other competing legal avenues. The answer of Sample C participant quoted verbatim is as follows:

SAMPLE C: "Use alternative charges interim to hold accountable the perpetrators".

The use of the word 'interim' in the answer has connotation that the participant holds the same view as other participants hoping for enactment of electricity theft. However, the participant's response indicates an urgent and tentative solution for investigating electricity theft while a need for a legislation is still a matter of debate.

The participants who mentioned a challenge relating to difficulty in obtaining electricity theft evidence are of the view that the challenge can be solved by utilities initiatives to support police and courts with evidence, dedicating employees that will be supportive to the investigation of electricity theft and training employees on the importance of providing evidence for investigation of electricity theft. The participants' answers are aligned with literature in that Eskom (2020c:1) and City Power Johannesburg (2019:95) valued the need to support and encourage actions intending to stabilise threats directed to supply of electricity.

Investigations and prosecutions are counted among the efforts to be supported to secure a sustainable electricity supply. Literature also values a point of training employees as a solution identified by the participants to improve the evidence of electricity theft. According to Dzansi, Rambe and Mathe (2014:187), there should be sufficient awareness and educational programmes directed at employees in order to instil a sense of contribution to protecting the assets of utilities against harm. In this case, the contribution should be in the form of supporting the law enforcement institutions and courts with evidence to enhance the investigation of electricity theft. The training of employees should be done in consideration that training alone cannot change a persons' behaviour, it yields positive outcomes when reinforced into a meaningful learning and practice (Paskoff, 2014:1).

The participants' solution to the challenge of corruption by employees and contractors, and inept attitude of employees to investigations of electricity theft is that utilities should apply strict disciplinary measures. An additional solution to inept employees'

conduct is that utilities should prioritise the importance of supporting electricity theft investigations. The participants answer on the need for strict disciplinary processes to corrupt and inept attitude of employees is cautiously supported in literature. According to Dzansi, Rambe and Mathe (2014:187), it is not guaranteed that the disciplinary sanctions can be effective to preventing the employees' undesired conduct. Dzansi et al. (2014:187), suggest that utilities should also consider coupling a reward system promoting good behaviour of employees to the disciplinary measures.

In addition, utilities should ensure that ethical values and standards are well-articulated and institutionalised (Hijal-Moghrabi, Sabharwal & Berman, 2015:3; Osibanjo, Akinbode, Falola & Oludayo, 2015:107). The solution requiring the prioritisation to support electricity theft investigations is in concurrence with literature because Geyevu and Mbandlwa (2022:11075) are of the view that municipalities and Eskom should be held accountable for failing to conduct investigations and follow ups on the illegal activities affecting the electricity supply projects. Based on limited resources, the participants believe that the police, courts and utilities should increase manpower to support the investigations of electricity theft.

The participants' belief concurs with assertions by Lawrence et al. (2019:4-5), that staff retention, incentives, recruiting right/skilled people and prioritising resources are necessary to counter the challenges in the investigation of electricity theft. While it is acknowledged in literature that the resources should be strengthened, the emphasis in literature is premised on the need of having human resources beyond the numbers but on basis of values, professionalism, skills and competency to protect and adhere to rule of law. Furthermore, the resources should include advance technology useful in criminal processes (Mabasa, Olutola & Mofokeng, 2022:2). According to Lawrence et al. (2019:4-5), enhancement of the investigation resources includes strategies such as provision of incentives to retain the competent and skilled personnel and ensuring personnel capable of prioritising the resources to support investigations.

The participants' answer depicting misconception of rights as a challenge to investigation of electricity theft is informed by the following remarkable answers provided by Sample C participants:

*“The perpetrators are always not acknowledging that their conduct of electricity theft is unlawful. They feel entitled or blame it on poor service delivery” and
“Utility employees are conforming to the believe harboured by community that electricity theft is less a crime”.*

The solution provided by the participants that utilities should accelerate the electrification of newly established settlements needing electricity and formalise the areas which are having illegal connections of electricity theft is in part aligned with the literature. While utilities have a responsibility to use part of electricity sales to subsidise electrification programme through National Electrification Fund (NEF), the electrification of indigent falls within the ambit of Department of energy and relies on funding by Treasury (Department of Energy, 2017:28-29). There should be caution on the way the right to basic electricity for indigent should be approached, hence utilities may not have jurisdiction to responsibilities of other institutions.

Therefore, organisations and individuals should not misconstrue the legitimate right entrenched in the Constitution of South Africa with illegal conduct of acquiring electricity (Kambule, Yessoufou, Nwulu & Mbohwa, 2019:200). Lastly, the answers of two Sample C participants provide an understanding that electricity theft has legally challenging characteristics namely invisible and intangible, thus making it difficult to investigate the crime. The participants’ solution that the law should be created point to them having belief that there is no proper law that can be used to investigate crimes (such as electricity theft) involving intangible and invisible properties. Following are the participants’ responses:

*“Legal definition of electricity theft is not clear particularly because electricity is intangible” and
“To deal with something invisible is technically challenging”.*

The views of the participants are consistent with literature because electricity theft is regarded as intangible (incorporeal) and invisible (Firstenberg, 2019:118; Michigan Occupational Safety and Health Administration (MIOSHA), 2021:1). Furthermore, in some decided cases such as *S v Scoulides*, *S v Harper and Another*, *S v Mintoor* and *S v Ndebele*, there is an indication of a continuous legal debate pertaining to theft of intangibles (incorporeal) and invisible objects. In *S v Scoulides*, *S v Harper and Another* and *S v Ndebele*, the judges recognised that complicated transactions such

as digital credits, technological transfer of rights from one person to another and electricity (electronic charges) are capable of theft.

However, the judge in *S v Mintoor* was not convinced that electricity theft can be stolen. Despite the latest court decision of *S v Ndebele* wherein the judge decided in favour of the notion that electricity as an incorporeal is capable of being stolen, there is still uncertainty in the legal fraternity given that court decisions remain relevant enforceable on provision they are not disapproved by latest outcomes of other similar cases. Hence, the need for a well-defined legislation governing electricity theft is likely to remain a necessity until it is created and enacted.

5.3.1.4 Lessons from investigations of electricity theft

Lessons learnt are premised on past experiences that can point to negative or positive outcomes, can be considered to improve future actions and can be shared verbally or in a documented form (Chaves, Araújo, Teixeira, Rosa, Júnior & Nogueira; 2016:28-29). Similarly, drawing lessons from past investigations of electricity theft carries a potential to improve the chances of effective investigation of the crime. Numerous lessons obtained from investigating electricity theft are recognised in this entire Section 5.3.1 premised on the dynamics of investigating electricity theft and are not exhaustive. The lessons learnt are summarised as follows:

- Adequate knowledge and accurate reports of electricity theft incidents are necessary to empower utilities and police on investigation practices effective to curbing the crime. Hence, there a need for electricity utilities and police to review and align the existing reporting mechanisms to encourage reporting of electricity theft (Dileep, 2016:56; Jiyane-Tshikomba, 2019:75; Kumar, 20173; Manaliyo, 2016:281-282; SAPS, 2021:15);
- Despite court decisions in favour of electricity theft, lack of a well-defined legislation addressing the crime contribute to difficulty in holding perpetrators criminally liable for electricity theft. Hence, there is a need for electricity theft legislation (Bolhuis, 2021:np; Musafiri, 2021:35, *S v Ndebele*);
- Electricity theft investigations are in most instances compromised by lack of will by utility employees to support criminal investigations with evidence. Utility employee and contractor corruption derails the successful investigation of electricity theft

(Mbanjwa, 2017:ii; Gaur & Gupta, 2016:135; Hijal-Moghrabi et al., 2015:3; Yakubu & Narendra, 2017:173);

- Indications point to utilities' slack approach to electricity theft investigations because of lagging in following up reports from communities about conduct associated with electricity theft (Geyevu & Mbandlwa, 2022:11075);
- Electricity theft is regarded as a crime against economy, however, not given the necessary attention by law creators, utilities, police and courts (Arango et al., 2016:np);
- Availability of human, material and financial resources are a necessity in the investigation of electricity theft (Khwela, 2019:26; Lawrence et al., 2019:1);
- Docket analysis for previously reported cases of electricity theft is valuable and offer guidance on aspects to embrace or avoid for successful investigations of the crime (Van Graan, 2014:145);
- Understanding the legal stance on the right to basic services entrenched in the constitution Act of South Africa is necessary to allay misconceptions that may derail investigations of electricity theft (Kambule et al., 2019:200; South Africa, 1996); and
- A meaningful training to instill and enhance a professional attitude in utilities' employees and police is necessary for effective investigations of electricity theft (Swanepoel & Meiring, 2018:463-464).

Six (6) Sample A1 participants and ten (10) Sample C participants were asked the following question

- "What are the most important lessons you have drawn from the investigation of electricity theft?"

The question was open ended and allowed participants to provide expressive answers. Fifteen (15) participants answered the question, and one (1) Sample A1 participant did not respond to the question. Some of the participants provided an answer depicting more than one lesson, hence the total number of responses might not tally with the number of participants who answered the question.

Informed by composite nature of some participants' answers; the answers of participants are grouped into different themes as follows:

- There is a need for legislation;
- Poor management of electricity material used by utilities;
- Corrupt employees and contractors in the service of utilities are contributory to the scourge of electricity theft;
- Delays in electrifying newly developed areas adding to a problem of electricity theft;
- Electricity theft result in fatal outcomes;
- Attitude of utilities, police and courts to electricity theft;
- A need to support investigations with evidence;
- Lack of methods to provide accurate measurement of electricity theft;
- Electricity evidence as a subject of legal scrutiny; and
- Use of basic crime investigation methods and tools is necessary in the investigation of electricity theft.

‘A need for legislation’ is the most (6 times) mentioned answer by two (2) Sample A1 participants and four (4) Sample C participants, followed by an answer pointing to ‘a need to support investigations with evidence’ which is mentioned thrice by one Sample A1 participant and two (2) Sample C participants, and an answer indicating ‘use of basic crime investigation methods and tools is necessary in the investigation of electricity theft’ as mentioned twice by two (2) Sample C participants. All the other answers are mentioned once by participants in different samples.

The majority views of the participants grouped into different themes provide invaluable lessons drawn from the investigation of electricity theft and are significantly in accordance with literature. In this study, most participants constantly mentioned the need for legislation, particularly in the current chapter. This proves that the absence of a well-defined legislation impedes legal measures (not limited to investigation) to address electricity theft. The need for legislation in dealing with electricity theft has been expressed clearly by various authors in Sub-Section 5.3.1.3 *supra* (Bolhuis, 2021:np; Chetty, 2018:3 & Musafiri, 2021:35).

Another lesson drawn by the participants on the investigation of electricity theft is that the use of basic crime investigation methods and tools is necessary in the investigation of electricity theft. The answer is a combination of two Sample C participants’ answers quoted directly as follows:

*“Taking statements, interviewing witnesses and suspects, obtaining warning statements and taking suspects fingerprints is important during the investigation of electricity theft” and
“It is necessary to obtain pictures and call Local Criminal Record Centre (LCRC) unit of SAPS”.*

The participants’ answer is supported in literature pointing that the processes and techniques involved in gaining knowledge to a particular crime are basic and necessary to deal with, and applicable to dynamic crime situations (Niu, Elsisy, Derzsy & Szymanski, 2019:2; Rosenfeld & Weisburd, 2016:329). In line with literature, the participants mentioned a need to support electricity theft investigations with evidence. According to De Silva et al. (2021:8) and Govender (2019:31-33), all crimes require the involvement of persons such as witnesses to assist in providing evidence to prove or disapprove the crime. While on the subject relating to importance of evidence on investigation of electricity theft, the participants demonstrate as a lesson that electricity evidence is a subject of legal scrutiny.

Although the participants’ view concurs with the provisions in literature; Feola, Mizio, Sala, Giordano and Pietra (2021:2) clarified that the process of examining evidence is not limited to electricity theft but encompasses all crimes. Among the lessons mentioned by participants is attitude of utilities, police and courts to electricity theft investigations. The participants’ answer is according to literature as discussed in Sub-Sections 5.3.1.1 and 5.3.1.2 of this chapter. Literature manifests that the unwelcoming attitude of police and court functionaries is contributory to utilities opting for measures alternative to criminal investigations and processes. Similarly, utilities have shown uninspiring attitude to criminal investigations of electricity theft (Davies & Cook, 2020:18-19; Gaur & Gupta, 2016:135; Gehl & Plecas, 2017:3-4; Mathias, 2016:19; Mbanjwa, 2017:ii).

The participants’ answer citing poor management of electricity material resonates with the insinuation by Govender (2017:3) that utilities are not properly safeguarding the project materials which end in the hands of criminals. Since utilities such as Eskom employ the service of contractors to carry out electricity related projects, it is surmisable that some of the project material is stolen by the contractor employees who use the material to commit acts associated with electricity theft. Although it could not be categorically mentioned that all contractors are involved in unscrupulous conduct,

those who are involved in the criminal acts of stealing material are likely to use the Eskom material to commit illicit electricity operations.

Furthermore, the culprits may deter or mislead investigation or any initiative to deal with electricity theft to avoid arrest, conviction or loss of income. The mismanagement of material can hardly be separated from the mentioning of corrupt employees and contractors in the service of utilities as part of lessons drawn in the investigation of electricity theft by participants. The views of the participants pointing to corrupt and detrimental conduct of utility employees to investigation of electricity theft is in line with literature and has been deliberated in Sub-Section 5.3.1.1 and 5.3.1.4 in this chapter (Dzansi, Rambe & Mathe, 2014:187; Mbanjwa, 2017:40).

Delays in electrifying newly developed areas is cited as contributory to electricity theft by the participants. Despite a discussion in Sub-Section 5.3.1.4 of this chapter pointing that the participants overlooked that electrification is not solely the responsibility of utilities, they were able to indicate in line with literature the importance of addressing social community needs (lack of electricity). Compromised community needs have a potential to impede the investigation of electricity theft and encourage hostile reaction or behaviour from affected communities (Department of Energy, 2017:28-29; Kambule, Yessoufou, Nwulu & Mbohwa, 2019:200).

The contentious community conduct may even lead to communities experiencing harm or death caused by failure to cooperate or let known the harmful illegal connections. Hence, the participants also mentioned as a lesson that electricity theft result in fatal outcomes and their view is supported in literature (Geyevu & Mbandlwa, 2022:11070; Govender, 2017:3). The participants' view that there is lack of methods to provide accurate measurement of electricity theft is inconsistent with literature. According to Arango et al. (2016:np), there are accurate methods and tools useful to provide accurate loss or theft of electricity. Among the methods mentioned by the author is the use of consumer tariffs, assessing the buying eagerness of consumers in a particular region and obtaining percentage of electricity stolen.

The participants' answers did not indicate some of lessons identified in literature and deliberated in this Sub-Section *supra* such as the importance of having accurate reporting mechanism and adequate knowledge of electricity theft incidents, the need

for human, material and financial resources, importance of case docket analysis as a source of reference, human understanding of rights to basic services and the criticalness of meaningful training of utility employees and police in investigation matters of electricity theft. The non-mentioning of some lessons drawn in about the investigation of electricity theft may not be construed as lack of knowledge of omitted lessons by the participants but may point to an indication that different people can draw different lessons from the same event (Paver & Duffield, 2019:107-108).

Indicated in this Section 5.3 *supra*, investigation precedes and leads to prosecution of electricity theft and other crimes (Feola, Mizio, Sala, Giordano & Pietra, 2021:2). Hence the discussion of the dynamics of prosecuting electricity theft in the next Sub-Section 5.3.2.

5.3.2 Understanding the prosecution of electricity theft

Prosecution forms a crucial component in criminal processes, involves the examination of evidence obtained for courts' attention, and *depends* on the outcomes of police investigation (Higginson, Eggins & Mazerolle, 2019:5). In the same way indicated in Section 5.3 of this chapter, numerous legal factors are considered when dealing with the dynamics of prosecuting electricity theft. Considering the diverse circumstances of prosecuting a crime enables an understanding necessary to encourage the good practices and develop improvement measures where a gap is identified (Lawrence et al., 2019:2-3).

Fundamental to criminal prosecution of electricity theft and other crimes is legal principles, *rules and guidelines necessary to regulate the functions in the prosecution process* (National Prosecuting Authority, 2019:11). The implementation of these legal principles is likely to be impacted by dynamic situations involved in criminal processes. Among the dynamic circumstances in prosecution of electricity theft is a need to legally hold accountable the perpetrators, whilst maintaining a balance to protect the rights of victims and accused as entrenched in Chapter 2 of the Constitution Act, Act 108 of South Africa (South Africa, 1996).

In addition, lack of a well-defined legislation dealing with electricity theft is cited by Bolhuis (2021:np), Mujuzi (2020:81) and Musafiri (2021:35) as a major impediment to prosecuting electricity theft. The legislation challenge of prosecuting electricity theft

has been highlighted in the decided cases *S v Mintoor* and *S v Ndebele and Another*. The judge in *S v Mintoor* was convinced that the characteristics of electricity theft of not being able to be appropriated renders it not being capable of being stolen. Whereas, in the latest decided case of *S v Ndebele*, the judge presided over the matter had a different view that the properties attached to the process of making electricity makes it a subject of theft.

Although the latter judge found guilty the suspects on the crime of electricity theft, it became apparent that the judgement relied heavily on Prevention of Organised Crime Act 121 of 1998 (South Africa, 1998), because there was no legislation created specifically for electricity theft. Among the dynamics involved in the prosecution is the reliability and usefulness of evidence presented at court to prosecute electricity theft. According to Yakubu and Narendra (2017:177), there are huge chances utilities are unable to secure and provide evidence required for investigation and prosecution. This is because utilities mostly rely on contractors who are difficult to trace when needed during criminal trials.

Furthermore, some of the untraceable persons are contributing to electricity theft in collusion with the permanent employees of utilities. Hence it may not be feasible for the perpetrators, who some of them are still in the employment of electricity companies, to provide evidence likely to implicate them. Instead, the involved employees may work towards ensuring that the criminal case opened does not reach a prosecution or conviction. As such, three (3) Sample D participants were asked the following question.

- “Describe your experience in prosecuting electricity theft cases”.

The question was open ended in its design and allowed expressive answers. All (3) participants responded to the question and each participant provided one descriptive answer. Following Table 5.4 depicts the participants’ response.

Table 5.4: Participants' answers on experiences of prosecuting electricity theft

Participants↓	Participants' answers for question: Describe your experience in prosecuting electricity theft cases.
Sample D	Difficult experience because of technicalities associated with a crime. I rely more on electricity expert evidence, which is often difficult to convert into legal evidence.
	I have very limited experience because electricity theft incidents are few. Very often, a legislation addressing electricity theft is questionable.
	Electricity theft cases have legislation issues since the electricity Act has been replaced by other acts, which are not so useful to prosecute the suspected persons.

(Source: Feedback from the participants)

Due to the compound and overlapping nature of the participants' answers, the answers of participants are summarised and grouped into four (4) answers in a form of statements depicting use of words sharing same meaning. The participants' answers as grouped according to words depicting same meaning are as follows:

- Legal technicalities make it difficult to successfully prosecute electricity theft;
- Expert evidence is difficult to be presented during prosecution;
- Lack of legislation criminalizing electricity theft is an impediment to prosecuting electricity theft; and
- Few electricity theft incidents contribute to limited experience of prosecuting the crime.

The summarised answer pointing to difficulty brought by legal technicalities to successfully prosecute electricity theft is in line with literature. According to Araya-Moreno (2022:329-330), legal technicality involves the process whereby court consider violation of legal processes to secure evidence, arrest or conviction. If such violation is identified or contested during criminal processes, its exclusion has a potential to exonerate the accused even if they have committed the crime. Mujuzi (2020:80-81) pointed a way in which conflicting court decisions can contribute to legal technicalities in prosecuting electricity theft.

However, Araya-Moreno (2022:329-330) underscore an understanding that legal technicalities are not limited to electricity theft but cover general crimes. Based on the response about expert evidence being difficult to be presented during prosecution, the

understanding as in literature is that expert evidence is useful to give courts opinions or guidance on matters that the courts may lack knowledge of (Muhamad, 2022:1). Olaborede and Meintjes-van der Walt (2020:5) warn that expert evidence can be biased and interpreted erroneously, hence it should be treated with caution by applying measures to test reliability and validity test.

Since the defence or the state is allowed to summon expertise in a particular field in which a court lacks knowledge, the chances are that the expert may provide opinion in favour of the party who requested their service (Lerm, 2015:37). It is essential to bear in mind that even if the service of expert evidence can be sought, it remains the responsibility of court to prove the facts of a criminal case placed before it. Therefore, the participants' answer that expert evidence is difficult to prove electricity theft during prosecution is aligned with literature. The participants' answer citing lack of legislation criminalising electricity theft as an impediment to prosecuting electricity theft, is aligned with literature.

The issue around legislation has been cited on numerous accounts in the study as a challenge to criminally hold accountable the perpetrators of electricity theft. The Sub-Sections pointed to lack of legislation criminalising electricity theft include among others Sub-Section 1.1 (Chapter 1), Sub-Section 4.2.1, 4.4, 4.7.2, 4.7.3.1 (Chapter 4) and Sub-Sections 6.2.1, 6.2.3, 6.2.5, 6.3.5, 6.4.2 (Chapter 6). Bolhuis (2021:np), Botha (2012:10), Chetty (2018:3) and Musafiri (2021:35) are among other authors who pointed to the absence of legislation as an obstacle to criminal prosecution of electricity theft.

The last answer by participants' manifests that few electricity theft incidents contribute to limited experience of prosecuting the crime. Literature reveals that poor reporting of electricity theft incidents amid escalating incidents of electricity theft deprive actors in the Criminal Justice System an opportunity to learn and improve ways to curb the crime using criminal processes (Bihl & Hajjar, 2017:1; Onat, 2018:174; Silber & Geffen, 2016:38-39). Therefore, the participants' answer is supported in literature. Sample D participants were asked the question: "*Based on your experience, can you suggest practical guidelines on how to prosecute cases of electricity theft?*" All (3) participants answered the question directed to them and some provided more than

one answer, which may not necessarily correlate with the number of participants. The participants' answers are summarised in Table 5.5 below.

Table 5.5: Practical guidelines to prosecution of electricity theft

Practical guidelines to prosecution of electricity theft	Number of participants in a sample who mentioned an answer
Secure supporting evidence	2 Sample D
The prosecution should be based on relevant legislation	2 Sample D
Secure scene of crime	1 Sample D
Use expert witnesses to support evidence	1 Sample D

(Source: Feedback from the participants)

Table 5.5 above demonstrates that Sample C participants mentioned three guidelines that can be applied practically during prosecution of electricity theft. The mentioned participants' answers culminated into three (3) guidelines that is a need to secure supporting evidence, reliance on relevant legislation and securing the scene of crime. It has been outlined in Sub-Section 5.3.1 *supra* that investigation of crime for purposes of prosecution involves securing evidence, securing crime scene and application of legislation (Gehl & Plecas, 2017:5-6).

5.3.2.1 The dynamics of quantifying electricity theft cases for prosecution

The number of cases reported to police, investigated and referred to court for decision is necessary to expose the prosecutors to dynamics of prosecuting electricity theft (Olsen, Courtney, Warnberg & Samuels, 2018:2-3). Lawrence, Gourdet, Banks, Planty, Woods and Jackson (2019:9) allude that prosecutors who regularly receive more cases for decision or prosecution are likely to have an improved practical experience and knowledge enabling them to handle a case in a way maximising the chances of convicting the offender as compared to those who receive less or none over a long period of time.

The exposure brought by number of cases received at court can also be simulated in matters of electricity theft. Hence, the reporting of electricity theft is essential in helping the law enforcements and courts to accumulate an improved understanding on the extent of crime. In the same way the investigation of electricity theft is influenced by reporting trends and the context in which a crime occurs, the prosecution of electricity

theft is premised on the quantity of cases registered with the police and brought to the attention of criminal court (Plecas, 2017:113). Despite an increase in number of electricity theft incidents in South Africa and a need to prosecute perpetrators of the crime; extremely few cases of electricity theft are subjected to prosecution and makes it impractical to conclude decisively on matters relating to prosecuting the crime (Mujuzi, 2020:81).

The researcher could not find in literature the details on quantities of electricity theft cases received and processed by courts over a specific period. The Sample D participants were asked a set of three (3) questions to understand their knowledge on number of cases received for prosecution. The first question asked is:

- “Based on your knowledge, how many electricity theft cases that you receive per month reach a court decision stage, but are dismissed or withdrawn before a prosecution (trial stage) or on nolle-proseque?”

The second question is:

- “Based on your knowledge, how many cases of electricity theft that you receive per month reach a prosecution stage, but end with a ‘not guilty’ verdict and without a conviction?”,

and the third question is:

- “Based on your knowledge, how many cases of electricity theft that you receive per month from SAPS reached a conviction stage?”

The participants required to provide reasons led to provided number of cases for each question asked. All the participants answered the questions, and some of the participants provided descriptive answers where a question required an answer indicative of quantity.

The participants’ answers to the first question requiring number of cases per month reaching a court decision but dismissed or withdrawn before a trial stage or on nolle prosequi indicate that there are few chances a case of electricity theft is brought to the attention of court for decision or prosecution. An indication from the answers of two

(two third) participants is that a maximum of two cases can reach a court decision over a period of years. Only one (one third) of participants mentioned that two (2) cases are taken to court per month. Nonetheless, the number provided is extremely few given that electricity theft incidents are on the increase and causing significant financial losses to utilities (Moshoeu, 2017:43).

The rarity of cases making their way to court is well represented in the answers of two Sample D participants who went to an extent of explaining their answer. The answers as quoted verbatim are as follows:

*“Approximately 2, not per month but after a long time. Sometimes a year or two passes without receiving that kind of a case” and
“Hardly a case of electricity theft is received, only those that relate to theft of electricity infrastructure such as cable and batteries. The last time I saw such a case it was 5 years ago”.*

The participants’ answers on reasons for the first question requiring the number of electricity theft cases reaching the prosecution and dismissed or withdrawn before they could proceed to trial stage are quoted verbatim as follows:

*“Lack of proper evidence”
“I may not know the reason, but I guess institutions such as Eskom do not feel a need to report the cases. On the other hand, their reluctance might be related to an issue that electricity theft Act was scrapped, and they are no longer having a strong basis to hold the perpetrators accountable for electricity theft. With municipality is even worse, I have never seen them reporting a case of electricity theft” and
“Since the Act dealing with electricity theft was amended to have lesser effect on prosecuting the crime, it is extremely difficult to handle the case”.*

The participants’ answers point to evidential issues associated with electricity theft, poor reporting of electricity theft by utilities and lack of legislation supporting the prosecution of electricity theft. All these aspects mentioned by participants are in line with literature as deliberated in Sub-Sections 5.3.1.1, 5.2.3.2 and 5.3.1.4 of this chapter. Jiyane-Tshikomba (2019:75), Mathias (2016:19), Shively et al. (2014:46) and Yoon (2015:19-21), pointed to poor reporting of electricity theft as a challenge in criminally dealing with the crime. The answer that electricity theft has evidential challenges has been highlighted by Feola et al. (2021:8). The lack of legislation to support the criminal processes of electricity theft is cited by Bolhuis (2021:np), Chetty (2018:3) and Musafiri (2021:35).

On a second question requiring the participants' knowledge on number of electricity theft cases they receive per month reaching a prosecution stage, however, end with a 'not guilty' verdict and without a conviction; two (2) participants' answers point to zero (0) number of cases received. One participant provided a descriptive answer instead of quantifying the cases, and the answer quoted verbatim is:

"Since this kind of incidents are rare, it is difficult to tell the precise numbers".

Nonetheless, the participant's use of word "rare" is substantiating the zero answers provided by two (2) participants. The participants' reasons on the mentioned number of electricity theft cases reaching the prosecution but ending without a guilty verdict or conviction point to two main reasons as follows:

- It is rare for electricity theft cases to reach a prosecution stage, thus depriving prosecutors an opportunity to learn and understand the dynamics of the crime; and
- Lack of legislation is a main reason that makes it difficult to prosecute electricity theft, thus discouraging utilities to report the crime for criminal investigation and prosecution.

Below are the answers of the participants cited verbatim as an indication that lack of legislation to criminally deal with electricity theft poses a challenge to prosecute the crime, and electricity theft cases rarely reach the prosecution.

"I have never dealt with such a case. My experience and assumption is that such cases are not well articulated in the legislation. If there is no clear legal mandate on how to deal with a case, it becomes difficult for prosecution to deal with such case".

"Such cases are even difficult to reach a trial stage. In my career as a prosecutor, I have never met one at trial stage", and

"Remember that a criminal case requires one to prove beyond reasonable doubt, and that is difficult with electricity theft cases. The parliament need to go back to the drawing board and relook into how they can criminalise the act of stealing electricity. If the crime is clearly defined, the courts won't have a challenge to prosecute".

Although the participants' answers to second question could not be found in literature, it is deductible that the participants' answers are aligned to the understanding that few electricity theft cases reported at the police deprive investigators and prosecutors an opportunity to learn about the crime. According to Mbewu et al. (2021:2), non-reporting of crime and lack of criminal cases reaching the attention of criminal justice system is

detrimental to the society, victim and authorities responsible to criminally deal with crime. Hence, it is surmisable that lack or few cases to court are not assisting the prosecutors to understand and appreciate the dynamics of a crime.

The participants' reasons pointing to lack of legislation and rare number of cases reaching the court are supported in literature, because various authors agree that lack of electricity theft legislation is an impediment to prosecuting the crime (Jiyane-Tshikomba, 2019:75; Musafiri, 2021:35). On the third question requiring the participants to provide information based on their knowledge the numbers of electricity theft cases received per month from SAPS that reach a conviction stage, all the participants mentioned that no cases were received. The reasons for the participants' answers are similar in that all of them indicate that they did not experience electricity theft cases resulting in a conviction. The answers of the participants cited verbatim are as follows:

*"I have never seen such a case at trial stage",
"Hence, I indicated that they hardly reach a trial stage. I don't know if in future maybe we will receive such cases regularly", and
"I experienced none".*

The participants' answers indicating that zero cases secure conviction per month cannot be assessed based on literature, because it is informed by their knowledge and experience. Furthermore, literature demonstrate that electricity theft cases are not adequately reported amid knowledge that electricity theft is rife (Khwela, 2019:1; Manaliyo, 2016:281-282). Inferentially, it is likely that the few electricity theft cases reported have evidential issues that may result in a case being withdrawn at a court decision stage or discharged at a trial stage (Feola et al., 2021:2).

5.3.2.2 Approaches and practices to prosecution of electricity theft

Mujuzi (2020:84) asserts that South Africa completely relies on courts to prosecute electricity theft. The latter author intimates further that private prosecutions by utilities (as directly and mostly affected by electricity theft) is necessary to empower them to conduct prosecution of the crime. The suggestion is made despite mentioning a disadvantage that private prosecution can deprive utilities to recover the costs of prosecution from the accused. This leads to a supposition that utilities are likely not to regard private prosecution as a viable remedial amid knowledge that electricity incidents are significantly impacting the income of utilities. Furthermore, as indicated

in Section 1.2 (Chapter 1 of this study); there are existing measures such as fines, disconnections and load reductions implemented by utilities to recover the loss incurred from stolen electricity and to protect the energy infrastructure.

Lawrence et al. (2019:1), demonstrate that the public expectation from the prosecutors is to ensure that justice is attained in a just manner amid the limited budget, resources and technology experienced by prosecutorial teams. Hence, the discussion relating to usefulness of resources in Sub-Sections 5.3.1.1 and 5.3.1.3 *supra* is also applicable to the prosecution of crime. The availability of sufficient resources is necessary and likely to influence the effectiveness of electricity theft prosecution. Prosecutors may not necessarily give attention to crimes based on their ranked importance, but according to the order in which the crimes are brought to their attention.

The Sample D participants were asked the following question:

- “Based on your experience, does the prosecution of electricity theft cases require a prosecution approach different from other criminal cases within your work precincts?”

The participants were required to provide a ‘yes’ or ‘no’ response. The participants who provided a ‘yes’ response, were required to explain the distinction between prosecution approaches to electricity theft cases and other criminal cases. All (3) Sample D participants answered with a ‘No’, and there was no need for them to explain the distinction between prosecution approaches to electricity theft cases and other criminal cases. The answers of the participants demonstrate that all participants are of the view that electricity theft does not require a different prosecution approach. The participants’ answers are in line with literature in that according to Ngalo (2017:8-9), the criticalness in the prosecution of crimes (not limited to electricity theft) is to ascertain that the principles of law are adhered to, the rights of affected parties particularly the accused are protected, and the principle of fairness is upheld.

Furthermore, the Sample D participants were asked the question:

- “Based on your experience, what are the prosecution practices you have implemented in the past during the prosecution of electricity theft cases?”

The ensuing follow-up question was asked:

- “What were the outcomes of the investigation practices mentioned in the previous question?”

All three (3) participants responded to the question as well as a follow up question requiring the participants to provide the outcomes of the prosecution practices. Table 5.6 overleaf depicts the participants’ responses.

Table 5.6: Participants’ answers on prosecution practices to electricity theft

Participants↓	Participants' answers for question: Based on your experience, what are the prosecution practices you have implemented in the past during the prosecution of electricity theft?	Participants' answers on the follow up question: What were the outcomes of the prosecution practices mentioned in the previous question?
Sample D	The criminal processes are the same in all the criminal cases because they are guided by Criminal procedure Act and other criminal related statutes.	Since I was employed here, I have not witnessed or handled an electricity theft case that secured a conviction.
	Basic prosecution practices applicable to other crimes as informed by legislation and common law.	The outcomes differ on case by case, but mostly a legislation of electricity theft is a challenging factor.
	I follow the normal criminal processes and procedures; hence each case can be unique.	There is less conviction. I know of 2 cases which were attained at other courts other than where I am working, and I was not involved in the prosecution of the case. Based on what I observed, the conviction was assisted by use of alternative acts to hold accountable the perpetrators and the conviction did not directly relate to the crime of electricity theft.

(Source: Feedback from the participants)

In the above Table 5.6, the participants’ responses do not indicate a specific practice. However, the answers demonstrate that the practices of prosecuting electricity theft are guided by the basic criminal procedure and informed by statutes pertinent to

criminal processes. The participants' answers resonate with De Rebus (2021:np) demonstrating that the practices involved in the prosecution of crimes are based on legal requirements, among them is Criminal Procedure Act, Act 51 of 1977 (South Africa, 1977) and Constitution Act of South Africa, Act 108 of 1996 (South Africa, 1996).

5.3.2.3 Challenges and possible solutions to prosecution of electricity theft

Electricity theft is a prejudicial and difficult crime to prosecute (Bihl & Hajjar, 2017:1). The South African courts deliberated on the complexity of matters associated to prosecuting electricity theft to a reasonable extent, and there are numerous irreconcilable court decisions about non-corporeal (such as energy and money credits in a bank account) capable of being appropriated (Njotini, 2016:3). The intricacies of investigating and prosecuting electricity theft as accentuated in Section 1.1 (Chapter 1 of this study), Section 4.6 (Chapter 4 of this study) and Sub-section 5.2.3.2 *supra* present a need to enable standard interpretation of the crime. The interpretation can be realised by addressing identified legislation inadequacy needed by the prosecutors to make decisions and lead the evidence during prosecutorial duties.

Prosecutors regularly decry that despite willingness to place electricity theft cases on the court roll for trial, they are in most instances discouraged by poor quality of investigation and evidence provided by law enforcement and utility investigators (Eskom, 2023a:2). According to Singh (2021:642), failure to conduct proper and ethical investigation beyond reproach amount to violation of legal principles necessary to prosecute the offenders. Furthermore, the evidence obtained using compromised legal methods will not be considered at court as informed by Sections 35(1)(c); 35(3)(i) and 35(5) requiring proper handling of evidence in Chapter 2 of the Constitution Act of South Africa, Act 108 of 1996 (South Africa, 1996) and Chapter 2 of Criminal Procedure Act, Act 51 of 1977 requiring a legal way to deal with evidence and conduct a search.

These Acts are binding to investigators involved in electricity theft evidence collection and preservation. Sample D participants were asked the following question:

- “What are the challenges of prosecuting electricity theft?”

The participants were further asked this follow-up question:

- “What do you think might be helpful in overcoming the challenges of prosecuting electricity theft?”

All three (3) participants answered the question and each provided one (1) descriptive answer to the challenges of prosecuting electricity theft. The first participant indicate that it is difficult to prove electricity theft because is not tangible and cannot be quantified. The second participant mentions that it is challenging to secure evidence and crime scene of electricity theft. The third participant alludes that there is no clearly defined charge of electricity theft, instead, alternative charges are used to prosecute electricity the crime. The three (3) Sample D participants’ answers are quoted verbatim as follows:

*“You may not directly frame a charge that relates to theft of electricity, instead alternative charges such as damage, tamper, cut, alter can be used”,
“It is difficult to prove electricity theft because unlike tangible things, it is usually not easy to quantify the loss” and
“Securing evidence and scene of crime”.*

The participants’ answer indicating that alternative charges to electricity theft can be used is supported in literature as deliberated in Sub-Section 4.6.4 (Chapter 4 of this study). *In S v Ndebele and Another* (SS16/2010) [2011] ZAGPJHC 41, the accused involved in stealing and using vending machines from Eskom were charged and found guilty on Prevention of Organised Crime Act (Act 121 of 1998) (South Africa, 1998). The participants’ answer indicating that the intangible nature of electricity makes it not easy to quantify the loss is found in literature as deliberated in Sub-Section 3.3.6 (Chapter 3 of this study) and 5.3.1.3 of this chapter. According to Firstenberg (2019:118) and in *S v Scouvides, S v Harper and Another, S v Mintoor* and *S v Ndebele*; electricity theft is considered as an intangible.

Furthermore, electricity theft is measured by estimating properties. On the challenge of securing evidence and scene of crime mentioned in the answers of participants, there is partial concurrence from literature in that obtaining evidence requires support from witnesses and other role players, which their unwillingness may render difficult the process to secure evidence (De Silva et al., 2021:8; Govender, 2019:31-33). However, it is clarified that the complexity of any crime (not limited to electricity theft) depends on circumstances a crime occurs (Gehl, 2017:113). Therefore, the challenge of securing evidence and scene of crime is general to all crimes.

The participants' answers about what they think might be helpful in overcoming the challenges of prosecuting electricity theft point to the following aspects:

- There is a need for a well-defined legislation to criminally deal with electricity theft;
- There is a need for electricity utilities to train their employees on the handling of electricity theft crime scene; and
- There is a need for electricity utilities to reinforce to their employees that their testimony and evidence is useful in the prosecution of electricity theft.

Two of the participants mentioned an aspect indicating a need for a proper legislation to criminally deal with electricity theft, while one participant points to a need to handle and provide evidence for court purposes. The answers of all participants are supported in literature in that Badiye, Kapoor and Menezes (2022:np) asserts that preserving evidence increases the chances to prosecute the perpetrators of crime. Conversely, compromised evidence weakens even the criminal case with great potential to secure conviction (Panzavolta, Maes & Mosna; 2022:123). The aspect relating to a need for clearly defined legislation is supported by various authors who demonstrate that despite the presence of measures and procedures in dealing with general crime, creation of electricity theft related legislation will contribute tremendously to the prosecution of the crime.

5.3.2.4 Lessons from prosecuting electricity theft

In the absence of a report by a complainant, the crime may not be brought to the attention of the prosecutors as custodians of prosecuting criminal cases. Hence Gultom and Flora (2020:71) asserts that prosecuting electricity theft depends on persons' willingness to report the crime for purposes of investigation and prosecution. As discussed in Sub-Section 5.3.2 *supra*, failure to report electricity theft to police denies prosecutors and courts an opportunity to learn from the dynamics of the crime and enhance legal approaches to criminally hold accountable the perpetrators of crime (Bihl & Hajjar, 2017:1; Onat, 2018:174; Silber & Geffen, 2016:38-39).

Mhaule (2017:38) points to a growing interest in prosecuting electricity theft particularly in that electricity theft is threatening the sustainability of economic growth. Like other crimes, prosecuting electricity theft should be guided by legal principles entrenched in the Constitution Act of South Africa, Act 108 of 1996 (South Africa, 1996), Criminal

Procedure Act, Act 51 of 1977 and other statutes governing criminal processes. However, an indication is that electricity utilities are inclined to place in abeyance the prosecution of electricity theft offenders and prefer use of amnesty methods on certain conditions that may be favourable to curbing the crime or assisting the recovery of lost revenue (Moeketsi, 2022:np).

On the other hand, the high number of general criminal cases experienced by the against limited resources present a demoralising factor to the prosecutors as public legal representatives. The prosecutors may not find a need to prioritise electricity theft among other criminal cases considered more important than electricity theft (Kotwal & Manhas, 2017:1; Khwela, 2019:26). Circumventing of prosecution processes in electricity theft matters is likely exacerbated among other matters by lack of effective laws to deal with the crime (Deep, 2022:np). Hence, various authors allude to a need of a well-defined legislation of electricity theft (Chetty, 2018:3; Musafiri, 2021:35).

The lack of legislation has a potential to affect even the evidential aspects in electricity theft prosecutions in that different court judgements came to different conclusions on interpretation of electricity theft as a commodity capable of being stolen. The judgement in *S v Ndebele* found that electricity can be stolen by virtue of appropriating the properties attached to it. Whereas in *S v Mintoor*, the presiding judge had a different interpretation that electricity theft cannot be stolen. Sample D participants were asked the following question:

- “What are the most important lessons you have drawn from the prosecution of electricity theft?”

The question was open ended and allowed participants to provide expressive answers. All three (3) participants answered the question. The participants’ answers are represented in Table 5.7 below.

Table 5.7: Participants' answers on lessons learnt from the prosecution of electricity theft

Participants ↓	Participants' answers for question: What are the most important lessons you have drawn from the prosecution electricity theft cases?
Sample D	There is a need a need for a legislation that is clear on the conduct of stealing electricity.
	Let there be a well-defined legislation addressing electricity theft.
	There should be a clearly defined statute criminalising theft of energy and it must describe in clear terms the prohibited conduct and sanction.

(Source: Feedback from the participants)

Amid a range of lessons from literature, the participants' answers point to one lesson, which is lack of a well-defined legislation governing electricity theft. The absence of proper legislation to deal with electricity theft is critical in that almost all the aspects dealt with in this study and in literature point to a need for proper electricity theft legislation (DeSilva, Dharmasini, Bhuddhadasa & Ranaweera, 2021:10; Dileep, 2016:56; Van Graan and Van der Watt, 2014:149).

5.3.3 Partnership in investigations and prosecutions of electricity theft

Partnerships is a distinctive and critical component required in various endeavours including criminal processes. According to Crawford and Cunningham (2015:77), individuals and organisations accommodating collaborative efforts stand a chance to accomplish goals by taking advantage of shared expertise, skills, knowledge and resources offered by partnership ventures. Different abilities brought together are likely to enhance the attainment of justice sought by reporting crimes for purposes of investigation and prosecution (Criminal Justice Joint Inspection, 2015:16). Although partnerships can be unique, they all thrive in certain common standards such as open communication, accessibility, flexibility, mutualism, and have measurable results.

Accordingly, successful investigations and prosecutions of electricity theft largely depend on support from various parties. Like other crimes, the investigation and prosecution of electricity theft can thrive in the creation and maintenance of relationships with role players pertinent to the course of fighting the crime (Gehl & Plecas, 2017:17). The court functionaries such as prosecutors and magistrates are among the notable partner's contributory to ascertaining proper investigations of crimes. The kind of relationships crime investigators have with the relevant role players

can determine the appropriateness and legitimacy of the processes involved in the investigation. According to (Mokwena, Motseki & Dube, 2020:169), the relationships are evidential in the interaction and consultation processes taking place between the crime investigation team, prosecution and the judiciary during the investigation or pre-trial stages. Furthermore, investigation processes such as bail objections, confessions and access to information may require the involvement of the magistrate. If these interaction processes are not dealt in a proper and amicable manner, they may lead to stiffened work relations and compromised investigations of electricity theft.

United States Agency International Development, (2022:10) outline a gap in the collaboration of efforts necessary to fight electricity theft. Among the parties pertinent to the fight against the crime are community members, utilities, law enforcement and prosecutors, and they need each other to ensure that justice is attained. For example: utilities suffering loss of revenue due to electricity theft need community members to report the incidents and serve as witnesses in criminal cases. Equally, community members may be prejudiced by some illegal connections which may lead to explosion on energy equipment in the entire neighbourhood. According to Swanepoel and Meiring (2018:451), it is common that the police and courts are working together on crime matters. However, the less rate of investigations and convictions experienced in South Africa is an indication that the parties necessary in the partnership are not adequately taking an advantage of collaborating to maximise the benefits of effective partnership. Therefore, there is a need for common partners (law enforcement and National Prosecuting Authority) in the investigation and prosecution of electricity theft to have an enforceable partnership compact to support each other in matters of electricity theft.

Samples A1, C and D were asked the following question: “Based on your experience, how effective is the working partnership between electricity utilities, SAPS detectives and NPA prosecutors in terms of securing evidence required for successful prosecution of electricity theft cases reported for criminal investigation purposes?”

The participants were required to select the most relevant answer among the options not-effective, less-effective, effective, more-effective and most-effective. Furthermore, the participants who selected not-effective and less-effective were required to elaborate on the choice of their answer. All nineteen (19) the participants answered

the first part of the question requiring participants to select an answer option. The participant's distribution of responses is represented in Figure 5.8 below.

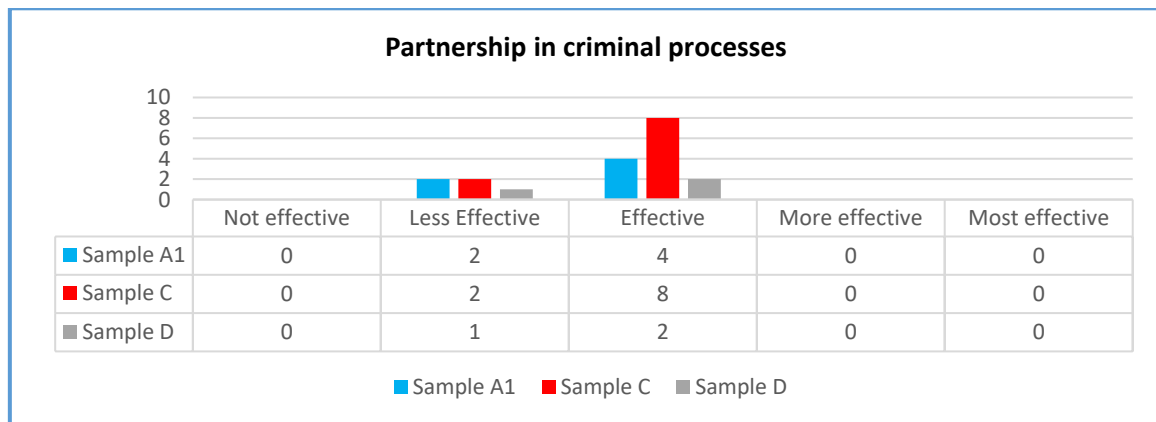


Figure 5.8: Police, NPA prosecutors and utilities partnership in criminal processes

(Source: Feedback from the participants)

The participants' answers as depicted in Figure 5.8 above indicate that most (14) participants believe that there is an effective partnership between the police detectives, NPA prosecutors and utilities, while five (5) participants are of the view that the partnership is less effective. Since the participants who selected 'not effective' and 'less effective' were required to substantiate their choice of answers, only five (5) participants were required to substantiate for their selected answers. Notably, the five (5) participants yielded a total of 15 elaborative statements as represented in Table 5.8 below.

Table 5.8: Participants elaboration on responses to ineffectiveness of working partnership between electricity utilities, SAPS detectives and NPA prosecutors

Participants↓	Participants' elaboration for their choice in the previous question. Only those who selected not-effective and less-effective options.
Sample A1	There is too much workload and contradicting job profiles leading to ineffective partnerships; not getting help when reporting electricity theft.
	Only when follow up is done, police can help utilities with electricity theft matters.
	At times utilities get advice from prosecutors and police about how to investigate with intention to legally hold perpetrators accountable.
	Corruption of police and utility employees makes it difficult to keep alive the partnerships.
Sample C	Lack of electricity theft legislation affects even the working relationship because we see each other as not being supportive.

Participants↓	Participants' elaboration for their choice in the previous question. Only those who selected not-effective and less-effective options.
Sample C	There is co-operation but there are instances whereby we struggle to get a dedicated person to give evidence.
	There are still some gaps in terms of interdepartmental support. i.e., Eskom is fragmented, when we require them to help in identifying the electricity equipment, they will refer the matter from one department to the other internally. Furthermore, they take long to respond.
	As police, we support utilities during removal of illegal connections. However, there is often a confusion from utilities to task persons responsible to help in evidence for court purposes.
	The partnership is there, although not so much given that there are less number of cases reported for investigation to SAPS.
	It is difficult to have a clear indication of partnerships because very few cases of electricity theft are reported.
	SAPS and NPA prosecutors work hand in hand but at times challenged by evidence that is not so well-coordinated.
	The co-operation is just fair.
Sample D	The partnership effectiveness is based on infrastructure crimes than energy theft.
	Poor legislation renders the partnerships ineffective, although the police and courts are willing to prosecute, the chances of securing conviction for electricity theft are low.
	Electricity theft is more complicated than infrastructure crimes, police and courts can be seen not willing to help utilities to curb the crime.

(Source: Feedback from the participants)

Table 5.8 indicates that four (4) elaborations obtained from Sample A1 participants, eight (8) from Sample C participants and three (3) from Sample D participants. The minority (5) participants are not convinced by the partnership between police, NPA prosecutors and utilities. Most of the elaborative statements are conditionally stated. The following are two statements pointing to the doubt of partnership level of effectiveness:

*“Only when follow up is done, police can help utilities with electricity theft matters” and
“There is cooperation but there are instances whereby we struggle to get a dedicated person to give evidence”.*

When comparing the responses of the participants, it is evident that the views of majority participants differ with the literature because they regard the partnership between police, NPA prosecutors and utilities as effective. Instead, the minority

answers and their substantive statements supports what is in the literature (States Agency International Development, 2022:10; Swanepoel & Meiring, 2018:451). United States Agency International Development (2022:10) reveals that there is lagging partnership between parties to the fight against electricity theft. In this regard, Swanepoel and Meiring (2018:451) mention that police detectives and prosecutors are preoccupied with personal interests than acting in the interest of the public, hence, their conduct compromises the intended purpose of attaining justice by those affected by crime. On the other hand, utilities are in most instances denounced by police and courts for not providing the necessary support required during investigations and prosecutions of electricity theft (Gaur & Gupta, 2016:135).

5.4 SUMMARY

In this chapter, there were deliberations on the dynamics likely to affect the manner of curbing electricity theft using criminal processes. The focus was on the extent of electricity theft in Limpopo Province, and the dynamics of investigating and prosecuting electricity theft. The extent of electricity theft is synthesised into an understanding of hot spots areas, reporting trends and reporting system utilised by energy electricity utilities, and law enforcement. Accordingly, the focus was on law enforcement, utilities and NPA prosecutors to outline the dynamics of investigating, prosecuting and partnerships involved in the criminal processes.

It has been determined that electricity theft is expansive in nature and affect Limpopo Province. A consensus from the literature and participants is that Nkowankowa, Lulekani and GaKgapane are on top of the list of areas with high number of electricity theft incidents in Mopani region, Limpopo Province. There is less likelihood for utilities to report electricity theft for purposes of criminal processes amid willingness of some community members to assist. Among the causes of poor reporting are corrupt utility members who perpetuate the crime. Similarly, most community members choose to not report electricity theft because they benefit from illegal consumption of energy. Even if potential reporters may like to report, the reporting systems utilised by utilities and law enforcement are not conducive to enable accurate and reliable reports of electricity theft.

While it is necessary to understand the impediments in the investigation and prosecution of electricity theft with intention to improve, it is acknowledged that the

investigation and prosecution of electricity theft is complicated. The complication is attributed to utilities not supporting law enforcement and prosecutors with evidence required to prosecute the crime. Conversely, the law enforcement appears to prioritise other crimes over electricity theft because the crime is not regarded as other critical offences. Lastly, there is a strong indication that lack of legislation dealing with electricity theft has detrimental effect to curbing the crime using criminal processes. It is important for utilities as the most affected by electricity theft to lobby and influence for meaningful legal interventions effective to curb electricity theft.

CHAPTER 6: PRACTICES TO CURB ELECTRICITY THEFT BY ELECTRICITY UTILITIES

6.1 INTRODUCTION

Ascertaining and forming an idea about the existing practices of curbing electricity theft is crucial to identifying and enhancing different practices (measures) against energy theft and its effects in the business of electricity supply (Xiao, Huijie, Jia, Huiyan, Yingying, Hua, Ling, Jianchun, Hainan & Jingxin, 2018:364). The attainment of sustainable energy supply, profit and improved welfare of the public are among other impelling reasons to apply measures to curb electricity theft. In the process of inescapable developments or transformation processes occurring within and outside the electricity industry, and to determine their usefulness, there might be a need to appraise and augment the existing practices of protecting electricity against theft (Thangalakshmi, 2015:30844).

Central to this chapter is the fourth research objective of the study as articulated in Section 1.5 of Chapter 1, namely: “To determine and evaluate current practices of curbing electricity theft by utilities in South Africa”. Accordingly, it is then important to outline the relevant aspects pertinent to this objective in the current chapter. As indicated in Section 1.1 (Chapter 1 of this study) and according to reasons provided in Section 4.7.3 (Chapter 4 of this study), Eskom and the selected Greater Tzaneen municipalities constitute the critical focus of the deliberations on ‘current practices to curb electricity theft by electricity utilities’ in this chapter.

This chapter determines and evaluates the current practices of curbing electricity theft in response to the challenges associated with the crime. The rules, procedures and guidelines applied by utilities to curb electricity theft are determined and their feasibility are examined. The role of the police and the courts as institutions critical to the aim of this study are then outlined in order to determine their contribution to curbing electricity theft.

6.2 CURRENT PRACTICES OF CURBING ELECTRICITY THEFT AS A RESPONSE TO CHALLENGES ASSOCIATED WITH ELECTRICITY THEFT

Understanding the variables influencing the practices in any business require an awareness of challenges contributing to the particular practices (Boffo & Patalano, 2020:10). In the same way other sectors in business anticipate potential obstacles, variations and contingencies influential to the attainment of organisational objectives; the energy sector constantly encounters challenges impeding the operations and performance of effective electricity supply (Cant, 2012:1108). A demonstration by Musungwini (2016:55) is that the energy supply related challenges include electricity theft and occur in the presence of the developments and transformation efforts in the electricity business. These challenges present utilities with opportunities to implement the practical measures to overcome the energy theft (Da Silva Costa Lima, 2015:18).

There is an indication that challenges associated with electricity theft are relational matters and extend beyond the menace experienced by utilities, to negatively affecting the legitimate consumers or customers (Abdullateef, Salami, Musse, Aibinu & Onasanya, 2012:2277). Dealing with the composite nature of challenges related to electricity theft requires an assessment of the involved situations and settings (Depuru, Wang, & Devabhaktuni, 2011:1007). The assessment of situations may lead to realisation that some of electricity related challenges are interrelated in a way that a solution to one challenge may potentially present solutions to other challenges. Furthermore, evaluating the situations associated with electricity theft are essential to understanding the basis on which utilities effect certain practices to curb the crime (Otuoze, Mustafa, Mohammed, Saeed, Surajudeen-Bakinde & Salisu, 2019:4). Hence, the following Sub-Sections 6.2.1 to 6.2.5 is a discussion of challenges giving rise to practices of curbing electricity theft by utilities.

6.2.1 Overloading of electricity equipment

Overloading of electricity equipment happens when the load connected to energy infrastructure uses more than the maximum energy that can be supplied by a source (Gilvanejad, Abyaneh & Mazlumi, 2013:855). Depending on the excessive amount of energy the electrical equipment is exposed to over a certain period, the electricity

equipment can burst or be ome damaged (Godina, Rodrigues, Matias & Catalão, 2015:12148).

The common types of equipment affected by overloading are energy transformers and energy cables (Gaur & Gupta; 2016:127; Ricketts, 2020:52; Saeed, Mustafa, Hamadne, Alshammari, Sheikh, Jumani, Khalid & Khan, 2020:4742). Khwela (2019:5) indicates that the damaged energy equipment could be in the form of low hanging wires, which in turn, become a safety hazard to human and animal life. The overloading of the energy equipment is in most instances precipitated by the conduct of stealing electricity and result in utilities encountering substantial losses of energy and incurring extra costs of replacing and normalising the energy supply equipment (Blazakis, Kapetanakis & Stavrakakis, 2020:4; Komolafe & Udofia, 2020:246).

Godina et al. (2015:12153), assert that utilities engage in continuous efforts to improve on the current practices to deal with overloading related to energy theft. To avert the illegal and excessive loading of energy networks, utilities use various technical methods, such as switching off the energy supply at different intervals in areas prone to severe threat of illegal connections (Eskom, 2017a:39). However, the contractual and technical obligations between utilities and some of the customers within the overloaded areas may restrict a deliberate load reduction by utilities. The customer driven obligations leave utilities with an overwhelming task of balancing the energy supply needs of particular customers and the protection of the energy infrastructure (Antonoadis, Cordy, Sifaleras & Traon, 2020:2).

South Africa manifests a passive commitment to enforce the law in curbing electricity theft (Manyaka & Nkuna, 2014:1574). In this regard, Depuru, Wang and Devabhaktuni (2011:1009-1011) highlight that the passive enforcement of law occurs amid available knowledge that energy theft is a crime punishable in terms of the criminal laws. Furthermore, countries which are robust in law enforcement experience significant low levels of electricity theft. Notably, the overloading of energy networks is a culmination of all other forms of electricity theft, which requires a stern enforcement of the existing criminal laws to curb the offence (Depuru, Wang & Devabhaktuni, 2011:1009-1011).

6.2.2 Dishonest workforce

Honesty is an indispensable requirement of effective and sustainable organisations. Institutions with dishonest personnel and practices are inclined to destabilise, because they cannot maintain support from stakeholders pivotal to the growth of those institutions (Cohn, Fehr & Marechal, 2014:86). Dishonesty is associated with criminal and unethical conduct, both of which are undesirable due to their devastating effects to businesses, organisations and society (Houdek, 2020:695; Irianto, Novianti, Rosalina & Firmanto, 2012:148).

Similar to other profit driven businesses, it is necessary for electricity utilities to conduct business in an honest manner. However, there is a manifestation of questionable practices and tendencies by some of the employees and contractors of the electricity supply industry. According to Mbanjwa (2017:19), corrupt employees and contractors of energy utilities contribute significantly to electricity theft. The personnel or contractors of utilities engage in different dishonest transactions such as colluding with customers in stealing electricity (Shokoya & Raji, 2019a:97).

Gaur and Gupta (2016:127) enlighten that the dishonest employees or contractors of utilities would solicit or accept bribes from the electricity theft perpetrators in exchange of untrustworthy dealings. The undesired dealings include the utility employees ignoring the illegal tampering of energy equipment, fail to issue fines or disconnect the illegal customers and lessen the energy consumption bills to help users evade payment of energy consumed. Some of the utility employees and contractors abuse the authority vested upon them by virtue of their employment or contract, and illegally install illegal connections at their own or customers' places (Shokoya & Raji, 2019b:469).

Chetty (2018:3-4) cautions that lack of a well-defined policy on dealing with electricity theft by utilities such as Eskom could compromise efforts to tackle the commission of the crime by employees of utilities, community members and contractors. Therefore, employees of utilities and contractors inclined to engage in electricity theft dealings may not feel the need to stop their illegal conduct because the illegal rewards of stealing from their employer outweighs the discipline measures imposed on them.

Dzansi, Rambe and Mathe (2014:187) indicate that the existing practices or sanctions such as suspensions, dismissals, demotions and fines imposed on dishonest employees or contractors of utilities are not sufficient to curb the crime of electricity theft. Furthermore, Rambe and Mathe (2014:187) advise that utilities should pay attention to and address the causes of behaviour such as attitudes and perceptions of the dishonest employees by promoting the following aspects:

- Fair and balanced remuneration of employees.
- Create an environment allowing employees to share ownership of the business and decisions of utilities.
- Recognize and reward informants or whistle blowers.
- Expose those employees who are involved in dishonest dealings by naming and shaming them.
- Enhance security measures in areas prone to dishonest conduct of employees.

Addressing the behaviour of the workforce has the potential to instil a sense of ownership and protection of the electricity supply equipment among the employees and contractors (Dzansi et al., 2014:187).

6.2.3 Legal implications and compliance issues

Legal requirements form the basis of businesses, in that the organisations that are in contravention of the legal stipulations governing their functional responsibilities may be subjected to litigation (Baker & Phillips, 2019:189). Similarly, energy utilities are frequently involved in legal battles arising from their operations. Legal claims or lawsuits linked to violated laws of public and employee safety, as well as violations of environmental laws and energy regulations, are the most typical form of legal disputes against energy utilities. (Schneider, Ghetas, Merdaci, Brown, Martyniuk, Alshehri & Trojan, 2013:104).

Remarkable consequences associated with contravention of laws are attributed to the perpetrators of electricity theft, whose misdeeds of stealing energy leave energy equipment in a damaged, sub-standard or dangerous and life-threatening form (Von Caues, Herbst & Wadee, 2018:1043). According to Van der Meulen (2011:4), the actual perpetrators responsible for the sub-standard or dangerous energy equipment may evade and leave liability to the utilities as owners of the energy infrastructure.

Utilities can be expected to compensate persons injured or killed, and individuals or groups impacted in any negative manner by the consequences of electricity theft (Khwela, 2019:5). The litigants in energy disputes can be oblivious to some of the facts that the utilities suffer the harm because of acts associated with electricity theft. In instances such as those involving safety, it becomes irrelevant for utilities to raise the excuse that the harm or damage suffered by the litigants ensued from the conduct of the perpetrators (Massachusetts Institute of Technology, 2016:62).

Murombo (2015:227-228) recommends that the setbacks that impede on legal compliance should be firmly addressed, which indicates a subtle concession that the compliance of legal requirements in the energy sector are less effective. The electricity utilities are faced with the dilemma of complying with the legal obligations in the electricity industry, accounting for violations incurred because of energy theft activities and defending the lawsuits posed following energy theft consequences to customers (Moshoeu, 2017:13).

Furthermore, Mujuzi (2020:78) recommends that utilities should be empowered to conduct private prosecutions on cases associated with electricity theft because they bear the consequences of electricity theft. Empowering the utilities may create an enabling environment for utilities to deal with electricity theft and attain an improved compliance of laws governing the supply of electricity. Furthermore, Mujuzi (2020:78) acknowledges the willingness shown by prosecutors to prosecute the electricity theft cases; however, points out the confusion brought by high court conflicting interpretations of electricity theft. The contradictory interpretations leave prosecutors uncertain of which best court decision to rely on when addressing electricity theft cases. Hence, there is a need for a clearly defined legislation on dealing with electricity theft (Parbhoo, Pillai & Madhoo, 2011:8).

6.2.4 Loss of revenue and tariff increases

Eggert, Hogleve, Ulaga and Muenkhoff (2014:24) regard revenue as a multifaceted expression encompassing financial proceeds or profits of a business, and can serve as a yard stick to determine the performance of a company. The basic understanding of revenue is that it is obtained when businesses sell their products and services to acquire an income. Generating revenue is an essential aspect of every profit driven

business and has a bearing on the tariff, which is described as a price of products or services sold to customers (Kojima & Trimble, 2016:6-7).

The unaccounted energy resulting from the work of dishonest employees, lawsuits against utilities and repairing the infrastructure damaged during theft as discussed in Sections 6.2.1 to 6.2.3. These factors negatively impact the financial viability and sustainability of utilities (Komolafe & Udofia, 2020:248; Phalatse, 2020:19). Khwela (2019:14) cautions that the effects of electricity theft compel utilities to recover the revenue losses associated with electricity theft by increasing the tariffs, which in turn, affect in a negative manner the financial abilities of customers. However, Pargal and Barnejee (2014:6) indicate that compensating lost revenue by increasing electricity tariffs is not always helpful because it does not discourage the perpetrators to steal electricity.

The lack of improvement in existing practices of protecting energy against theft is attributed to the implementation of incompatible solutions to energy theft (Nebey, 2020:1). According to Murombo (2015:227-228), a feasible solution to enhance the existing practices of curbing electricity theft requires an emphasis of recognising detailed activities and technologies that may be effective in enhancing the current practices in the electricity industry. Although the emphasis was directed on matters relating to renewable energy, it is plausible that the proposed solutions are useful to contribute meaningfully to practices of curbing electricity theft. Nonetheless, the diminishing revenue and increasing electricity primary costs resulting from energy theft remains a challenge, because such financial implications may derail utilities to implement effective practices and use of improved technologies aimed to curb electricity theft (Jiyane-Tshikomba, 2019:12). Accordingly, utilities may be limited to utilise infrastructure technologies and other practices that are outdated and cannot deter the modern methods of stealing electricity (Organisation for Economic Co-operation and Development (OECD), 2018:10). Until such time the law makers, law enforcers and law interpreters are determined to treat electricity theft like other serious crimes, the perpetrators will not perceive a need to avoid stealing electricity (Khwela, 2019:85).

6.2.5 Various interests of civil society

Civil society is a collective term for various groups of people who collectively or individually share common interests in the same environment (World Economic Forum, 2013:8). On the other hand, Van Dyck (2017:1) describes civil society as organisations operating between individuals, groups of people or entities and the state. The environment in which the diverse and dynamic civil society formations co-exist, serves as a mechanism empowering the various groups to formalise their persuasive activities independently from the State, but within the confines of the state laws (Cooper, 2018:8; World Economic Forum, 2013:6).

Almost all the actors in the civil society claims to represent and challenge the unfavourable living conditions experienced by ordinary people (Klein & Lee, 2019:66). The common interests or needs of the groups or individuals they represent, determine the persuasive abilities of the actors in the civil society. Energy utilities form part of the civil society and their activities are occasionally influenced negatively or positively by stakeholders, formations or other groups of interest to electricity supply matters (Cooper, 2018:4). The common societal stakeholders who can bring significant impact to electricity supply practices (including curbing electricity theft) are political organisations or individuals, labour unions, economic actors and non-governmental organisations (NGOs) (Dar, 2015:1; Kruse & Martens, 2015:263). Figure 6.1 below is an illustration of the societal role players who are influential to the practices of curbing electricity theft.

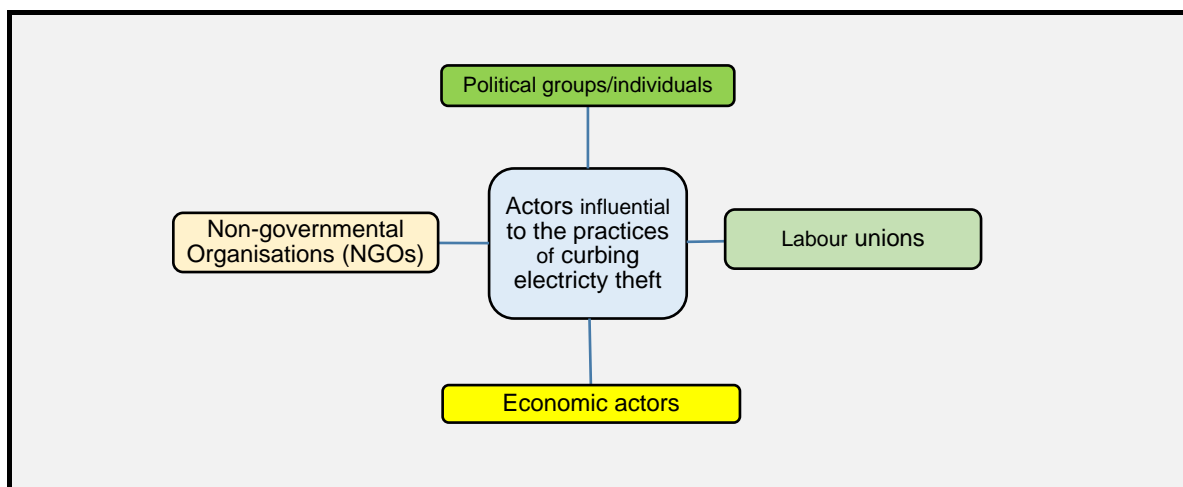


Figure 6.1: The societal stakeholders who are influential to the practices of curbing electricity theft

(Source: Compiled by the researcher)

The contribution of the societal actors to the development of society is necessary. However, it may escalate into undesired outcomes if not properly checked and controlled (Datzberer & Nguyen, 2018:2). Hence, Sub-sections 6.2.5.1 to 6.2.5.4 below provide a delineation of the manner in which the notable societal stakeholders and their various interests in the society can be a challenge to the existing practices of curbing electricity theft.

6.2.5.1 Political organizations or individuals

Li (2015:2) describes political organisation as an establishment or structure that actively participates in matters associated with influence of power, policies and decisions of the ruling state. The affiliates of the political organisations or politicians act as intermediaries between the ordinary people and the state. The various political groups use the society as a platform to pursue political objectives believed to be aligned with the best interest of people (Simiti, 2017:3-4). Hence, there is a reasonable belief that politicians can influence the communities in many aspects including to initiate and support the practices to curb electricity theft and persuade the creation and enactment of laws supporting the fight against electricity theft (King, Milanzi, Massoi & Kyando, 2015:85).

Political role players are interested in electricity supply services because they can be used as a tool to obtain support from society on service delivery issues (Klein & Lee, 2019:75). According to Burke and Stephen (2018:81), the political organisations that are having a remarkable influence on the operations and decisions of electricity supply institutions, impact the way utilities respond to matters relating to electricity theft. The influence political organisations have on electricity supply matters can improve the progress on ensuring that electricity is accessed by all people, and that communities should refrain from practices that encourage electricity theft (Barnett & McCulloch, 2019:4-5; Scott & Seth, 2013:2). However, politicians tend to derail the objectives of protecting energy against theft and utilise electricity services to attain ulterior motives that are not benefitting the society (Burke & Stephen, 2018:81).

The power to control energy is likely to shift to powerful political role players with more support from community members as potential voters, and the actors can deliberately derail the practices put in place to deal with electricity theft because they too are benefitting from the conduct of stealing energy (World Energy Council, 2019:18-19).

Noting that most of the political support comes from poor communities that cannot afford the high electricity tariffs, the political representatives would then avoid accountability for failing to deliver the affordable supply of electricity as promised to the people (Scott & Seth, 2013:7). As a result, the political organisations in power may not be open to, but intentionally obstruct practices including the creation of legislation aimed to curb electricity theft (Klein & Lee, 2019:77).

Without disregarding that electricity supply industry is profit driven, Scott and Seth (2013:2) enlighten that utilities should be mindful that the society has expectations to get affordable energy services from the politically influenced government. Energy utilities should adopt practices that would promote collective partnership in enabling the government to fulfil the mandate of providing electricity services to the people. According to Barnett and McCulloh (2019:7), the efforts useful to energy utilities are those that are aligned with the needs of the politically influenced society. Power utilities should cater to the demands of society, such as the provision of affordable electricity. In that regard, energy utilities will enable an engaging and productive atmosphere between members of communities and utilities if they consider the requirements of communities. When working with society, energy utilities should exercise caution and keep in mind that some political influences may take advantage of the society-utility relationship for personal gain (other than addressing the needs of communities or utilities).

6.2.5.2 Labour unions

Bhorat, Naidoo and Yu (2014:15) present labour unions as organised structures formed by a group of employees for the purpose of improving the welfare and working conditions of employees. Therefore, labour unions are social role players with a bargaining power that extends beyond the boundaries of the work environment, and their collective effort in a form of a federation provides them with an advantage to influence the government decisions and policy making (Chamberlain, Ncube, Mahori & Thom, 2014:9). Burke and Stephens (2018:79) count unions among the most critical stakeholders with the capacity to contest or influence electricity practices at municipal and local spheres. According to Barnett and McCulloch (2019:6), the effectiveness of labour unions derives from the support they acquire from political influence. The unions which have aligned their objectives or are in alliance with the powerful political

actors gain power to influence the practices (include measures to curb electricity theft) employed by the electricity industry (Geddes, Bridle, Mostafa, Roth, Sanchez, Garg, Scholtz & Fakir, 2020:9).

There is a need for innovatively adapting the work force to and the continuously changing work practices (United Nations, 2021:3). However, practices such as the introduction of new technology to curb electricity theft have the potential to reduce workforce quantitatively, and may be viewed by unions as the employer's strategy to purge the employees (Phalatse, 2020:15; Diski, Chapman & Kumar, 2021:18). Hence, Diski, Chapman & Kumar (2021:18) warn employers implementing transition to avoid measures that may impact job security and livelihoods, and also commit to avoiding the reduction of employees based on operational requirements.

According to Mathe (2017:30-31), the power possessed by labour unions can be observed during the bargaining processes. This occurs when the union representatives are likely to blame the employer for poor working conditions, incentives and remuneration structures as contributing factors influencing the attitude and perception of some employees on initiatives designed to curb electricity theft. Since unions are among the prominent role players in the society who cannot afford to see their members excluded from the social economic benefits and improved livelihoods as determined by political influences, they may implicitly resist the practices put in place by the employer to curb electricity theft (Van Dyck, 2017:1).

An expectation from society is that the employees of electricity utilities should always protect the assets of the employer. Electricity and the resources pivotal to the generation and supply of electricity are among the products and assets that are to be protected by the staff of electricity utilities. However, Dzansi et al. (2014:188), indicate that it is common to find the utility employees among the perpetrators of electricity theft and equipment, thus rendering the practices that are in place to curb electricity theft ineffective. In case the corrupt employees of utilities are subjected to disciplinary measures, they will seek representation and protection from their unions. Although it may be clear to the union representatives that the theft allegation of their employees is not justifiable, the union representatives will in most instances argue for the vindication of the charged employees in order to gain employee's confidence, increase or retain the union membership, or cover their own corrupt acts (Masters, 2016:4-5).

To encourage willingness and acceptance of practices aimed at curbing electricity theft, utilities must not also acknowledge the existence of labour unions and also ensure that their participation is meaningful to initiatives intended to alleviate the scourge of electricity theft to utilities (Bhorat et al., 2014:16). Strambo, Burton and Atteridge (2019:6) indicate that considering the views of union fraternity is likely to serve as an indication that their contribution to the energy business is important. As much as the labour unions feel that their contribution to energy utilities is valued, they may as well persuade the political influencers to use their powers in a way favourable to the existing or proposed practices of curbing electricity theft.

6.2.5.3 Economic actors

The economy includes various processes of maximising the resources, goods and services as the means to attain life necessities (Rees, 2015:1). Balaam and Dillman (2016:8) indicate that the economy is characterised by interaction of markets, societal actors and behaviours. The interaction in the economic environment involves the identification, production, distribution and consumption of tangible and intangible things valuable to secure livelihood. The individuals and institutions that have interest in economic affairs are called economic stakeholders, and include economists, entrepreneurs, managers, society, government, utilities and economic scholars (Felin & Zenger, 2017:258; Soeparna, 2015:2).

According to Hakimah, Nugraha, Surya, Ananda and Astuty (2019:490-491), the sustainable provision of electricity and practical measures to protect electricity supply are among the most deliberated subjects by the economic role players. Electricity theft is of concern in the economic domain in that it hampers the sustainable supply of electricity required for productive economic activities and is likely to attract inputs, criticisms or contributions from the economic role players (Otchere-Appiah, Takahashi, Yeboah & Yoshida, 2021:2).

Load reduction is one of the practices engaged by Eskom to protect electrical infrastructure against illegal connections. According to Gladwin-Wood et al. (2021:3), the load reduction is not only impacting those who are stealing electricity, but also negatively affects the loyal customers who are in the business and are paying for energy consumption. The economic activities are not spared from the negative effects that may arise from the practices to curb electricity theft; consequently, the economic

actors affected are likely to pursue or institute litigation processes against electricity utilities (Gladwin-Wood, Gohl & Sing, 2021:2). Considering the loss of profits and goods, contractual obligations and constitutional mandates between utilities and their customers who are actors in the economy, the court rulings may be in favour of the customer litigants (Van der Meulen, 2011:74-75).

The two cases of Vaal River Development Association (Pty) Ltd v Eskom Holdings SOC Ltd and Others, and Lekwa Rate Payers Association NPC v Eskom Holdings SOC Ltd and Others (31813/20) [2020] ZAGPPHC 429 illustrate the manner in which the utilities can be drawn into legal disputes. In such instances, the courts can rule against the practices of utilities intended to curb the effects of illegal connections. The applicants in these cases represented persons in business residing in the Lekwa (in Mpumalanga Province) and Ngwathe (Free State Province) municipalities who were impacted by the Eskom decision to impose a Notified Maximum Demand (NMD) on the municipalities that were contracted to Eskom. Notified Maximum Demand requires municipalities to use not more than an agreed maximum of energy for their customers. Therefore, municipalities who may increase their customer base and exceed the maximum demand of energy are likely to incur penalties and may be compelled to reduce energy loads to comply with the contractual obligations set by Eskom as a sole provider of energy.

In addressing the Ngwathe case in the High court at Pretoria, Eskom cited illegal connections as a cause of damages to energy infrastructures and loss of money incurred for repairing the damaged equipment. The court rejected the claim by Eskom and substantiated that the damaged infrastructure resulting from the illegal acquisition of electricity may not be used as an impediment to restore the supply of electricity to its previous state before Eskom introduced an equivalent of load reduction. Furthermore, it emanated from the court judgement that the damage caused by some of the municipal customers to Eskom equipment and revenue cannot be elevated over the unfortunate circumstances endured by the businesspersons residing in the affected areas, who are diligently paying their energy consumption in both the Ngwathe and the Lekwa municipalities.

Soeparna (2015:2) points out that the role played by economic stakeholders in contributing to livelihood gives them an advantage to influence the policies of

government, utilities and their business practices. The economic stakeholders may have an expectation that their influential economic role in society should exempt them from certain obligations. Minnie (2018:4) reveal that institutions like Eskom are not only energy utilities, but are also actors in the economic sphere and are entrusted with a significant responsibility of supplying electricity. The dominance by institutions like Eskom in the electricity supply sector potentially gives them an advantage to have greater influence in the economic sector even if they are deficient in the practices and interventions needed to improve the economic conditions of the society.

For utilities to realise the efforts and practices of curbing electricity theft successfully, they should not entrust the responsibility of providing the indigent with basic electricity to municipalities only (Gladwin-Wood et al., 2021:3). In note of the sincere reasons to implement practices aiming to protect electricity against theft, electricity utilities cannot be oblivious to the fact that they co-exist with other businesses as active participants in the economy (Khwela, 2019:14). Instead, utilities are required to accommodate other actors in the economy and adjust practices against electricity theft in consideration of the needy who may be lacking financial means to afford electricity (Roodt, 2018:2-3).

6.2.5.4 Non-Governmental Organisations (NGOs)

Tortajada (2016:266) describes Non-Governmental Organisations (NGO's) as organised interest groups that can influence policies at all levels of society for the benefit of their interest or the interest of groups they represent. The NGOs are known to operate outside the boundaries of government, represent the marginalised groups of people, and in most cases, help societies to solve intricate aspects that cannot be dealt with by reliance on government policies (Botha, 2018:48). According to Binder-Aviles (2012:7), the establishment of NGOs is prompted by factors such as the needs of different groups in society and the quest to acquire collective support to help meet those needs.

Harangozo and Zilahy (2014:22) uphold that the NGO's can utilise confrontation or co-operation to oppose the policies and the practices implemented by the utilities to curb electricity theft. An expectation from the government and energy utilities might be that the NGO's should reasonably employ the co-operation and negotiation methods, because such methods are likely to yield mutual benefits to the involved parties. On

assessment that co-operation can be potentially more unfavourable to attain the interests of the groups represented, the NGOs are likely to resort to the strategy of confrontation and deter the practices engaged by energy utilities (Volmink & Van der Elst, 2017:8). The NGO's can utilise their power to influence other civil society groups pursuing the similar views or interests to their interest group (Harangozo & Zilahy, 2014:18; Lewis, 2015:2).

The NGO's generally have views and expectations different to those of government and private institutions. Kambule, Yessoufou, Nwulu and Mbohwa (2019:200) substantiate the varying expectations between the public institutions and civil groups by giving a practical context relating to electricity theft curbing practices at Soweto in Gauteng Province. According to Kambule et al. (2019:200), Soweto residents and other NGOs and civil groups were of the view that Eskom and government policies inadequate to curb electricity theft. Eskom implemented the project to replace the billing system with pre-paid meters to reduce the non-payment culture of energy consumed. However, the Soweto residents and civil groups rejected the new system of pre-paid meter installation.

According to Da Silva Costa Lima (2015:24-25), non-governmental organisations can be instrumental in helping the electricity utilities to effectively curb electricity theft. The high interest shown by NGOs to energy matters and the significant effect of their campaigns to society can be used to the advantage of utilities to spread the message against electricity theft. Nonetheless, the utilities should be willing to incorporate the needs of NGOs in their plans by eliminating the barriers to access affordable electricity by the groups represented by NGO's. Therefore, the utilities should invigorate corporate social responsibility in a way they will meaningfully lift the economic viability of communities they serve (Bellanca & Wilson, 2012:1).

The Sample A1 (Eskom security personnel), Sample A2 (Eskom personnel from customer services (CS) and Operations and maintenance (O&M)), Sample A3 (Eskom personnel from energy trading and energy protection) and Sample B (Local municipality personnel responsible for electricity supply) were asked the following question:

- “What are the challenges related to illegal consumption of electricity you experience in your work networks”?

All (24) participants answered the question, and some provided more than one answer. Hence the number of answers may not tally with the number of participants. Where participants provided similar answers using different wording, the researcher clustered or summarised the responses to one accommodative answer. The participants’ answers on challenges to illegal consumption of electricity are summarised into in nine (9) aspects as indicated in Table 6.1 below.

Table 6.1: Participants’ answers on challenges related to illegal consumption of electricity experienced on networks

Challenges relating to illegal consumption of electricity	Number of participants in a sample who mentioned an answer
Overloaded, exploding and tripping network equipment	1 (A1), 3 (A2), 3 (A3), 4 (B)
Reduced sales of electricity resulting in loss of revenue or profit	1 (A1); 3 (A3)
Substandard, damaged and/or unsafe electrical infrastructure	3 (A1), 4 (A2), 4 (A3), 6 (B)
Death and injuries of human and animals resulting from damaged or tampered infrastructure	1 (A1), 3 (A2), 1 (A3), 1 (B)
Lawsuits and claims against utilities for injuries, death and any loss caused by damaged and unsafe electrical infrastructure	1 (A1), 1 (A2)
Unstable supply of electricity or interruption of electrical equipment functioning	2 (A1), 3 (A2), 4 (A3), 3 (B)
Lack of human and other resources necessary to conduct audits or detect electricity theft	1 (A1)
Employees and consumer corruption	1 (A1)
Energy loss	1 (A1)

(Source: Feedback from the participants)

The participants’ answers in Table 6.1 are supported in literature. For instance, Blazakis, Kapetanakis & Stavrakakis (2020:4) and Komolafe and Udofia (2020:246) intimates that overloading electrical infrastructure perpetuates electricity theft, and also leads to significant energy losses and revenue by utilities. Von Caues, Herbst and Wadee (2018:1043) lamented the conduct of stealing electricity as detrimental to electricity companies in that they are constantly required to fund equipment damages

caused by perpetrators and claims of casualties from unsafe electrical networks. Furthermore, the electricity theft activities cause unstable supply of electricity. The participants also mentioned lack of resources to audit electricity theft, which concurs with assertions by Khan et al. (2020:44), that audits are expensive in nature, they need sufficient resources considering revenue constraints suffered by utilities. Employees and consumer corruption as appearing in the answers of participants is cited by Mbanjwa (2017:19) and Shokoya and Raji (2019:97) as a challenge complicating effort to curb electricity theft by utilities.

Participants in Samples A1, A2, A3 and B were asked a follow up question:

- “How do you overcome the challenges you mentioned above?”

All (24) participants answered the question, and some provided more than one answer for each question. Hence, the number of answers may not correlate with the number of participants. Table 6.2 below is an illustration of the participants’ responses regarding ways to overcome challenges relating to illegal consumption of electricity.

Table 6.2: Participants’ answers indicating ways to overcome challenges relating to illegal consumption of electricity theft

Challenges relating to illegal consumption of electricity	Ways to overcome the challenges	Number of participants in a sample who mentioned an answer
Overloaded, exploding and tripping network equipment	Conduct audits/inspections Remove illegal connections/normalise Issue fines/tamper notice Report to police Track, follow and action anonymous reports about electricity theft	2 (A1), 2 (A2), 3 (A3), 3 (B) 3 (A1), 1 (A2), 3 (A3), 1 (B) 1 (A1), 1 (A2), 3 (A3), 1 (B) 2 (A1), 1 (A2) 1 (A2)
Reduced sales of electricity resulting in loss of revenue or profit	Conduct audits/inspections Remove illegal connections/normalise	1 (A1), 3 (A3) 1 (A1), 3 (A3)
Substandard, damaged and/or unsafe electrical infrastructure	Conduct audits/inspections Remove illegal connections/normalise Issue fines/tamper notice Report to police	2 (A1), 3 (A2), 4 (A3), 4 (B) 2 (A1), 1 (A2), 3 (A3), 1 (B) 1 (A1), 2 (A2), 3 (A3), 1 (B) 1 (A1), 3 (A2)

Challenges relating to illegal consumption of electricity	Ways to overcome the challenges	Number of participants in a sample who mentioned an answer
	Use security contractors to patrol the lines/grid and arrest the suspects	1 (A1)
Death and injuries of human and animals resulting from damaged or tampered infrastructure	Conduct audits/inspections Remove illegal connections/normalise Issue fines/tamper notice Report to police	1 (A1), 2 (A2), 1 (A3), 1 (B) 1 (A2), 1 (B) 1 (A2), 2 (B) 1 (A1), 3 (A2), 1(A3)
Lawsuits and claims against utilities for injuries, death and any loss caused by damaged and unsafe electrical infrastructure	Conduct audits/inspections Remove illegal connections/normalise Issue fines/tamper notice Report to police	1 (A2) 1 (A1) 1 (A1) 1 (A2)
Unstable supply of electricity or interruption of electrical equipment functioning	Conduct audits/inspections Remove illegal connections/normalise Issue fines/tamper notice Report to police	1 (A1), 3 (A2), 4 (A3) 2 (A1), 4 (A3) 2 (A1), 3 (A3) 1 (A1), 2 (A2)
Lack of human and other resources necessary to conduct audits or detect electricity theft	Deploy latest technology to detect electricity theft	1 (A1)
Employees and consumer corruption	Report to police Engage disciplinary process	1 (A1) 1 (A1)
Energy loss	Remove illegal connections/normalise	1 (A1)

(Source: Feedback from the participants)

The participants' answers in Table 6.2 above culminated into eight (8) propositions for overcoming challenges relating to the illegal consumption of electricity, namely: audits/inspections, issue fines/tamper notices, normalise/remove illegal connections, report to police, track and follow up anonymous reports, engage disciplinary processes, use service of security contractors and deploy latest technology. The participants' responses are consistent with literature. For instance, Khan et al. (2020:44), assert that audits are expensive, which is an indication that audits or inspections of electrical network are necessary, because it enables utilities to identify areas susceptible to electricity theft incidents and to execute remedial measures. According to Blazakis et al. (2020:4) and Komolafe and Udofia (2020:246), utilities

need to audit and normalise their networks to attain maximum and reliable network performance. Issuing of fines and tamper notices is practiced by Eskom and municipalities during audits to minimise illegal consumption of electricity (Eskom, 2016a:1; Eskom 2020c:4). Jiyane-Tshikomba (2019:76) is not satisfied with the few reports of electricity theft made to police by utilities, and that points to a need to normalise involving law enforcement in illegal consumption of electricity.

Furthermore, the need to involve police in matters of electricity theft is aligned to an answer by one Sample A2 participant who indicated the need to track, follow up and action the electricity theft reports received from anonymous reporters. One Sample A1 participant mentioned the need to deploy latest technology to detect electricity theft and to compensate shortage of resources necessary for audits. However, technology should take into consideration other aspects that may need human intervention (Diski, Chapman & Kumar, 2021:18; Phalatse, 2020:15; United Nations, 2021:3).

There is a need to reinforce disciplinary processes and engage police on illegal activities associated with electricity theft in order to effectively address employees and consumer corruption (Dzansi et al., 2014:187; Jiyane-Tshikomba, 2019:76). Lastly, one Sample A1 participant alluded a need for security contractors that will patrol the electrical lines to identify and arrest suspects involved in damaging the equipment. Eskom have contractors responsible to patrol the lines and that has not guaranteed safety of the infrastructure. In addition, the contractor employees are subjected to unsafe conditions in that some are killed along the patrols by suspects damaging infrastructure (Eskom, 2022a:1).

The Sample E participants were asked the question: “Based on your experience, what are the challenges relating to curbing electricity theft in your community?” All (6) participants answered the question, and some provided more than one answer, which may not correlate with the actual number of participants. Where participants provided similar answers using different wording, the researcher clustered the responses to one accommodative answer. The participants’ answers are summarised into six (6) challenges as follows:

- Misguided belief of normalising stealing from the government (3 participants);

- Different societal groups and political formations having interest on matters of electricity and using partly true narratives to obtain support from communities (2 participants);
- Violent communities displaying hostile tendencies to activities aimed to deal with electricity theft and restore legitimate electrical installations (1 participant);
- Potential reporters of electricity theft fear intimidation by illegal consumers of electricity (1 participant);
- Unwillingness to comply with legitimate processes of consuming electricity (1 participant); and
- Utilities employees and contractors are complicit to the conduct of stealing electricity (1 participant).

The six (6) summarised participants' answers are aligned with literature. For example, Eskom as one of the utilities has indicated that hostile community attitudes to their employees prompted the utility to withdraw its members from working in unsafe environments (Eskom, 2022b:np). The assertion emanates from reports that Eskom employees were unable to deal with illegal connections in Sibangweni village located within Nyandeni Local municipality in Eastern Cape Province. The participants' view on perpetrators' misconceived belief of stealing from government is in line with literature.

Furthermore, Opperman (2014:15-18) asserts that such belief is premised on bias and yields detrimental effects to the performance of utilities. Also, Opperman (2014:15-18) asserts that intimidation had a negative impact on potential crime reporters. According to Burke and Stephen (2018:81), Klein and Lee (2013:7) and Scott and Seth (2019:77), politicians are prone to making hollow promises or pursue ulterior motives that may obstruct activities aimed at curbing electricity theft. Murombo (2015:227) confirms that utilities have some employees and deal with community members who are not willing to comply with the legal processes. Hence, Murombo (2015:227) found it necessary for utilities to exercise a strict approach in curbing electricity theft. Lastly, according to Komolafe and Udofia (2020:248), some people are stealing electricity not out of necessity but complicity.

The Sample E participants were asked a further follow-up question: “In your opinion, what contributes to the challenges you mentioned above?” All (6) participants answered the questions, and some provided more than one answer, which may not correlate with the actual number of participants. Where participants provided similar answers using different wording, the researcher clustered the responses to one accommodative response. The participants’ answers on aspects contributing to the challenges relating to curbing electricity theft in communities are summarised to include seven (7) reasons, such as:

- Lack of honest political education and customer awareness about matters of electricity (1 participant);
- Different interests social and political groups have about matters of electricity supply (1 participant);
- Low social income classes, poverty and unemployment renders people vulnerable to illegitimate influences (1 participant);
- People feel that they were promised basic electricity by the government, which in turn does not deliver as promised (2 participants);
- Some people are powerful, influential and threaten people who want to do the right thing of reporting electricity theft (1 participant);
- Dishonesty from community members and leaders (1 participant); and
- Greed displayed by people who steal electricity while they can afford to pay (1 participant).

All the participants’ summary of answers is covered in literature as various authors mentioned dishonesty across different echelons of society, ranging from ordinary community members to influential political leaders. Contributing factors that deter the successful fight against electricity theft include, but not limited to, threats directed at potential reporters and propaganda (Burke & Stephen, 2018:81; King, Milanzi, Massoi & Kyando, 2015:85; Li, 2015:2; Mhaule, 2017:27; Scott & Seth, 2019:77). Furthermore, Oprisor, Tiron-Tudor and Nostor (2016:752) contend that different interests harboured by different people affect the decision-making, which may negatively impact the efforts to curb electricity theft. This perspective coheres with the participants’ viewpoints. Jiyane-Tshikomba (2019:75) pointed to some conduct of electricity perpetrators precipitated by poverty and unaffordability conditions.

Additionally, Afiyah (2023:1098), Kets de Vries (2016:3) and Veresha (2016:4749) mention greed as having negative effects on curbing electricity theft, which is in tandem with the participants' responses.

The following question was posed to the Sample E participants:

- “In your experience, how can the challenges mentioned above be overcome?”

All (6) participants answered the questions, and some provided more than one answer, which may not correlate with the actual number of participants. Where participants provided similar answers using different wording, the researcher clustered the responses to one accommodative response. Hence, the participants' answers culminated only in 8 (eight) responses. The summary of participants' answers concerning ways to overcome the challenges relating to curbing electricity theft include:

- To conduct regular meetings with communities (1 participant);
- Bring awareness campaigns or customer education on consequences of electricity theft (2 participants);
- Use multi-government organizational approach to address community needs (1 participant);
- Encourage people to buy electricity by lowering the prices of electricity (1);
- Ensure that government provide electricity to all citizens of the country (2 participants), have anonymous way of reporting electricity theft (1 participant);
- Have utilities giving attention to reports of electricity (1 participant); and
- Enhance accountability processes to corrupt employees and contractors (3 participants).

The Sample E participants were asked the following question:

- “In your own experience, what are the practices implemented by utilities to curb electricity theft within your community area?”

The participants were not provided with answer options. In that regard, their experience was required. All (6) Sample E participants answered the question, and some provided more than one answer. Accordingly, the responses answers may not

correlate with the actual number of participants. The researcher grouped the participants' answers with similar meaning into one accommodative answer. The participants' answers culminated in five (5) answers, namely:

- Issuing of fines or tamper notices (4 participants), removing illegal connections or installations (5 participants);
- Switching off or disconnecting the illegal supply (4 participants);
- Fixing or normalizing the installation (1 participant); and
- Tolerating or ignoring the illegal connections (1 participant).

Four (4) of the five (5) participants' answers mentioned fines, removal of connections, normalising the connections and disconnecting the connections. These responses are in alignment with literature suggesting issuing of fines and removal of illegal connections among common practices of addressing electricity theft (Eskom, 2019c:116).

According to Mbanjwa (2017:32), the practice of disconnecting is applied by utilities to illegal consumers, including businesses found to have acquired electricity illegally. Khan et al. (2020:8023), suggests that it may be beneficial for utilities to consider normalising and legitimising the illegally installed electricity connections because that may enable the utilities to hold the illegal users accountable. The participant's answer indicating tolerance and negligence as a practice to curb electricity theft is not supported in literature. However, if understood from the participant's experience, it is appreciable that the participant might have observed as a practice the corrupt and inept conduct of not giving necessary attention to illegal connections of electricity by employees of the utilities. Furthermore, the understanding may be in line with the assertion by Dike et al. (2015:np), that the corrupt conduct of utilities' employees has a potential to escalate the problem of electricity theft.

The Sample E (Community leaders or representatives) participants were asked the question:

- "How effective are the practices to curb electricity theft you mentioned above?"

The participants were required to select from Options A (not effective), B (less effective), C (effective), D (more effective) and E (most effective). All (6) the participants selected an answer option, with four (4) participants opting for Option C (Effective) and two (2) participants selecting Option D (more effective). None of the participants selected Option A, B or E. There was a question for participants who selected Options A (not effective) or B (less effective), namely:

- “What do you think contributes to the level of effectiveness you selected above?”

Since none of the participants selected Options A (not effective) or B (less effective), it was then not necessary for the question to be answered.

The participants’ responses concerning the effectiveness of practices to curb electricity theft are aligned with literature. To that effect, Eskom (2018a:12) refers to issuing of fines, disconnecting and normalising illegal connections as useful to alleviating incidents of electricity theft. However, different authors point out to various factors such as employee dishonesty, different stakeholders’ interests and utilities not updating practices to curb electricity theft may frustrate the effectiveness of the practices to curb electricity theft (Barnett & McCulloh, 2019:7; Burke & Stephen, 2018:81; Jiyane-Tshikomba; 2019:12; Shokoya & Raji, 2019b:469; Yurtseven, 2015:70).

The Sample A1 (6), Sample A2 (6) and Sample A3 (6) participants were asked the question:

- “What do you think can be done by utilities to improve the practices of curbing electricity theft?”

The question asked was open ended and required the participants to freely express their views. Two (2) participants each from Sample A1 and Sample E did not answer while all Sample A2, Sample A3 and Sample B participants answered the question. Some of the participants who answered the question provided more than one answer. In case where the participants used different wording for similar view, their answers were clustered into one answer accommodating all similar answers. Hence, the

representation of their answers may not tally with the number of participants who answered. The summary of participants' answers is depicted in Table 6.3 below.

Table 6.3: The participants' answers on what they think can be done by utilities to improve the practices of curbing electricity theft

Summary of participants' answers for question: what you think can be done by utilities to improve the practices of curbing electricity theft.	Participants who provided the answer
Compile accurate statistics of electricity theft incidents and studying the crime trends for better comprehension necessary to yield effective solutions.	1 x A1
Utilities' senior managers should lobby political representatives and role players in the Criminal Justice System to influence the creation of legislation necessary to deal specifically with electricity theft.	1 x A1
Utilities' senior managers should declare the duty of dealing with electricity theft mandatory and compulsory to all categories of employees in their work industry, and they must include the functions of curbing electricity theft in the performance contract of employees.	1 x A1
Utilities should add human resources necessary to conduct regular audits to detect and address electricity theft.	1 x A1
Utilities should enhance the existing processes and efforts such as audits and police reports to curb electricity theft.	3 x A1, 2 x A3, 1 x B, 2 x E
Utilities should normalise and legalise some of illegal electrical installations meeting the electrical standards to legitimise electricity sales from previously illegal consumers.	1 x A2
Perpetrators should be reported to police and arrested.	3 x A2, 3 x A3
Municipalities should accelerate electrification of new residential establishments to discourage illegal connections of electricity.	1 x A2
Utilities should intensify customer education and awareness on consequences electricity theft.	2 x A2
Utilities should act timeously to reports of electricity theft received from informers.	1 x A2
Utilities should remove electrical installation until such time the consumers are legitimised or paid their illegally accrued debts of electricity.	1 x A2
Utilities various departments should work in synergy and form effective partnerships with police and courts.	1 x A3
Informal settlements should be formalised because are difficult to monitor and audit for electricity theft.	1 x B
Utilities should install advance technologies that will enable remote monitoring of illegal consumptions.	2 x B
Utilities should intensify the monitoring of customers who were found to have committed illegal acts associated with electricity theft.	2 x B

Summary of participants' answers for question: what you think can be done by utilities to improve the practices of curbing electricity theft.	Participants who provided the answer
Utilities should be involved in operations against crime with police and other stakeholders in crime prevention.	1 x E
Utilities should respond quickly upon being notified of illegal activities of electricity theft.	1 x E
Utilities should regularly monitor and follow up if those who were found stealing electricity are compliant.	1 x E
Begin disciplining their own employees who are helping people to commit illegal connections.	1 x E
No answer.	1 x A1, 1 x E

(Source: Feedback from the participants)

Based on the available literature, the summary of participants' answers in Table 6.3 show that they understand the measures required to improve the practices of curbing electricity theft. The answer about having accurate statistics and studying of crime trends for better understanding and possible generation of solutions is covered addressed by Boateng (2016:2) who indicated that knowledge of crime information is critical to enable a plan of workable strategies in the fight of electricity theft. Furthermore, Monyeki (2021:16) indicates that accuracy in crime trends assist utilities affected by electricity theft to predict patterns of the crime and institutionalise the requisite measures to counter the identified crime.

The participants believe that the practices of curbing electricity theft can be improved by lobbying role players in the criminal justice system to influence the creation of laws that are relevant to electricity theft is in line with the assertions by King et al. (2015:85), Simiti (2017:3-4), Hakimah et al. (2019:490-491) and Otchere-Appiah (2021:2), who believe that while various actors in the society may have interests different from those of utilities. They can be useful to influence measures to deal with electricity because they too are negatively affected by the outcomes of electricity theft.

The participants also mentioned that there should be mandatory requirements to all utilities' employees to protect electricity from theft. In this regard, the participants' responses are supported by the Labour Guide (2023:np) and its acknowledgement that the balance of employees' rights and their fiduciary duty to put first the employers' rights. In this case, the utilities' employees are bound by the allegiance to the employer

to guard against electricity theft. On the need to add human resources to conduct audit and address electricity theft matters, the participant is supported by Kotwal and Manhas (2017:1) who values sufficient resources necessary to deal with electricity theft and other illegal acts affecting utilities. There are participants who appreciate the existing practices to curb electricity theft by utilities, however, are of the view that they should be enhanced to improve curbing electricity theft.

The participants' answer demonstrates that utilities are not adequately monitoring and implementing strict measures to deal with illegal consumers. The participants' views are in line with assertions by Godina et al. (2015:12153), that there is a need to continually improve the current efforts to deal with matters of electricity theft. Moreover, the participants' views resonate with Afiyah (2023:1106-1107) who suggests a need to strengthen monitoring of electricity supply activities with intention to detect and deal with illegal activities before they could escalate into a crisis. There is a participant who suggested that the illegal connections should be normalised to legitimise sales of electricity.

The participants' view concurs with that of Blazakis et al. (2020:4) and Komolafe and Udofia (2020:246), as indicated in Section 6.2.5 *supra*, that utilities should audit and normalise their networks for improved network performance. Among the participants' answers is a view that perpetrators should be reported and dealt with in terms of law enforcement. Swanepoel and Meiring (2018:452) intimated that the involvement of law enforcement is pivotal to dealing with criminal matters. Furthermore, the participants believe that electrification for people without electricity can contribute positively to the practices of curbing electricity theft. This statement resonates with the assertion made in the National Treasury of South Africa (2011:149) that the utilities are likely to experience challenges of poor electricity sales because of delays in electrifying places that are without electricity.

The affected people ultimately resort to illegal means of accessing electricity. The participants also mentioned the importance of educating the public about matters of electricity. This is supported by Bilolikar (2019:4) and Mbanjwa (2017:26-27), who assert that regular campaigns are useful to bring awareness to people on various aspects relating to electricity (including electricity theft). Geyevu and Mbandlwa (2022:11075) acknowledge that utilities sometimes incur self-inflicted harm emanating

from electricity theft because they fail to respond swiftly to reports of crime from the community members. The authors assertion supports the views of a participant who indicated a need to respond timeously to reports of electricity theft.

In Section 6.3.2 *supra*, it was stated that removal of illegal connections forms part of the procedures and practices necessary to curb electricity theft. This correlates with the answer of a participant who mentioned removal of illegal installation as a practice to curb electricity theft (Gaunt et al., 2012:3). Another participant underscored the working partnership of parties relevant to the investigation and prosecution of electricity theft. According to Mujuzi (2020:79), joint efforts of stakeholders in electricity matters have a great potential to curb electricity theft incidents. Collaborative endeavours are likely to benefit from varying expertise, skills and knowledge and resources necessary to address the problem of electricity theft (Crawford & Cunningham, 2015:77).

One (1) Sample B participant raised the need to formalise informal settlements because they make it difficult to audit and monitor the illegal connections. The participant's answer is consistent with literature. For example, in their study entitled "Economic conditions that lead to illegal electricity connections at Quarry Road Informal settlement in South Africa", Mbandlwa and Geyevu (2022:11071-11072) indicated that the rapid growth of population in informal settlements exacerbates the challenges of planning and regulating informal settlements. The unplanned settlements deprive the residents of the affected areas the basic services they deserve and makes it difficult for them to be electrified. Ultimately, the communities in the informal settlement resort to illegal connections.

According to Mbandlwa and Geyevu (2022:11071), various alternative ways should be explored to electrify the communities in informal settlement. In this regard, two (2) Sample B participants proposed the deployment of advance technology to monitor illegal activities on electrical infrastructure. The participants' view concurs with the recommendations by Mabasa, Olutola and Mofokeng (2022:2), who assert that the deployment of advance technology to counter the modern and sophisticated techniques of committing crime is necessary. Furthermore, and in line with literature, participants have indicated a need for utilities to participate in operations against crime in partnership with police and other stakeholders in crime.

The study has established that initiatives such as ‘Operation Tima’ and ‘Operation Khanyisa’ by Eskom are commendable as having a progressive impact on reduction of electricity theft related crimes in that they were premised on efforts to intensify users’ legal compliance in electricity usage (Eskom, 2020a:14; Eskom, 2021b:25). The participants’ responses reflected the need to expedite the electricity theft reports, which is in tandem with assertions by Mbanjwa (2017:54) and Sibuyi (2021:np) who pointed to the importance of following up reports of illegal connections by informers as it may assist utilities to keep up a pace of eliminating incidents of electricity theft.

The participants also indicated the need to regularly monitor the compliance as supported by Han et al. (2017:2), who further appreciated the use of smart grids and their benefit to utilities’ reduction of electricity theft because of their effective monitoring and detection of grid intrusions and capacity to send out notification that enable the response of utilities to the intrusion. Furthermore, the participants indicated the need for utilities to discipline employees’ complicity in committing illegal electricity connections. The latter resonates with the assertions by Dzansi et al. (2014:187) and Jiyane-Tshikomba (2019:76), who find it necessary to discipline corrupt employees and involve law enforcement where the conduct of employees can be defined in terms of criminal laws. It is fundamental for electricity theft measures to be applied within a specific frame of guidelines. The next section deliberates on the rules, procedures and guidelines applied by utilities to curb electricity theft.

6.3 THE RULES, PROCEDURES AND GUIDELINES APPLIED BY UTILITIES TO CURB ELECTRICITY THEFT

General rules, procedures and guidelines are necessary to regulate the practices in any organisation. Furthermore, the rules and procedures contribute to realisation of fairness and reasonableness and can be adapted to various processes and settings not limited to criminal processes and disciplinary inquiries (National Prosecuting Authority, 2019:11; University of Pretoria, 2020:5). The researcher indicated in Section 6.1 *supra* that the basis of this study is on the practices to curb electricity theft by utilities (Eskom and municipality). Whereas Section 4.8 (chapter 4 of this study) particularly addresses the rules, procedure and guidelines pertaining investigations and prosecutions, Section 6.3 largely examines the feasibility (practicality) of the general rules and procedures used by utilities to curb electricity theft.

Section 4.7.3 (chapter 4 of this study) acknowledged that Eskom and municipalities hold a large contribution of electricity supply in South Africa, and that the public expectation might be that Eskom and municipalities have proper rules and procedures in place to curb electricity theft. It was indicated in Section 4.8 (chapter 4 of this study) that municipalities developed by-laws to provide guidance on electricity matters, including electricity theft. However, Eskom does not have a clear policy to deal with electricity theft. Nonetheless, there are constant indications from Eskom (2020a:7-11), Eskom (2020b:96) and Mujuzi (2020:79) that Eskom has adopted some rules and procedures to curb electricity theft. These adopted mechanisms are similar to some of the provisions in the Ba-Phalaborwa Model Electricity Supply by-laws 2016/2017 as discussed in Section 4.6.6 (Chapter 4 of this study) and are outlined in the following Sections 6.3.1 to 6.3.5.

6.3.1 Conducting public awareness on ways to curb electricity theft

Public awareness campaigns are a useful practice to engage communities on a range of issues (including matters of electricity), and may be presented following a particular order or procedure (Borawska, 2017:867). The campaigns educate the public on ways to benefit from electricity services and inculcate awareness concerning issues such as electricity theft (Bilolikar, 2019:4). In South Africa, utilities use awareness campaigns as a strategy to curb electricity theft in line with social, economic and political policies (Mbanjwa, 2017:26-27). Mujuzi (2020:79) intimates that electricity theft campaigns that are conducted in partnership with various stakeholders in the community carries a great potential to reduce electricity theft suffered by Eskom. The community members may feel that their contribution is valued and encouraged to ensure that their participation is not seen as a failure. The City of Polokwane Municipality (2020:218) provides assurance that municipalities in South Africa values the enforcement of all the by-laws including those that relate to electricity supply and protection. Furthermore, the municipality stressed the importance of awareness on all matters not limited to protection of electricity against theft or illegal acts.

Bele, Dimc, Rozman, and Jemec (2014:218) and the United Nations Office on Drugs and Crime, (2011:10) indicate that in any criminal matters, awareness without responsibility and accountability does not improve the situation of the problem. Accordingly, Mbanjwa (2017:55) revealed that in most instances the perpetrators of

electricity theft acknowledge the problem and its consequences without alternative solution to correct their behaviour. Therefore, after making people aware of electricity theft, it is advisable for utilities to implement alternative measures such as reporting a crime to the police or normalising the illegal connections.

6.3.2 Removing illegal connections and/or normalizing the infrastructure

Gaunt, Salida, Macfarlane, Maboda, Reddy and Borchers (2012:3) describe the removal of illegal connections as one of the procedures and practices employed by utilities to curb electricity theft. The practice is implemented to restore the electricity infrastructure to its normal and safe condition. Since highly specialised technical individuals or contractors install some of the illegal electricity infrastructures according to utilities' standards, the utilities may on consultation with various stakeholders and community decide to normalise such compromised infrastructures (Khan, Adil, Javid, Saqib, Shafiq & Choi; 2020:8023).

Normalising the electricity infrastructure does not necessarily mean that the utilities are promoting the conduct of illegal connections and electricity theft. In most instances, normalisation is undertaken to curb electricity theft by legitimising and holding the users accountable (World Bank Group, 2017:1). Utilities will allocate to the illegal users of electricity the accounts to formalise their status as customers. In that context, those who used to be illegal consumers will add to the sales of energy and contribute to the generation of utility revenue. The practices of removing illegal connections or normalising the electricity infrastructure are not always desirable to consumers or utilities.

The erection or installation of some illegal connections are done on informal areas that may not be adjusted to meet the standards of Eskom or municipalities (Gaunt et al., 2012:2). An example in this regard relates to informal areas that are built on Eskom or municipal servitudes (remarkably close or under distribution or transmission infrastructure). The utilities are likely to remove illegal connections, and the illegal consumers may not appreciate that. Utilities might experience a recurrence of illegal connections in the areas of concern. Alternatively, and where feasible, utilities may require that the illegal consumers pay the costs of diverting the infrastructure. However, most of the perpetrators who occupy informal communities and steal electricity are impoverished (World Bank Group, 2017:1). Therefore, the engagement

of local government is unavoidable to consider indigent interventions necessary to prevent power theft.

6.3.3 Audits and inspections

Eskom and municipalities conduct audits to pursue incidents associated with electricity theft and other network problems contributing to unaccounted loss of energy (Eskom, 2020c:4). However, it could be difficult to identify perpetrators with extensive skills and understanding of power operations because they use sophisticated methods to commit electricity theft. As a result, these criminals deploy advanced tactics to steal electricity (Khan et al., 2020:8023). In most instances, the causes leading to utilities conducting audits are patterns of abnormal consumption of electricity in a particular area. Utilities can select to audit all individual customers in an area with suspicious activities of electricity theft, target those customers whom their energy accounts have recorded zero consumption of energy over a suspicious long period or conduct random checks on electricity networks (Ahmad, Chen, Wang & Guo, 2018:2917).

Han, Xiao, Hong, Vrbsky, Zhang and Zheng (2017:7) regard electricity theft audits as a pro-active procedure to identify the problem of non-technical losses including those caused by electricity theft. The pro-active identification of non-technical losses is done to address the problem before it escalates to the proportions of a crisis. However, electricity audits are expensive because they require more human, time and material resources (Khan et al., 2020:44). Therefore, utilities are left with an option to weigh the advantages and disadvantages of selecting to invest in conducting audits and saving on resources. If the losses incurred from electricity theft cost more than the resources utilised for auditing, electricity utilities may prioritise the electricity audits. Contrarily, in case the use of resources does not prove to increase revenue, the utilities have an option to consider curbing energy theft by utilising the processes involving the laws governing crime in South Africa.

6.3.4 Issue tamper fines or notice

The issuing of tamper fines or notices is a procedure used by Eskom and municipalities to hold the customers liable to violation of the conditions of electricity supply agreement (Eskom, 2019c:116; Ba-Phalaborwa Municipality, 2016). The electricity supply agreement prohibits the customer from tampering the electricity equipment and illegally redistributing electricity to places outside the premises where the utility's meter

is legitimately installed (Greater Tzaneen Municipality, 2013). As discussed in Section 3.2.5 (Chapter 3 of this study), Section (8)(1) of the Electricity Regulation Act (No. 4 of 2006) forms the basis of the prohibition to distribute or redistribute electricity by requiring persons or institutions to have a distributing licence (South Africa, 2006).

The practice in Eskom and municipalities is that the tampering fines should not be issued to consumers who neither have an agreement nor an account with Eskom, because the utility does not have any binding agreement to hold such consumers accountable (Eskom, 2016a:1). The practice of not issuing fines to non-customers' places utilities in a difficult situation, considering that such illegal consumers may not be left to avoid accountability. As indicated in Section 1.2 (chapter 1 of this study) that the issuing of fines to customers who are found to be involved in electricity theft is not a guarantee to curb the conduct of stealing energy by perpetrators. According to Jiyane-Tshikomba (2019:75), some of the perpetrators are perpetually stealing electricity while having the tamper fines on their names because they cannot afford the exorbitant fines issued to them. The viable option to deal with illegal electricity consumers who do not have an agreement with electricity utilities is to subject them to criminal processes.

6.3.5 Replacement of damaged or tampered energy equipment found during the audits

The utilities' routine maintenance includes replacing or repairing broken energy equipment. However, it would be a disadvantage if the funds budgeted for energy equipment maintenance were to increase due to unanticipated damages caused by electricity theft (Godina, Rodrigues, Matias & Catalo, 2015:12148). Transformers, wires and meters feature regularly on the list of electricity equipment, adding to the maintenance costs induced by electricity theft (Gaur & Gupta, 2016:127; Saeed et al., 2020:4742). According to Jiyane-Tshikomba (2019:76), it is concerning that utilities seem to have lost control over the damages caused by electricity theft, and subsequently fail to report the crime to the police.

As part of the solution to deal with unprecedented physical damages caused by electricity theft, Shokoya and Raji (2019a:98-99) recommend that South African utilities should put more effort by enhancing the existing conventional electricity grid (network) with a smart grid. The latter authors reason that a conventional grid is more

susceptible to physical intrusions leading to electricity theft, whereas the digital communication abilities of the smart network allow for a remote energy system monitoring. However, Faquir, Chouliaras, Sofia, Olga and Maglaras (2021:25) indicate that smart networks have a complicated system that makes it difficult to secure critical information exchanged between the computer information system and the network.

The complicated nature of smart grid exposes utilities because they may not be able to protect the information within the communication system against hackers. Sample A1 (Eskom security personnel), Sample A2 (Eskom personnel from customer services (CS) and Operations and maintenance (O&M) and Sample A3 (Eskom personnel from energy trading and energy protection) were asked the question:

- “Does Eskom have rules and procedures in place that are applied to curb electricity theft?”

The participants were provided with a ‘yes’ and ‘no’ option from which to select their responses. All (18) participants answered the question with fifteen (15) participants opting for a ‘yes’ response, while only three (3) Sample A1 participants selected a ‘no’ response.

The participants were further asked to respond to the statement: “If your answer to the above question is ‘yes’, name the rules and procedures in place to curb electricity theft”. Where the participants provided answers with similar meaning, the researcher combined the answers into one accommodative answer. In this regard, their answers may not tally with the actual number of participants who answered the question. Table 6.4 below summarises the responses of 15 participants who responded ‘yes’.

Table 6.4: Participants’ answers on rules and procedures applied by Eskom to curb electricity theft

Participants’ answers on rules and procedures applied by Eskom to curb electricity theft	Number of participants who mentioned an answer
Audits/Inspections	2 x Sample A1, 4 X Sample A2, 5 X Sample A3
Electricity Act	1 X Sample A1
Safety Act	1 X Sample A1
Issuing of fines/tamper notices	1 X Sample A1, 2 X A2

Participants' answers on rules and procedures applied by Eskom to curb electricity theft	Number of participants who mentioned an answer
Removal of illegal connections	1 X A2, 2 X A3
Report to SAPS	1 X A1

(Source: Feedback from the participants)

The participants' responses in Table 6.4 are aligned to literature in that audit, issuing of tamper fines, removal or disconnection of illegal connection, replacement of illegal connection and referral of an illegal connection to law enforcement with the possibility of securing a prosecution, form a part of the procedures to address the illegal acquisition of electricity as indicated in the Eskom supplementary pricing information 2021/2022. This supplementary information is updated annually to guide the way in which employees should deal with illegal operations on Eskom infrastructure (Eskom, 2021d). Additionally, the participants' responses are consistent with the provisions in the municipal by-laws (Ba-Phalaborwa Municipality, 2016; Greater Tzaneen Municipality, 2013).

One (1) Sample A1 participant mentioned Electricity Act which is no longer operational as it has been amended entirely by Electricity Regulation Act 4 of 2006 (South Africa, 2006). Furthermore, the same Sample A1 participant also mentioned Safety Act that is concerned with safe occupational behaviour than curbing electricity theft (South Africa, 1993). Therefore, the two Acts mentioned by the Sample A1 participant cannot be used as a procedure or guideline to curb electricity theft. Nonetheless, the majority of the participants provided substantial answers in line with literature, which is an indication that they have extensive knowledge about the procedures and guidelines used by Eskom to curb electricity theft.

The participants who selected a 'no' answer were asked the question:

- "If your answer to the above question is 'no', what practices are used in your organisation to curb electricity theft incidents?"

There were only three (3) Sample A1 participants who responded "no", and each mentioned one answer in line with the literature on the basis that their answers include audits (1 participant), removal of illegal connections (1 participant) and issuing of fines

(1 participant) as discussed in this text *supra*. The participants' choice of 'no' is an indication that they do not consider the mentioned answers as procedures, rules or guidelines. Their understanding may arguably be correct in that the answers in line with literature provided by participants who selected a 'yes' answer can also be regarded as practices to curb electricity as embedded in the Eskom supplementary pricing information serving as a guideline (Eskom, 2021d).

Participants who answered, 'yes' and mentioned the rules and procedures were asked "How effective are the rules and procedures to curb electricity theft mentioned above?" The participants were provided the Options A-not effective, Option B (less effective), Option C (effective), Option D (more effective) and Option E (most effective) to select from. Of the fifteen participants (n=15, 100%) who responded 'yes', thirteen participants (n=13, 86%) selected Option 'C-effective', one participant (n=1, 7%) selected B (less effective), and one participant (n=1, 7%) opted for D (more effective).

The participants who selected Option A-not effective or B-less effective were probed further by the researcher, the following question was asked the question:

- "If your answer to above question is A or B, what do you think contributes to the level of effectiveness you chose above?"

Only one (1) Sample A1 participant was required to answer, and it is the same participant who mentioned the Electricity Act and Safety Act as an example of the rules and procedures that are in place to curb electricity theft. The answer of the participant who opted for B (less effective) is quoted verbatim as indicated below:

"The laws I mentioned are not designed to deal with electricity theft but can to some extent be of help to hold accountable the culprits on their actions that are mostly associated with energy theft. Due to the laws lacking clear purpose to deal with electricity theft, the police are reluctant to arrest and take statements while prosecutors cite reasons of most electricity theft cases not having a chance of successful conviction. Most of the cases are withdrawn without any reason provided. Eskom personnel with expertise to support the case are mostly not willing to cooperate with investigators. Again, some customers who were issued with fines and non-customers whom their illegal connections were removed often find a way to repeat the behaviour of stealing electricity. They take an advantage of weak application of law and the inconsistent way of dealing with people stealing energy by Eskom".

The Sample A1 participant's emphasis is in tandem with literature perspectives stating that available procedures to curb electricity may not be effective as desired since there is no clearly defined legislation to criminally hold the perpetrators of electricity theft accountable (Chetty, 2018:3; Musafiri, 2021:35). As also suggested by Gaur and Gupta (2016:135), the participant also mentioned that the existing procedures to curb electricity theft are not sufficiently effective because there is still some reluctance to support investigations and prosecutions with evidence by utilities' employees.

The Sample B (Local municipality personnel responsible for electricity supply) participants were asked the following question:

- "Does your municipality have by-laws in place that are applied to curb electricity theft?"

The participants were provided an option of 'yes' and 'no' from which to select their responses. All (6) participants answered the question by selecting the 'yes' option. The participants were asked a further question:

"If your answer to the above question is 'yes', name the by-laws in place to curb electricity theft" and "If your answer to the above question is 'no', what practices are used in your municipality to curb electricity theft incidents?"

Since there were no participants who selected 'no' for an answer, only the participants who responded 'yes' were required to name the by-laws. Accordingly, each of the participants mentioned one by-law, and their answers include Greater Tzaneen electricity by-law mentioned by two participants (2), Ba-Phalaborwa electricity by-law illuminated by two participants (2), Greater Letaba by-law mentioned by one participant (1) and municipality by-law mentioned by one participant (1).

The participants were asked another question: "How effective are the by-laws to curb electricity theft you mentioned above?". They were provided with Options 'A-not effective', 'B-less effective', 'C-effective', 'D-more effective' and 'E-most effective' to select from. Four (4) participants selected Option 'C-Effective' and two (2) participants selected Option 'D-more effective'. The participants were further asked the question: "If your answer to above question is A or B', what do you think contributes to the level of effectiveness chosen above?"

There were no participants who selected either Option A or Option B. Hence, there was no need for the question to be answered. However, three (3) participants who selected Option 'C-effective' as an answer provided a further explanation for their responses. Their explanation is cited verbatim as follows:

“Not everyone adheres to the by-laws in addition to corrupt conduct of employees who are instrumental in promoting theft of electricity for personal financial gain”.

“The by-laws are useful but with challenges that people always find a way to steal electricity in the presence of the by-laws.”

“Shortage of manpower makes it difficult to monitor the fined customers so that they do not repeat their illegal consumption of electricity”.

Considering that the participants opted for 'C-effective', their substantiation is a demonstration that there is uncertainty on whether the by-laws are effective in curbing electricity theft. Their uncertainty is in accordance with the deliberations in Sub-section 6.2.5.4, indicating that shortage of resources and the conduct of corrupt utility employees hinder the object of curbing electricity theft effectively (Dzansi et al., 2014:187; Khan et al., 2020:44). It is surmised from the participants' choice of answers and explanations that the effectiveness of practices to curb electricity theft are conditional.

The Sample E participants were asked the following question:

- “Are there any measures put in place in your community area to prevent electricity theft?”

The participants were provided with a 'yes' or 'no' answer option from which to select their responses. All six participants (6) answered the question, and three participants (3) selected a 'yes' response, while the other 3 (three) participants opted for a 'no' response. The three participants (3) who selected the 'yes' response, were further asked the following question:

- “If your answer is yes to the question above, mention the measures put in place in your community area to prevent electricity theft”.

Some of the participants who selected a 'yes' response also provided more than one answer since they may not tally with the number of participants. Their answers are summarised as follows:

- Remove electricity illegal connections (1 participant);
- Switch off or disconnect the illegal electricity supply (2 participants);
- Utilities conduct audits and inspections (1 participant);
- Issue tamper fines or notices (2 participants); and
- Utilities introduced an advanced meter technology controlled from outside the premises of the consumer (1 participant).

Notably, two participants who selected a ‘no’ answer and were not required to answer a further question substantiated their choice of answer. The statements made by the two (2) participants are quoted verbatim as follows:

*“Not that I know, except that we wait for Eskom to conduct audits”; and
 “It is the responsibility of Eskom to empower the community on information to assist the curbing of electricity theft”.*

The answers of the participants who selected a ‘yes’ answer option and the participants who opted for a ‘no’ response do not require an explanation. However, they provided an explanation demonstrating measures by utilities to curb electricity theft as deliberated in Section 6.2 and 6.3 *supra*. Mbanjwa (2017:32) mentioned disconnections; Blazakis et al. (2020:4); Komolafe and Udofia (2020:246) dealt with the audits or inspections; Eskom (2016a:1) covered tamper fines or notices; Mabasa, Olutola and Mofokeng (2022:2) mentioned the use of advanced technology; while Borawska (2017:867) and Bilolikar (2019:4) recommended consumer education or awareness as a measure or practice to curb electricity theft. Therefore, the Sample E participants understand the measures implemented in their communities to curb electricity theft.

The Sample E participants were asked the following question:

- “What would you suggest be done to improve the measures to curb electricity theft within your community area?”

All the participants answered the question, and each provided one answer. Two (2) participants provided a similar answer that was eventually combined as one. Accordingly, the following summary depicts the participants’ responses:

- Conduct inspections and warn communities before removal of installation (1 participant);
- Utilities should move from conducting audits as mere routine exercise but in a meaningful and effective manner to deter the recurrence of electricity theft (1 participant);
- Invest in advance technology to detect the conduct of stealing (1 participant);
- Timeous attendance of electricity theft incidents by means of technology or human intervention immediately they are known (2 participants); and
- Utilities should work with community organizations' such as Community Policing Forum (CPF), traditional leaders, street committees and ward committees to curb electricity theft (1 participant).

The participants mentioned that warning communities before removal of illegal connections can improve measures to curb electricity theft. This view is not supported in literature. The evidence from Eskom (2023a:1-2) is that electricity theft incidents are persistent despite the utilities' prioritisation of customer education and warning electricity users of undesired outcomes associated with electricity theft. The answer reinforcing meaningful and effective audits is aligned to literature because Khan et al. (2020:44), accentuates that auditing of electricity infrastructure is expensive in nature since it needs sufficient human and material resources. Additionally, the need for meaningful audits or inspections is impelled by having knowledge that corrupt utilities' employees are contributing to sub-standard audits (Shokoya & Raji, 2019:97).

In tandem with literature perspectives, the participants also mentioned that the deployment of advance technology and speedy response to electricity theft reports were some of the means by which to curb electricity theft (Geyevu & Mbandlwa, 2022:11075; Mabasa, Olutola & Mofokeng, 2022:2). Furthermore, aligned with literature is the participants view that utilities should partner with community organisations to improve the measures of curbing electricity theft (Mujuzi, 2020:79). It is noteworthy that the partnership required to improve the practices of curbing electricity theft is premised on the understanding that certain parties or institutions have a notable role to play in curbing electricity theft. The next section addresses the contribution of law enforcement and the judicial system to the practices of curbing electricity theft.

6.4 CONTRIBUTION OF LAW ENFORCEMENT AND JUDICIAL SYSTEM IN THE PRACTICES OF CURBING ELECTRICITY THEFT

Bun, Kelaher, Sarafidis and Weatherburn (2019:2303) point out that the ability of the criminal justice system to apply the law in criminal matters has a great influence on the reduction of crimes (including electricity theft). Various institutions and personnel such as the police, the courts, correctional services, social workers and many more together constitute the criminal justice system (Gould, 2017:2-3; Muntingh & Dereymaeker, 2013:29-3). However, the law enforcement (the police) and judicial system (the courts) are always involved in the first line of criminal matters and their roles are essential in all the stages of criminal processes.

The importance of the police and the courts is clarified in Section 4.7 (chapter 4 of this study), which alludes that the institutions consist of different components and functionaries valuable to the practices of curbing electricity theft. On the other hand, Section 4.7 focuses on two institutions, namely: law enforcement and the judicial system. The reason for focusing on law enforcement and the judicial system is that their activities are central to the entire criminal process (United Nations, 2020:41). The functions of the police and the courts are pivotal to this study's aim of exploring and determining the extent to which adequate application of South African laws governing crime could assist in curbing electricity theft than relying on engineering technology to enforce compliance.

The contribution of the police and the judicial system to practices of curbing electricity theft is not different from measures of dealing with other crimes (Mphaphuli, 2012:16). In that regard, the discussion in Sections 6.4.1 and 6.4.2 outlines the roles of the judicial system and law enforcement to the practices of curbing electricity.

6.4.1 The role of law enforcement in curbing electricity theft

The role of law enforcement in relation to the practices of curbing electricity theft is observable in their proactive (prevention of crime) or reactive (response to a crime) functions (Haskins, 2019:2). According to Sherman, Williams, Ariel, Strang, Wain, Slothower and Norton (2014:97), the proactive duties of police include conducting regular patrols on areas known as hotspots for different crimes and random patrols for visibility in their entire police precinct. On the other hand, the reactive functions of

police include investigation as a response action to crime commission and effecting an arrest to suspects of crime (Civilian Secretariat for Police Service, 2020:19; Muntingh, 2015:5).

Parker (2015:23) informs that the role of the police can be useful with regard to initiatives intended for curbing electricity theft by responding to information provided by various sources. Collecting, processing and analysing information are critical roles of curbing electricity theft (among other crimes) by all police. Nonetheless, an intelligence division in the police has members specialising in handling of crime information (Sheptycki, 2017:626; South African Police Service, 2020:105). Naicker (2017:39) indicates that in South Africa, the police intelligence unit utilises various sources of information such as informers, agents and contact persons to gather information about different crimes. Intelligence personnel utilise collated crime information to examine, interpret and use it for purposes of curbing electricity theft in a similar way they do with other crimes (South African Police Service, 2017:151).

The utilities' encouragement of their employees to consider opening criminal cases of energy infrastructure that has been tampered with or damaged by unauthorised consumers, is an indication that the role of the police and the courts is important to curbing electricity theft (Eskom, 2020b:2; City of Polokwane Municipality, 2020:218). However, there is an indication that Eskom and municipalities are reluctant to report criminal cases to the police for reasons that are unknown (Eskom, 2020b:2; Msunduzi Municipality, 2019:190). However, most Eskom employees believe that reporting a criminal case is the responsibility of certain individuals employed specifically to deal with security related tasks (Eskom, 2018c:4). According to Isenring, Mugellini and Killias (2016:374), the hesitancy to report any crime (including electricity theft) is attributed to various factors. These factors include the adversarial criminal processes, such as dealing with intimidating legal representatives during examination of evidence in the courts, as well as the discouraging attitude of law enforcers displayed during the reporting and investigating phases of criminal cases.

Despite reasons and beliefs held by utility employees, it is important that they understand the criminality of electricity theft and the requisite multiple stakeholder approach both inside and outside the electricity utilities (Derakhshanalavijeh, Turner & Mancini, 2019:35). Therefore, utilities should encourage employees to take part in

stakeholders' engagements arranged by police and courts. The participation will enable utility employees to share the challenges experienced when requiring the services of the police and courts. Furthermore, the utility employees will be able to understand the way in which the processes within police and courts can be useful to curbing electricity theft.

The contribution of the police to the practices of curbing electricity theft is remarkable insofar as the police co-operate with the public and other institutions in the public domain. The co-operation between police and other stakeholders is enhanced by keeping the communication lines open and working as guided by legal stipulations of the country in which the police operate (United Nations Office on Drugs and Crime, 2016:74). Swanepoel and Meiring (2018:452) express the role of the police in curbing electricity theft as educating and guiding society on matters relating to electricity theft prevention, improving the capacity to investigate electricity theft, implementing visible policing; as well as improving protection services to the victims of energy theft. The SAPS use different forums such as Community Policing Forums (CPF), Non-Ferrous Crime Combatting Committee (NCCC) and Rural Safety Forums (South African Police Service, 2020:24, 138, 142).

6.4.2 The role of judicial system in curbing electricity theft

The University of Cape Town (2020:7-8) asserts that a judicial system is an organisation (arrangement) of courts having various functionaries (personnel). These functionaries have capacity and competence to execute different functions for purposes of administering justice, and includes but not limited to, prosecutors, magistrates, judges and interpreters. The judicial system entails among other roles, the prosecution of electricity theft, adjudication of criminal processes, and issuing of warrants (to search, seizure and arrest) and orders executable against the suspects (Department of Justice & Constitutional Development (DoJ&CD); 2016:iii; Muntingh, 2015:9).

In evaluating the judgement in *S v Ndebele and Another* (SS16/2010) [2011] ZAGPJHC 41 in conjunction with other preceding judgements about electricity theft, D'Oliveira (2012:318-320) reservedly recognises the contribution of the judicial system in measures of curbing electricity theft. This view by D'Oliveira (2012:318-320) emanates from the court decision in *S v Ndebele and Another* (SS16/2010) [2011]

ZAGPJHC 41 and the cautious court explanation in other judgements that were short of recognising electricity theft. Furthermore, D'Oliveira (2012:319) is concerned with the scant regard by the judicial system to effect significant measures of combatting electricity theft.

According to Sage Publications (2020:10), the processes the judicial system's processes can lead to distressful outcomes (convictions and incarcerations) to the perpetrators of crimes, but have the potential to deter electricity theft. For Muthaphuli (2012:25), the deterrence is attainable in a way that it can discourage the convicted offenders from repeating the crime in future and serve as a lesson to those perpetrators who have not been subjected to criminal processes. Mbanjwa (2017:32) cites as an example, an instance of Eskom utilising the judicial system to hold a notable business customer in Limpopo Province accountable and consequently disconnect his electricity supply service.

The Department of Justice and Constitutional Development (2016:111) demonstrates that the contribution of courts to criminal matters has transformed from the ordinary way of examining and adjudicating crimes in the courtroom, to creating awareness and educating the role players in the criminal justice system and parties affected through court processes. The court created principles and practices to educate and empower the public, individuals and organisations on the way in which various cases flow between the court criminal processes. Acquiring knowledge of the court and case-flow management process is critical to utilities such as Eskom and municipalities because they have electricity theft cases taken to court for purposes of prosecution, adjudication and conviction.

Figure 6.2 overleaf depicts the involvement of the law enforcement and the judiciary in all the stages of the criminal process in comparison with other role players in the criminal justice system.

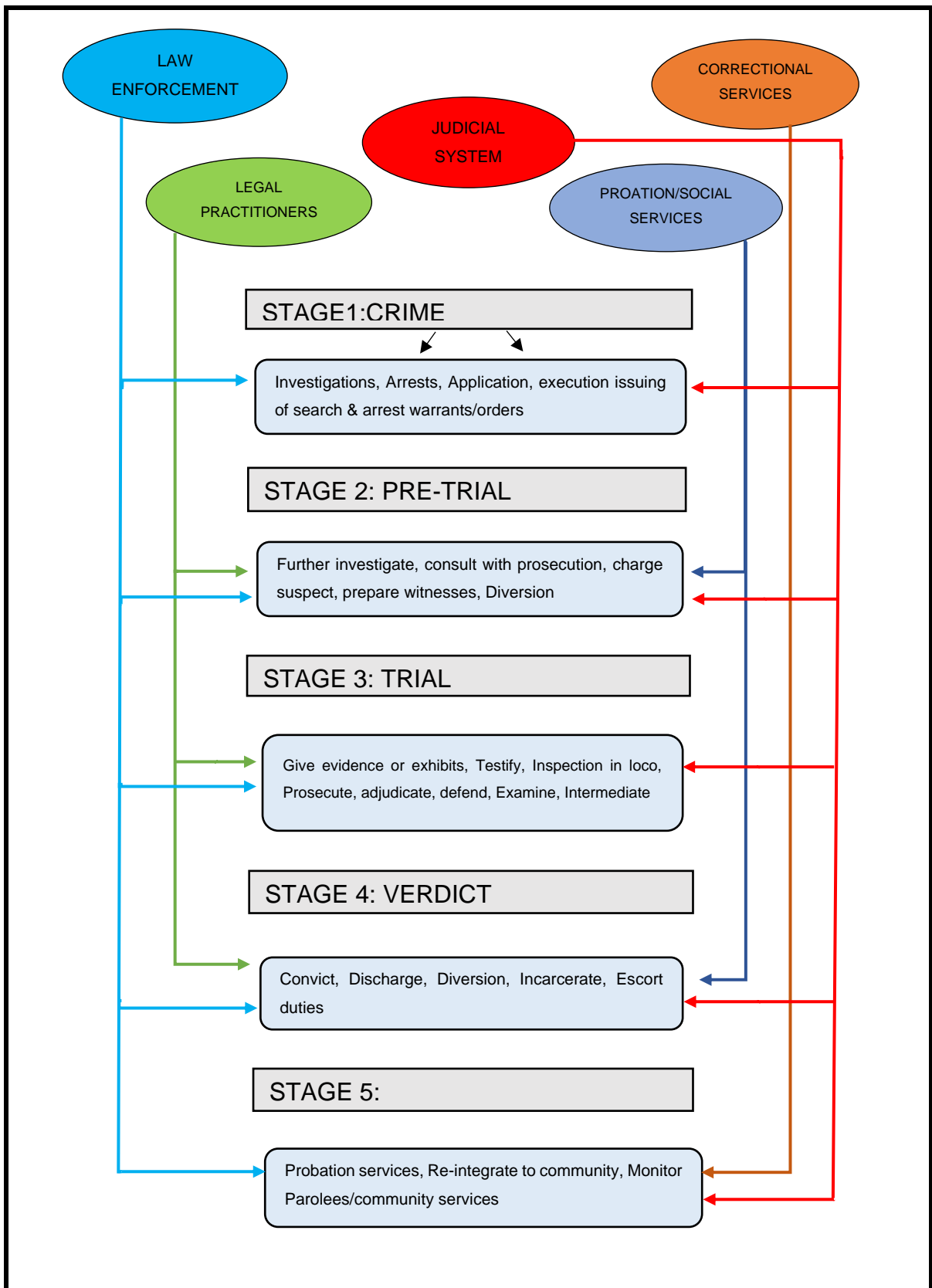


Figure 6.2: The involvement of law enforcement and judicial system in criminal processes
 (Source: Compiled by the researcher)

The Sample A1, Sample A2, Sample A3, Sample B and Sample E participants were asked the following question: “In your opinion, do you think that the police and courts have a role to play in curbing electricity theft incidents?” The participants were required to answer ‘yes’ or ‘no’. Of a total of thirty (30) participants from Samples A1, A2, A3, B and E, twenty-eight (28) answered ‘yes’ answer. One Sample B participant did not select ‘yes’ or ‘no’, but mentioned ‘not sure’, while one Sample E participant selected a ‘no’ answer. The participants who responded ‘yes’ were further required to give reasons for their choice of response.

The 28 participants who responded ‘yes’, provided reasons for believing that police and courts have a role to play in curbing electricity theft. Some participants provided more than one answer, and the researcher summarised the responses as one answer where in that instance. Hence, the number of responses may not correlate with the actual number of participants. The participants’ answers culminated in seven (7) reasons police and courts have a role to play in curbing electricity theft. These reasons are summarised in Table 6.5 below:

Table 6.5: Participants’ answers on the role of police and courts to electricity theft

Participants’ answers indicating the role police and courts have on curbing electricity theft	Number of participants who mentioned an answer
Prevention of electricity theft	3 x A1, 1 X A3, 3 x B
Investigate electricity theft	2 x A1, 3 x A3, 2 x B
Arrest the perpetrators	2 x A1, 4 x A2, 2 x A3, 3 x E
Escort and protect utility employees during operations to audit and remove illegal connections	1 x A1, 4 x A2, 3 x sample B, 2 x E
Prosecute the perpetrators of electricity theft	6 x A1, 5 x A3, 1 x B, 1 x E
Sentence and convict the perpetrators of electricity theft	4 x A1, 1 x A2, 1 x A3
Courts issue enforcement orders to remove illegal connections	1 x E

(Source: Feedback from the participants)

The summary of answers depicted in Table 6.5 above are aligned with literature through Section 205 of the Constitution Act 108 of 1996, which covers the responsibilities of preventing, combating, investigating crime and enforcing the law among the functions of the police (South Africa, 1996). Araya-Moreno (2022:329-330) acknowledges that securing evidence, arrests and conviction of perpetrators were

among the core functions of the police and the courts. Furthermore, Mujuzi (2020:80-81) accentuates the role of courts in prosecuting electricity theft and the way in which the police and court functions in criminal justice are interrelated. As indicated by the Sample E participants, the duties of the courts include the provision of assistance regarding the issuing and enforcement of court orders to legally protect the interest of parties, depending on the circumstances placed before the court itself (Dube & Moyo, 2022:14). The following verbatim response by one Sample A1 participant comprehensively indicated the different roles police and courts play in curbing electricity theft:

SAMPLE A1: "They have constitutional responsibility to help in holding accountable the culprits. The police should arrest and investigate well the cases of electricity theft. The courts should prosecute and convict them".

Additionally, one Sample A3 participant added the following in relation to circumstances that may compel the need for services of the police and the courts:

"The police and courts are necessary because some of the incidents cannot be solved by auditing or inspections only. Aggressive consumers commit repetitive energy theft".

The above-cited assertion is well founded in literature and in practice as observed by the researcher, who is an employee of Eskom and has witnessed the scenarios as mentioned by the participant. Therefore, the participant understands the role of the police and the courts in the fight against electricity theft.

The participants in Sample E were asked the following question: "In your experience, how often is your intervention required for matters related to electricity theft within your community area?" The participants were provided with Options 'A-never', 'B-less often', 'C-regularly', 'D-more often' and 'E-always' to select from. All the participants selected from answer options, and four (4) participants selected Option 'B-less often' while two (2) participants selected Option 'C-regularly'. The participants who selected Options B, C, D or E, were further asked the question: "If your answer to above question is B, C, D or E, which organisations or individuals require your intervention in electricity theft matters within your community?" Due to all (6) participants having selected Options B and C, they were then able to answer the question. The participants' answers include Eskom (6 participants), municipality (1 participant) and the community (1 participant). Accordingly, all participants had Eskom as a common

answer, and two (2) among the participants each mentioned one additional answer that is municipality and community.

The participants were further asked to: “Describe the nature of your intervention in electricity theft matters within your community”. All participants described the nature of their intervention in electricity theft matters within their community. Some provided more than one answer, which may not tally with the number of participants. A summary of the participants’ responses reflects the following:

- During community meetings aimed to address the electricity needs and complaints of utilities and communities (1 participant).
- During outreach programme to strategic places of community such as schools and traditional leaders (2 participants).
- Supporting the utilities’ campaigns on electricity related matters including curbing electricity theft incidents (2 participants).
- Disseminating information about various aspects of electricity supply (1 participant).
- To assist in creating awareness about programmes offered by utilities (2 participants).

The participants’ answers are in tandem with literature perspectives. As revealed in Eskom the involvement of various stakeholders and community members during its operations against illegal connections, safety and electricity usage are a priority (Eskom, 2020a:14). Moreover, Khan et al. (2020:8023) and Mujuzi (2020:79), attest that utilities function effectively when involving communities to support their initiatives.

The Sample A1 (6), Sample A2 (6), Sample A3 (6), Sample B (6), Sample C (10), Sample D (3) and Sample E (6) were asked the question: “What practical guidelines, procedures and recommendations can be offered to curb electricity theft in Limpopo Province?” The question was open-ended, and participants were not provided with options from which to select their answers. All other participants from the mentioned samples answered the question, except one (1) Sample A1 and two (2) Sample A3 participants who did not answer the question. Some of the participants who answered the question provided more than one (1) response. Responses with a similar meaning were summarised as one answer. Therefore, the participants’ answers may not tally

with the number of participants who answered the question. Table 6.6 below depicts the number of participants and their answers in respect of practical guidelines, procedures and recommendations to curb electricity theft.

Table 6.6: Participants answers on practical guidelines, procedures and recommendations to curb electricity theft

Participants' answers indicating practical guidelines, procedures and recommendations to curb electricity theft	Number of participants who mentioned an answer
Did not answer	1 x A1, 2 x A3
Add manpower that will deal with the mushrooming cases of electricity theft	1x A1
Dedicate a team that will focus on investigating electricity theft and provide direction on possible remedies to combat electricity theft	1 x A1, 1X A2
In the absence of legislation specially created to deal with electricity theft, use available alternative laws to deal with electricity theft associated crimes	2x A1, 2x C, 2 x D
Utilities, law enforcement and courts should keep the lines of communication open to share ideas on ways to curb electricity theft using criminal procedures	1 x A1, 1 x A3
Utilities should encourage employees and users to report electricity theft crimes to law enforcement	1 x A1
Utilities should encourage courts to effect severe punishment for electricity theft related conduct	1 x A3
Utilities should conduct basic principles of crime investigations in electricity theft incidents	1 x A1, 2 x C, 2 x D
Strengthening the existing practices of curbing electricity theft and regular monitoring of electrical infrastructure by utilities	2 x A2, 1 x A3, 1 x B, 1 x E
Utilities should conduct regular and continuous customer education	1 x A2
Utilities should attend to scene of electricity theft as soon it is reported and promptly notify law enforcement upon confirmation of criminal incident	1 x C, 1 x D, 1 x E
Utilities should support the law enforcement and courts with expert evidence	2 x C, 2 x D
Law enforcement and courts should support the utilities with information useful to secure a criminal case	3 x C
Law enforcement should support the utilities with escort and protection during removals of illegal connections of electricity	2 x C

Participants' answers indicating practical guidelines, procedures and recommendations to curb electricity theft	Number of participants who mentioned an answer
Utilities should normalise illegal installations that are meeting the required electrical standard to have more legitimate customers that can be held accountable and increase sales of electricity	1 x A1, 1 X A2
Utilities should invest in advance technology to detect and curb electricity theft	4 x B
Municipalities should formalise informal settlements to enable proper electrification that will enable holding accountable the consumers	1 x C, 2 x E
Utilities must electrify informal and new settlements	1 x B, 3 x E
There should be a legislation criminalising electricity theft	1 x C
Law enforcement should use specialised services such as LCRC and technical experts to investigate a scene and provide expert evidence	1 x C
Adherence to basic principles of criminal investigation is essential	1 x C
Police and utilities should respect the rights of witnesses, victims and suspects at any stage of dealing with electricity theft	
Law enforcement and utilities should provide comprehensive details of electricity theft and credible evidence of electricity theft	1 x D
Utilities and law enforcement should reconsider the importance of utilising informers	1x E
Utilities should establish street committees that will serve as watch dogs for conduct of electricity theft	2 x E
The courts should consider blacklisting persons found guilty of electricity theft to prevent them from doing any sort of business or registering business with South African Revenue Services (SARS)	1X E

(Source: Feedback from the participants)

Table 6.6 above indicates that the majority of the participants recommended basic and general practices to addressing electricity theft by utilities. All the general practices mentioned by the participants are covered in literature and are deliberated in Sections 6.2, 6.3 and 6.4 of this chapter. The basic and general practices include the need to have sufficient human resources; the use of existing and alternative laws; open communication and support between utilities, police and courts on activities to curb crime; regular and constant consumer education; monitoring, auditing and penalising illegal users; normalise and standardise the illegal electrical installations; employ

advance technology necessary to detect unwanted activities and protect electricity against theft; quick response to alleged reports of crime and use of informers.

The above-cited measures cohere with the assertions by Afiyah (2023:1106-1107), Bilolika (2019:4), Geyevu and Mbandlwa (2022:11075), Godina et al. (2015:12153), Kotwal and Manhas (2017:1), Mabasa, Olutola and Mofokeng (2022:2), Mbanjwa (2017:26-27), Mujuzi (2020:79), Murombo (2015:227-228) and Swanepoel and Meiring (2018:452). The basic understanding of practical recommendations by majority participants is endorsed by the answers of three (3) participants, each from Sample A1, Sample A3 and Sample C. The participants' verbatim answers as quoted verbatim are as follows:

SAMPLE A1: "Utilities should conduct basic principles of crime investigations in electricity theft incidents".

SAMPLE A3: "The implemented practices by utilities are not necessarily failing, there is only a need to strengthen the existing practices of curbing electricity theft and monitor regularly the electrical infrastructure".

SAMPLE C: "Adherence to basic principles of criminal investigation is essential".

Among the participants' answers is a recommendation to blacklist persons who were convicted of electricity theft from transacting in business and the South African Revenue Services (SARS). The participant's recommendation may not be feasible, given that SARS is more concerned with compliance matters regarding tax or revenue collection, and only deals with criminal matters associated with non-compliance (South African Revenue Service, 2021:np). Another answer drawn from the participants indicates that electrification is necessary to legitimate users. While this view has the potential to reduce electricity theft by legitimising illegal users, its effectiveness in curbing electricity theft may be challenged by utilities imposing high tariffs of electricity and exacerbating the unaffordability of consumers (Khonjelwayo & Nthakeni, 2021:55).

Another participant mentioned the need to have street committees because of their essential role in curbing criminal activities in communities (Ngcobo, 2022:119). However, the benefits of having street committees are experienced in residential zones and may have limitations in remote or isolated sites where some of electricity

infrastructure is found. Another participant alluded to the need for respecting the rights of the accused, the victims, and the witnesses. The participant's view is supported in the Constitution of the Republic of South Africa (Act 108 of 1996) and the Service Charter for Victims of Crime in South Africa (Nkukwana, 2016:1). However, the respect of persons' rights particularly after the crime has been committed, does not prove to have any significance to curbing electricity theft. The respect for human rights can be understood in the sense that it ascertains fair and credible criminal processes.

The Sample A1 (6), Sample A2 (6), Sample A3 (6), Sample B (6), Sample C (10), Sample D (3) and Sample E (6) were requested to respond to the statement: "If you have any additional comments or views about how electricity theft can be curbed in a successful manner using the laws governing crime in South Africa, please write them below". The statement is open-ended, and participants were not provided with options from which to select their answer. Nineteen (19) participants comprising of three (3) Sample A1, four (4) Sample A2, two (2) Sample A3, two (2) Sample B, three (3) Sample C, one (1) Sample D and four (4) Sample E participants did not respond to the statement.

Of the twenty-four (24) participants who answered, some provided more than one (1) answer. Where participants mentioned answers with similar meaning, the researcher summarised them as one answer. Therefore, the participants' answers may not tally with the number of participants who answered the question. Table 6.7 below is a depiction of the participants' answers and frequency of their respective answers.

Table 6.7: Participants' answers indicating additional views on curbing electricity theft using laws governing crime

Participants' answers indicating additional views to curb electricity theft using laws governing crime in South Africa	Number of participants who mentioned an answer
No answer.	3 x A1, 4 x A2, 2 x A3, 2 x B, 3 x C, 1 x D, 4 x E
There is a need for a specific legislation to deal with electricity theft.	1 x A1, 1 x A3, 1 x B, 1 x C, 2 x D
Local authorities should prioritise electrification of new developed areas and settlements to increase reduce illegal consumers.	1 x A1, 1 x C
Utilities should have clear procedures guiding employees on handling matters of electricity theft.	1 x A1

Participants' answers indicating additional views to curb electricity theft using laws governing crime in South Africa	Number of participants who mentioned an answer
Utilities should prioritise reporting perpetrators of electricity theft to police for investigation and prosecution.	1 x A2, 3 x A3, 2 x B
Utilities should increase manpower to intensify the existing practices of curbing electricity theft.	1 x A2
Utilities should utilise police to escort and protect its employees during removal of illegal connections.	1 x B
Utilities should only report the perpetrators of electricity theft to police for investigation and prosecution when they are found to have committed more than one incident of theft.	1 x B, 1 x E
Utilities should actively participate in case flow management meetings convened by Department of Justice.	1 x C
Utilities should stop relying on contractors because they familiarise themselves with and exploit the electricity operations vulnerabilities.	1 x C
Utilities, courts and police should rely on Criminal Procedure Act and other laws governing crime to deal with electricity theft.	2 x C
Utilities should actively participate in crime prevention initiatives to get support from other stakeholders in fight against crime.	1 x C

(Source: Feedback from the participants)

Informed by Table 6.7 above, the answer mentioned most (8 participants) was that electricity theft should be reported to police for investigation and prosecution. However, two (2) participants each from Sample B and Sample E mentioned that the perpetrators should be reported to law enforcement only when they repeatedly commit the crime of electricity theft. Notwithstanding the exception to report repeat electricity conduct by two (2) participants, the answers of the eight (8) participants demonstrate that they commonly believe that electricity theft can be curbed effectively by applying criminal laws.

Additionally, the participants' view is in alignment with literature. For example, Jiyane-Tshikomba (2019:76) has demonstrated dissatisfaction on few reports of electricity theft, and this forms part of the discussion in Section 6.2 of the current chapter. The second most mentioned answer by six (6) participants is the need for specific legislation to deal with electricity theft. The need for a creation of legislation governing electricity theft is in alignment with literature as attributed to suggestions by Bolhuis

(2021:np), Chetty (2018:3) and Musafiri (2021:35). This aspect has been dealt with in Sections 4.2 and 4.4 (chapter 4 of this study) and Section 5.3 (chapter 5 of this study).

The remaining responses were mentioned by a smaller number of participants, ranging from 1 to 2 participants. Sections 6.2, 6.3 and 6.4 of this chapter alludes to the least mentioned factors in literature regarding the importance of electrifying new developed areas and informal settlement, increase of human resource by utilities to intensify measures to curb electricity theft, participation of utilities in case flow management, and utilisation of the Criminal procedure Act and other criminal laws to deal with electricity theft (Kotwal & Manhas, 2017:1; National Treasury of South Africa, 2011:149; Scott & Seth, 2013:2).

Furthermore, the participants mentioned that utilities should stop relying on contractors. The participants' view is supported in literature because various authors lamented the corrupt conduct of contractors appointed by electricity utilities as perpetuating electricity theft (Gaur & Gupta, 2016:127; Mbanjwa, 2017:19; Shokoya & Raji, 2019a:97). In addition, the participants mentioned the need for utilities to have clear procedures to guide employees on ways to curb electricity theft. In Section 6.3 *supra*, it was deliberated that utilities such as Eskom and municipalities have the procedures in place to guide processes to deal with electricity theft (Eskom, 2020a:7-11; Eskom, 2020b:96; Mujuzi, 2020:79).

The participants' answers are supported in literature, since utilities already have procedures in place. Therefore, the emphasis should be on reviewing the effective implement ability of the procedures by employees in addressing electricity theft. The participants also indicated that the employees of utilities should be escorted by police during the removal of the illegal electricity connections. The point emphasised by participants is already in practice by utilities. According to Matlhabe (2023:np), Eskom employees work under volatile situations, and on numerous occasions require to be escorted by police when removing illegal electrical installations in communities. The participants identified the need for utilities to actively participate in crime prevention strategies. In this regard, the South African government developed a crime prevention strategy applicable to all sectors of society, including business (South African Government, 2023:np). Furthermore, Business Leadership in South Africa underscores the importance of businesses to participate in crime prevention matters

because they can draw benefits that accrue from the reduction of crimes affecting the business sector (Business Leadership South Africa, 2023:np).

6.5 RESEARCHER'S CONTRIBUTION TO THE STUDY

The aim of this study was: "To explore and establish the extent to which adequate application of South African laws governing crime could assist in curbing electricity theft, than relying on engineering technology to enforce compliance". It is evident from the discussions in Section 1.2 (Chapter 1 of this study), Sub-sections 3.3.2.1 and 3.3.3.1 (Chapter 3 of this study); as well as Sub-sections 6.2.5.4 and 6.3.5 (in Chapter 6) that utilities are inclined to employment of technology in curbing electricity theft than using laws governing crime in South Africa (Diski, Chapman & Kumar, 2021:18; Geyevu & Mbandlwa, 2022:11075; Louw & Bokoro, 2019:210; Narendra, 2017:176; Phalatse, 2020:15; United Nations, 2021:3). It has been established that the perpetrators have a way to commit electricity theft multiple times even in the presence of technological anti-theft measures (Tshikomba, 2019:15-16). The presentation in Sub-section 6.2.5.4 (this Chapter 6) shows that the use of technology may not yield the desired results if utilised in isolation from other interventions, such as holding the perpetrators legally accountable (Diski, Chapman & Kumar, 2021:18; Phalatse, 2020:15; United Nations, 2021:3). Hence, there is a call to government, utilities and Criminal Justice System (CJS) to implement serious measures such as hefty fines and harsh sentences to perpetrators of electricity theft (Khwela, 2019:85; Thangalakshmi, 2015:30844).

It has been established further that law enforcement and courts do not adequately appreciate that electricity theft matters should be dealt with by using other laws governing crime in South Africa. It is notable from literature and the participants' views in Sections 5.3.1 and 5.3.2 (Chapter 5 of this study), that central to the reserved approach of engaging criminal laws in matters of electricity theft by utilities, law enforcement and courts lack a clearly defined legislation criminalising the conduct associated with electricity theft (Arango et al., 2016:np; Davies & Cook, 2020:18-19; Eskom, 2023a:2; Gehl & Plecas, 2017:3-4; Khwela, 2019:26; Lawrence, 2019:1). In the absence of clearly defined legislation to deal with electricity theft as informed by literature and the views of participants in Samples A1, A2, A3, B, C, D and E, and as directed by the research objective: "To determine and develop practical measures for

curbing electricity theft successfully by applying laws governing crime in South Africa”. As such, it is imperative to have a legal basis necessary to subject electricity theft to criminal processes and laws governing other crimes in South Africa.

It is against the above-stated background that the researcher developed a conceptual framework modelling procedures for criminal investigation and prosecution of electricity theft. The conceptual framework should take into consideration the possibility for creation and enacting of necessary statute relevant to punish the conduct of electricity theft and is depicted in Figure 6.3 overleaf.

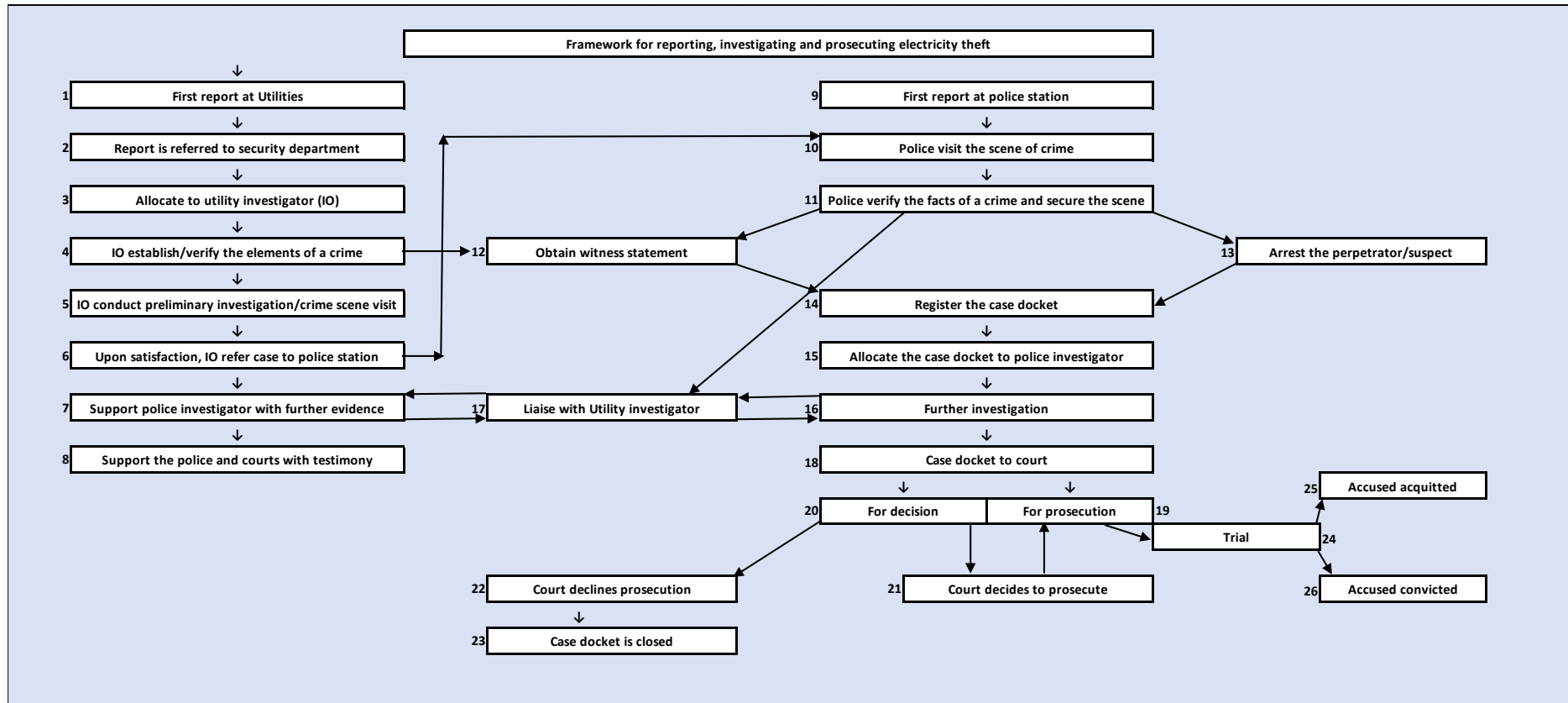


Figure 6.3: Conceptual framework of reporting, investigating and prosecuting electricity theft

(Source: Developed by the researcher)

As depicted in the conceptual framework in Figure 6.3, the conceptualised process of addressing electricity theft by applying laws governing crime in South Africa encompasses the reporting, investigation and prosecution of the crime. Accordingly, electricity theft reporters should be afforded a dual opportunity to report electricity theft cases for purposes of criminal investigation and prosecution at utilities or/and police station as indicated in point 1 and point 9 of Figure 6.3. The dual reporting platform and the process involving reporting, investigation and prosecution is explained and indicates that the police investigator has the ultimate responsibility to investigate and hand over the case docket to court as outlined in Sections 6.5.1. and 6.5.2 below.

6.5.1 First report made to utilities

- Upon receipt of electricity theft related report from reporters, informants, complainants or community leaders (point 1), the utilities should put in place a mandatory system to refer the reported matter to the security department (point 2).
- The Head of Security should allocate the reported electricity theft incident to the internal investigator/investigation officer (IO) (point 3).
- The internal investigator should establish or verify if the reported incident subscribes to the elements of a crime (point 4).
- The internal investigator should conduct preliminary investigations and visit the crime scene (point 5) to determine the facts, evidence and potential witnesses. The internal investigator should obtain witness or first report statements (point 12) to confirm the veracity of the reported incident.
- Upon satisfaction that the preliminary information confirms electricity theft crime, the internal investigator should file a criminal case at the police station (point 6). The first report statement should be used to open a criminal case.
- The police should visit the scene of the crime (point 10) to verify the facts of a crime and secure the crime scene (point 11).
- Depending on the circumstances found by the police, witness statements should be obtained (point 12) and if the facts are confirmed, the suspect may be arrested if found at, or near the scene (point 13).
- The police should register the case docket to issue a case number (point 14).
- The case docket should be allocated to the police investigator for further investigation (point 15).

- There should be communication between the police investigator and the utilities investigator (points 16 and 17). The police investigator may need further details of the reported case docket, and the utility investigator may need to support the police investigator with evidential information.
- The case docket is taken to court (point 18). In instances wherein police conducted further investigation concurrently with the arrest of the suspect (accused), the police should liaise with court for prosecution (point 19). In case further investigation is done without arresting the suspect, the police investigator should submit the case docket to court for decision (point 20) upon completion of investigation.
- Depending on the merits of the contents in the case docket, the court can decide to prosecute (point 21) or decline (point 22) to prosecute on the case docket referred for decision.
- In case the court declined to prosecute, the case docket can be closed (point 23).
- In both instances wherein the accused was arrested during further investigation, and wherein the accused was charged following a court decision, the court can subject the accused to a trial (point 24).
- The utilities should support the police investigator and court with evidence and testimony (points 7 and 8).
- The court outcome may lead to a conviction (point 25) or acquittal (point 24) of an accused.

6.5.2 First report made to police station

- Upon receipt of the report relating to electricity theft from reporters, informants, complainants or community leaders, the police should visit the scene of crime (point 10) to verify the facts of a crime and secure the crime scene (point 11). The police can also liaise with utilities investigator for further support (points 16 and 17).
- Depending on the circumstances found by the police, witness statements should be obtained (point 12) and in the event of the facts being confirmed, the suspect may be arrested if found at, or near the scene (point 13).
- The police should register the case docket to issue a case number (point 14).
- The case docket should be allocated to the police investigator for further investigation (point 15).

- There should be a communication between the police investigator and utilities investigator (points 16 and 17). The police investigator may need further details of the reported case docket and the utility investigator may need to support the police investigator with evidential information.
- The case docket is taken to court (point 18). In instances of police conducting further investigation concurrently with the arrest of the suspect (accused), the police should liaise with court for prosecution (point 19). In case further investigation is conducted without arresting the suspect, the police investigator should submit the case docket to court for decision (point 20) upon completion of investigation.
- Depending on the merits of the contents in the case docket, the court can decide to prosecute (point 21) or decline (point 22) to prosecute on case docket referred for decision.
- In case the court declined to prosecute, the case docket can be closed (point 23).
- In both instances of the accused being arrested during further investigation and the accused being charged following a court decision, the court can subject the accused to a trial (point 24).
- The utilities should support the police investigator and court with evidence and testimony (points 7 and 8).
- The court outcome may lead to a conviction (point 25) or acquittal (point 24) of an accused.

The researcher asserts that the developed conceptual framework has the potential to significantly contribute to addressing the research problem outlined in Section 1.2 (Chapter 1 of this study) and offers a viable response to the research question: "*Which practical measures could be applied to curb electricity theft successfully within the framework of laws governing crime in South Africa?*" In essence, a holistic approach involving utilities, police, and courts is indispensable, guided by the proposed conceptual framework and insights garnered from this study.

6.6 SUMMARY

The practices of curbing electricity theft are generally reflective of a response to challenges affecting the effective supply of electricity. These challenges also present opportunities for implementing the practices of dealing with electricity theft. Overall,

these include: overloading of electrical infrastructure, dishonest utilities' employees contributing to electricity theft menace, legal implications and compliance matters negatively impacting the financial stability of utilities, loss of revenue, tariff increases; as well as various interests that civil society has on electricity supply affairs. Some of the challenges affecting electricity supply environment are interrelated in that a solution to one challenge may potentially present solutions to other challenges.

In implementing the practices to curb electricity theft, utilities put in place rules, guidelines and procedures to curb electricity theft. The procedures, guidelines and rules valued by utilities to curb electricity theft include conducting regular public awareness on matters of electricity supply, prohibited consumer conduct, and the consequences of stealing electricity. Utilities also have a procedure to remove illegal electrical connections, issue tamper fines where illegal acquisition of electricity is detected, replace infrastructure damaged by electricity theft related conduct, and involving law enforcement to investigate for prosecution of perpetrators.

Despite an indication that utilities are passive in implementing the practice of involving criminal processes in dealing with electricity theft, the police and courts have a role of assisting in investigations and prosecutions of matters relating to electricity theft. However, various issues are instrumental in impeding the effectiveness of criminal processes in dealing with electricity theft. The impediments themselves include legal implications in that some of the legal processes implemented by utilities, police and courts may be challenged by the parties affected, which add more responsibilities on utilities to defend the legal challenges or lawsuits instituted against them. Lack of clearly defined legislation in matters of electricity theft and different case decisions taken by courts on similar matters associated with the crime are creating ambiguities in dealing with electricity theft. Furthermore, various interests of civil society affect the practices of curbing electricity positively or negatively. If not properly checked, the dynamics induced by different societal formations such as political groups, labour unions, non-governmental organisations (NGOs) and economic activists can hamper the envisaged practices to curb electricity theft.

CHAPTER 7: FINDINGS AND RECOMMENDATIONS

7.1 INTRODUCTION

This chapter's primary focus is on its findings and proposed recommendations. Accordingly, the discussion in this regard includes primary and secondary findings emanating from the aim and objectives of this research. The chapter further includes an analysis of all the previous chapters' respective contributions to the findings and recommendations of this research. The aim and objectives of this research are restated below in order to remind the reader and maintain the flow of discussion.

7.2 RESEARCH AIM AND OBJECTIVES

The aim of this research was to explore and establish the extent to which adequate application of South African laws governing crime could assist in curbing electricity theft, rather than relying on engineering technology alone to enforce compliance. The aim of this study has the following five (5) objectives:

- To explore and describe the nature and extent of electricity theft in South Africa;
- To determine and evaluate the interpretation of electricity theft in relation to laws governing crime in South Africa;
- To explore the dynamics of reporting, investigating and prosecuting perpetrators of electricity theft;
- To determine and evaluate current practices of curbing electricity theft by utilities in South Africa; and
- To determine and develop practical measures for curbing electricity theft successfully by applying laws governing crime in South Africa.

7.3 RESEARCH QUESTIONS

The following main research questions were asked to achieve the aim and objectives of this research:

- What is the nature and extent of electricity theft?
- How is electricity theft interpreted in relation to laws governing crime in South Africa?
- What are the dynamics associated with reporting, investigating and prosecuting the perpetrators of electricity theft?

- What are utilities' current practices for curbing electricity theft?
- What could practically be done to curb electricity theft in a successful manner utilising laws governing crime in South Africa?

7.4 RESEARCH FINDINGS

The research findings emanate from answering the research questions (as indicated in Section 7.3 *supra*) of this study with the integration of information acquired from both the literature and the interviews with the selected participants.

7.4.1 The nature and extent of electricity theft

The findings in the above regard were informed by the answer to the question:

- "What is the nature and extent of electricity theft in South Africa?"

7.4.1.1 Explication of electricity

The explication included the definition of the concept 'Electricity', sources of electricity, types of electricity, importance of electricity and the rationale of regulating the generation, transmission and distribution of electricity.

- **Definition of electricity**

This study found that it is difficult to define the concept, 'electricity'. Concepts such as electricity energy, electric power and voltage are used interchangeably and synonymously. Such a state of affairs contributed to the confusion of understanding what electricity is. A consensus understanding obtained from literature is that electricity encompasses the following characteristics:

- It is natural phenomenon produced through exploring various mechanisms;
- It is defined in terms of the directional movement or presence of charged particles in the form of energy;
- It has effects that are observable in physical properties;
- It is processed and produced in power plants;
- It is versatile in that it can be produced from various types of fuel;
- It is transmittable from one place to another using various methods;
- It is a useful form of energy that has undergone conversion;
- It can be used for multiple purposes; and
- It is produced from both renewable and non-renewable sources of energy.

The findings obtained from the participants' views aligned with literature insofar as they stated that electricity is important to citizens' daily lives, operations and economic activities. Since there was no clear definition of electricity, the researcher utilised the both the literature and participants' activities in the conceptualisation of the term 'electricity' as a set of phenomena associated with the presence or movement of electric charges by unstable force through physical properties.

• **The sources of electricity**

This study found that sources of electricity are categorised into non-renewable and renewable sources. Renewable sources of electricity are replenished by nature, while non-renewable sources are depleted over time as they are used. The different types of renewable and non-renewable sources of electricity depicted in literature are represented in Table 7.1 below.

Table 7.1: Renewable and non-renewable sources of electricity

<p>Renewable sources of electricity</p>	<ul style="list-style-type: none"> • Solar - the radiant light and heat from the sun is solar. • Wind – energy in motion. • Biomass – organic material such as solid waste, wood, crops and many more. • Geothermal - heat from the internal earth surface. • Hydropower - energy of flowing water. • Hydroelectric – energy that increases the rate at which water flows at a time. • Hydrogen - odourless, colourless and flammable gas that is combined with oxygen to generate electricity. • Tides - Tides are caused by the moon and sun energy attraction that causes rise and fall of water in the ocean or sea. • Waves - are formed on the surface of the ocean or sea when it is set in motion by the wind.
<p>Non-renewable sources of electricity</p>	<ul style="list-style-type: none"> • Fossil fuels - fuels that are formed by decomposition of plants and animal remains, and example are coal, oil and natural gas. • Nuclear fuels - fuels that result from the loss of energy in a form of radiation by atomic nucleus of the metal or earth crust, and an example is uranium.

(Source: Compiled by the researcher)

The data from participants demonstrate that they have a great understanding of sources of electricity in that they were able to mention almost all the sources as depicted in literature. The only source that was not mentioned by the participants is

geothermal (heat from the internal earth surface). It has been determined from this study that the participants' views and literature indicate that the common sources of electricity used in South Africa ranging from the most used to less used are coal, water, solar and wind. It can be deduced from the findings that the greater understanding of sources from participants forms the basis to develop workable solutions to curbing electricity theft.

- **The types of electricity**

This study found that there are two types of electricity, namely: dynamic and static electricity. Dynamic electricity is produced when electrical energy generated flows in a specific direction through the conductor to where it is required, is generated in large quantities. It is a common type of electricity generated for commercialisation. The study findings also indicate that static electricity occurs when two or more objects are rubbed together to build up charges on the surface of objects. In static electricity, the charged particles in a material or an object remain at rest until there is contact with other materials or objects. The usage of static electricity is very low because it is produced at very small quantities.

The data obtained from eight of the 18 participants (n=8, 44%) in Samples A2, A3 and B demonstrates that they do not understand the types of electricity, which indicates that their contribution to curbing electricity theft may be challenged if required to deal with matters requiring understanding of electricity types.

- **The importance of electricity**

The study found that electricity is vitally important, acknowledging its substantial potential to contribute to cost-effectiveness, sustain economic growth, and enhance human livelihood and survival. The significance of electricity is evident across various dimensions, encompassing its value chain from generation to distribution to consumers along with the commercialisation of electricity production and the consequences of inadequate electricity supply.

In South Africa, electricity generation involves four distinct categories of entities: Eskom, a state-owned enterprise operating major power plants that supply a substantial proportion of the country's electricity; municipalities, mandated to generate and supply electricity as a service to communities within their boundaries; Independent

Power Producers (IPPs), self-sustaining generators selling electricity to businesses and Eskom; and auto-generators, industrial entities generating electricity for their operational needs. Additionally, the literature emphasises that the generation, transmission, and distribution of electricity to consumers incur significant costs, regardless of whether a traditional or smart grid is employed.

Non-technical losses, particularly electricity theft, contribute significantly to the expenses associated with generating, transmitting, and distributing electricity to end users. Upon analysing participants' responses, it was observed that the responses of the majority of Sample A2, Sample A3, and Sample B participants were aligned with the literature, demonstrating a comprehensive understanding of the traditional linear process (generation-transmission-distribution) involved in supplying electricity to customers. Notably, the seventeenth participant described a method related to transmitting electricity using a modern smart grid in alignment with the literature, suggesting a commendable level of knowledge regarding the potential impact of electricity theft on the sustainable generation and supply of electricity.

- **The rationale of regulating the generation, transmission and distribution of electricity**

The study found that the business of generating, transmitting, and distributing electricity falls within the ambit of economic activities requiring regulation, and various statutes are pertinent to the regulation of electricity production and supply. Examples in this regard include the Occupational Health and Safety Act of 1993, providing guidelines for safe work practices, and the Electricity Regulation Act of 2006, empowering the National Energy Regulator of South Africa (NERSA) to oversee licenses, tariff determination, trading, and import and export activities in the electricity industry. Additionally, the National Energy Act of 2008 aims to ensure a sustainable, renewable, efficient, and environmentally friendly energy mix while addressing economic growth, poverty alleviation, research, and related matters.

Literature also revealed that overlapping governance mandates complicate the functioning of various government departments in handling electricity supply matters. Regulatory complexities may lead to leadership vacancies due to ill-defined mandates, and regulatory bodies lack a well-defined legal base to address electricity matters. The study found further that municipalities create by-laws to address electricity theft-related

issues, but such by-laws may not benefit all utilities as they are often specific to particular municipalities. In alignment with literature, participants from Samples A2, A3, and B provided reasons for regulating the generation, transmission, and distribution of electricity.

These reasons include compliance with legal prescripts governing the electricity sector, protection of the interests of consumers and producers of electricity, and the assurance of quality electricity services. Furthermore, the study determined that the majority of participants from Samples A2, A3, and B provided views in line with literature regarding reasons for electricity non-generation, non-transmission, and non-distribution by unlicensed entities. These reasons further include the specialised nature of electricity tasks requiring skilled and authorised individuals, prioritising safety and protecting life, compliance with laws governing the electricity industry, and the standardisation of practices in electricity generation and supply. The participants' responses reflect a comprehensive understanding of the reasons behind regulating the electricity industry, showcasing their extensive knowledge on the subject.

7.4.1.2 Explication of electricity theft

Explication of electricity theft was discussed in this study to include the definition of concept 'electricity theft', methods of stealing electricity, methods of detecting electricity, impact of electricity theft on customers and utilities, motives of stealing electricity and measuring electricity theft.

- **Definition of electricity theft**

This study found that electricity theft involves the use of electricity generated for commercial purpose without the owner consenting to such use. Electricity theft is regarded as an activity contributing to commercial loss because it affects in a negative way the utilities revenue. Literature also demonstrated that electricity theft is a criminal act committed by the perpetrator with an intention to acquire electricity without permission from the owner. Electricity theft is further categorised as a loss incurred in a non-technical manner.

The data obtained from a total of 43 responses from participants in Samples A1, A2, A3, B, C, D and E demonstrates that the majority of participants have a fair understanding that electricity theft is a conduct punishable by law. The participants'

extent of understanding the unlawfulness of electricity was gauged by answers from twenty (20) participants who used the key word 'illegal', two (2) participants who used the key word 'unlawful' and 29 participants who provided general descriptions which implied that electricity theft is prohibited by law. It was found that the majority of participants' understanding is partly supported in literature in that they point to unlawfulness and prohibition of electricity theft conduct. However, they could not attribute the conduct of electricity theft to human culpability or liability.

The limited understanding of electricity theft by most participants may contribute negatively to initiatives to curb the crime. The concept 'electricity theft' was conceptualised and operationalised in this study as informed by literature. Accordingly, electricity theft was conceptualised as "*an unlawful and intentional appropriation of a characteristic that attaches to a thing and by depriving the owner of that characteristic*".

- **Methods of stealing electricity**

This study found that the methods of operation are old, but still conceived as relevant to identify a perpetrator during criminal investigations, including in electricity theft. Therefore, a particular pattern of perpetrator's behaviour can be studied for successful investigation and prosecution. This study assisted in determining the following three (3) methods used by perpetrators to steal electricity:

- Tampering with electricity infrastructure;
- Billing irregularities to abate or avoid payment of electricity consumption; and
- Vendor fraud.

It was found that tampering with electrical infrastructure is the common method used to steal electricity. In this regard, tampering with electricity infrastructure includes altering, cutting, disturbing, interfering with, interrupting, manipulating, obstructing, removing and uprooting any essential infrastructure installed for delivery of basic services to the public using any means or devices. The study found further that redistribution of electricity by a legitimate customer or account holder to any other nearby place that is outside the borders of the premises where the electricity meter of the account holder is installed, is treated as tampering of electrical infrastructure because the legitimate customer is violating the supplier-customer agreement.

The study found that traditional (analogue) meters and modern (smart) meters are susceptible to energy theft committed by applying different modes of stealing. The perpetrators use technology such as software and hardware to manipulate the smart energy meter reading. The manipulation in smart meters could be performed remotely, whereas in analogue meters, the perpetrators mostly use physical methods such as cutting, damaging, removing and using objects or devices to interfere with the reading of the electricity used. The use of the remote manipulation techniques is commonly associated with wealthy people who can afford the services of a technical expert offered illegally to assist in tampering with the energy meter.

The tampering of electricity meters is found to be the most preferred method of electricity theft, and the different types of energy meters' present multiple options that can be explored by perpetrators to commit electricity theft. Below is a summary of tampering methods applied in electricity meters:

- Magnetic tampering-a strong and rare magnet is used to saturate the meter and manipulate the energy consumption reading;
- Meter spoofing/mock meter-replacing the utility energy meter with non-utility meter;
- Resistor insertion-inserting an object in a meter to interfere with the normal reading of energy consumption;
- Meter strap-fastening the wires around the terminals at the base of the energy meter;
- Meter inversion-turning in the opposite direction the socket in the meter or wiring the meter backwards;
- Full or partial Earth condition-splitting of the load connection between the earth and the neutral wires of the energy meter;
- Missing neutral-a neutral wire is disconnected from the energy meter;
- Neutral disturbance-using the neutral connection to manipulate the flow of energy from the source to the meter;
- Missing potential-removing one of the phase wires in a meter to reduce voltage to zero reading; and
- Phase and neutral interchange-interchanging meter phase and neutral in a meter to reverse the flow of current.

Furthermore, the study found that tampering of electrical infrastructure involves redistribution of electricity by a legitimate customer or account holder to any other nearby place that is outside the borders of the premises where the electricity meter of the account holder is installed. In the latter regard, the legitimate customer would have been guilty of violating the supplier-customer agreement. The literature revealed that electricity grid formed by various systems such as transmission lines, distribution lines, mini-substations, overhead poles, transformers and other energy systems is also prone to tampering methods of electricity theft. The methods to steal electricity from grid ranges from tapping, rigging, cutting, fusing and bypassing the network equipment.

In most instances, the methods of stealing electricity from the grid are easy to identify and detect because the common place for network grid is outside in observable areas. Some of the tampered grid wires are observable hanging lower than the required height. The exposure of grid related illegal connections of electricity serves as an advantage to crime investigators and utilities in that they may not struggle to collect evidence for criminal prosecution. Billing irregularities is another method that can be used to steal electricity. Literature indicates further that utilities' employees (or contractors) and consumers can collude to use wrong billing codes and capture wrong electricity meter readings with intention to reduce the payment for electricity consumed.

The contractors' or employees' participation may be influenced by gaining fraudulent rewards from parties who benefitted fraudulently to wrongful billing. Ultimately, the utilities suffer loss of revenue from fraudulent arrangements between consumers and employees (or contractors). The wrongful billing may subject utilities to litigation processes such as failure to declare accurate information to regulators and other bodies in need of information relating to commercial activities. This study found that another method of stealing electricity is called "illegal vending" because it involves the unauthorised selling of prepaid electricity and causes harm to utilities in that they lose energy without gaining revenue.

The study demonstrates that Eskom experiences vending fraud linked to stolen vending machines. The stolen vending machines are susceptible to tampering because they are rendered unable to reach a limit of issuing electricity credits in a form

of tokens captured on the meter box. The stealing of vending machines was intended to fraudulently generate revenue by depriving Eskom the right to commercialise electricity consumed from such fraudulent credits. The data obtained from Sample A1, Sample A2, Sample A3, Sample B, Sample C, Sample D and Sample E (43) participants indicates that there are two (2) methods of stealing electricity; namely, tampering with electrical infrastructure mentioned by all (43) participants and vendor fraud mentioned by six (6) participants.

None of the participants mentioned billing irregularities as a method of stealing electricity, which demonstrates that participants did not experience, or were not exposed to billing matters. This is likely to derail their efforts necessary to curbing electricity theft that emanates from billing irregularities.

- **Methods of detecting electricity theft**

The research demonstrates three (3) methods used to detect non-technical losses related to electricity theft as follows:

- Data-oriented detection methods- employ data mining and data analytics to study consumer related data such as time series of active energy consumption, consumer location, consumer characteristics and consumer behaviour relating to illegal consumption of electricity;
- Network-oriented detection methods- apply network related data and resources such as observer meters, transformer measuring aggregate consumption, feeder remote terminal unit and sensors fitted on the network; and
- Hybrid-oriented detection methods- incorporates two independent detection methods (data oriented and network oriented).

It was established in this study that data-oriented detection methods are cost effective and are implementable if the database is well coordinated. However, the accuracy of data orientation methods is compromised. Data oriented detection methods are inconvenient to use because it is not always feasible to quantify and verify data collected. In addition, the effectiveness of data-oriented detection methods depends on large pre-existing data necessary to identify patterns useful to determine possible electricity theft. Compared to data-oriented detection methods, network-oriented methods are expensive and difficult to implement.

From the literature, it was established that network-oriented detection methods involve studying a difference in patterns of consumption by customer, and the greater the difference in consumption patterns on the network, the more likely the chances of electricity theft. The hybrid-oriented detection methods are a combination of data-oriented and network-oriented detection methods. Available literature indicates that the hybrid-oriented detection methods are the most effective because they capitalise on combined benefits of data-oriented and network-oriented detection methods. Below is a combination of methods employed by hybrid-oriented detection methods to maximise the detection rate of electricity theft:

- **Physical methods:** they are expensive and include video surveillance and power line inspections;
- **Intrusion Detection based methods:** they deal with general security issues of smart grid than non-technical losses (electricity theft);
- **Profile based methods:** require the analysis of large volumes of detailed energy consumption data method and entail machine learning and data mining;
- **Statistic methods:** provide statistics of intrusions on network, however, the methods are susceptible to high false alarm rate caused by variations such as change of weather, new home appliances and any other variation; and
- **Comparison based methods:** the current comparison-based methods can detect non-technical losses associated with theft but yield a small amount of data. Furthermore, they require improvement of detection speed.

The literature indicates that the detection of electricity theft is important, but does not necessarily curb electricity theft. Therefore, a further intervention to deal with electricity theft is required. The data from participants (A2, A3 and B) indicate four (4) methods of detecting electricity theft as in line with literature. The detection method mostly mentioned by participants is inspections (or auditing) of electricity infrastructure mentioned by (18) participants, followed by studying the electricity accounts of customers to understand the patterns and behaviour of buying and consuming electricity illuminated by four (4) participants, and acting on the information received from the reporters and informers mentioned by three (3) other participants and conducting operations intended to identify and disrupt the illegal acquisition and consumption of electricity averred by three (3) participants.

Literature indicate that visual inspections remain critical even in the presence of detecting technologies because there might be some faults which might cause the technology to be unable to pick some of the irregularities or electricity theft activities along the electricity network. The comparison between the participants' answers and literature leads to an understanding that the participants are conversant with the methods of detecting electricity theft.

- **The impact of electricity theft on utilities and communities**

This study detected that utilities and communities are negatively impacted by electricity theft in that utilities cannot predict the demand of electricity in the country and overloaded electricity network leads to undesirable measures of constantly shedding loads and affecting consumers. Furthermore, the costs incurred from electricity theft are recovered through increase of tariffs and bailouts from the government. This has direct and indirect consequences to the economy and the public that absorbs increases of commodities resulting from expensive tariffs. Ultimately, expensive electricity and consumables result in reduced sales and commercial growth for utilities.

Electricity theft negative impacts the sustainability of services to customers, thus leading to customer dissatisfaction who may look for other avenues to obtain electricity and cause utilities to miss an opportunity to retain loyal customers. Eventually, the chances of utilities to survive are reduced by effects of electricity theft because there will be no return on investment from stolen electricity. The research also found that the potential of electricity theft eroding the commercial gains and contributing to unstable supply of electricity by utilities affects the interest of utilities to re-invest in capacity growth, modern technology, infrastructure and skilled human resource necessary to intensify the production of electricity to meet the demand.

Electricity theft contributes to impeded private investment in the power sector and escalates unemployment in that shedding of loads creates devastating effects that force employers to shed labour. The ultimate impact of electricity theft effects escalates to poverty, crime and social unrests. It was established in this study that electricity theft directly or indirectly causes harm to communities and utilities, because it compels utilities to divert funds that were allocated for development and improvement of communities to control incidents relating to electricity theft. Such

diversion of funds results in a vicious cycle of effects that hinder the reduction of electricity tariffs, provision of quality service, and subsidising the poor and remote areas.

The poor customers or consumers are compelled to use unsafe and flammable fuels to reduce costs associated with increased electricity rates or tariffs. Moreover, electricity theft also threatens life because the perpetrators do not take pre-cautionary measures when stealing electricity. Consequently, the unsafe way of operating the electric equipment is likely to result in burnt homes, as well as electrocuted persons and fatalities. Ultimately, the injured or affected persons may litigate against utilities for harm or loss suffered. In tandem with existing literature perspectives, it was found from the Sample (A2, A3, B and E) data that electricity theft negatively impacts the revenue of utilities.

An indication from Samples A2, A3 and B participants is that electricity theft presents difficulties for the utilities to fulfil their fiduciary responsibilities such as allocating funds to daily operations, development of infrastructure and economic development. Such a situation results in communities also not receiving benefits such as improved life and employment. It was evident from the Sample E participants that electricity theft threatens community safety in that people's lives are lost from illegal connections. Moreover, utilities are required to regularly repair the infrastructure damaged by acts associated with electricity theft. Also, electricity theft negatively impacts the operations of utilities and inconveniences the legitimate customers who are constantly subjected to load reduction aimed to curb electricity theft.

- **The motives of electricity theft**

Available literature indicates that there are various motives for stealing electricity. The most prominent motive relates to the unaffordability factor, which is perpetuated by factors such as high tariffs of electricity, harsh economic conditions, unemployment and poverty. In the study further found that some people commit electricity theft out of necessity and impatience emanating from newly developed areas whose electricity infrastructure is delayed by municipalities for various reasons. Moreover, the motive for stealing electricity emanates from the belief in the Constitutional right to access basic services such as electricity provision. However, this belief is misconstrued as entitlement to stealing commercialised services.

It has been established in the study that even the wealthy and educated people do steal electricity in order to avoid paying huge bills that they mostly incur because of their high electricity consumption. On the other hand, the educated people indulge in energy harvesting that is often applied in an unethical and illicit manner befitting the description of electricity theft. Some perpetrators take advantage of the weaknesses in the rule of law and poor enforcement of regulations intended to protect electricity against theft. Meanwhile, others commit electricity theft due to lower literacy levels, which renders them oblivious to the laws against electricity theft and other related matters.

It was established that some perpetrators of electricity theft are committed to stealing electricity because of some environmental influences, while others just lack the means to buy electricity. Furthermore, some of the motives are perpetuated by poor monitoring of electricity operations by utilities. There is an indication that perpetrators are enticed by an opportunity to commit electricity theft that feeds on their interest and kleptocratic instincts. It was further established that owners of clandestine businesses are inclined to steal electricity because their operations happen in concealed areas. In addition, some people are motivated to steal electricity because they believe that stealing from government is better than stealing from neighbours.

Corrupt politicians tend to use electricity as a campaign tool to garner support from the electorate, and present themselves in a way that subtly encourages communities to steal electricity. Furthermore, corrupt utility employees are motivated by incentives obtained from fraudulent activities of colluding with customers to steal electricity, while corrupt customers or consumers are motivated by fraudulent reduction of electricity services payments. In addition, some customers feel a desire to revenge the losses incurred during outages and load reductions. In terms of data obtained from Samples A2, A3 and B participants it is found in line with literature that the motives to steal electricity include unaffordability, as mentioned by 15 participants, followed by six (6) participants who mentioned greed, five (5) who mentioned criminal motive. Meanwhile, the other four (4) participants mentioned cost reduction, other four (4) participants mentioned moral issues, three (3) participants mentioned urgency or necessity, and two (2) participants mentioned political betrayal while the remaining three (3)

participants mentioned the lack of will to pay for electricity, conformity, and irresponsibility respectively.

Furthermore, the researcher noted that the data from the Sample E participants is in agreement with literature by stating that poverty (2 participants), crime (3 participants), greed (2 participants), dishonest (3 participants), unaffordability (4 participants), expensive electricity (2 participants) and lack of monitoring (1 participant) are among the motivating factors to steal electricity. The participants' responses indicate that they have reasonable knowledge of the motives of electricity theft.

- **Measuring electricity theft**

The findings of this study indicate that electricity theft is a complex phenomenon to measure, because its loss cannot be quantified using technological systems. Instead, the losses are estimated on the basis of factors such as: external factors regarding the area in which the electricity theft occurs; the reporting behaviour of witnesses or complainants; as well as utility measures to estimate the loss resulting from electricity theft. Electricity theft can also be estimated using general broad terms or estimations that represent the loss in percentage rather than exact quantities. Literature does not point out to any accurate figures of electricity theft incidents in South Africa, including in Limpopo Province as the focus area of the study.

Various measuring attributes such as number values, percentages and monetary values were used in this study to reveal the possible magnitude of electricity theft phenomenon in South Africa and Limpopo Province. Hence, it was determined that electricity theft is a major contributor of the total 10% losses attributed to non-technical losses experienced by utilities per annum in South Africa. The estimated loss value attributed to electricity theft in South Africa is R20 Billion annually. The estimated number of incidents in Limpopo Province is more than 590 incidents annually, and to the estimated financial loss of R43 million. The data from Samples A2, A3 and B participants it was found that 50% (9 out of 18) of the participants indicated that the reports of electricity theft in Limpopo Province range between 501 to 1000 in a month. The other nine (9) participants indicated that 500 or less incidents are reported monthly in Limpopo Province. The data of participants who indicated a range of 501 to 1000 cases reported monthly in line with literature.

7.4.2 The interpretation of electricity theft in relation to laws governing crime in South Africa

The findings obtained to answer the following second question:

- “How is electricity theft interpreted in relation to laws governing crime in South Africa?”

7.4.2.1 Criminal elements of electricity theft

The conduct, legality, unlawfulness, culpability and fulfilment of the definitional elements of electricity theft was discussed in order to understand the distinct elements of electricity theft.

- **Conduct**

This study found that ‘conduct’ is a relevant aspect of electricity theft because it emanates from human thoughts and volition to carry out the thoughts. The conduct involved in stealing electricity is by commission (positive conduct) because the perpetrator executes an act prohibited by law. The researcher could not find evidence in literature indicating that electricity theft is a conduct of omission (negative conduct) indicating a person fails to act as required by law.

- **Legality**

It was found in this study that legality of electricity theft is a subject of legal arguments because of the absence of any legislation that explicitly prohibits the commission of electricity theft. The following substantive and formal requirements are to be satisfied for confirmation of legality in any crime, including electricity theft: the conduct must be recognised by law as a crime, stated in clear terms before it is committed or omitted, defined as a crime without extending the meaning of words and concepts to accommodate the conduct, and after conviction, the imposition of the punishment should comply with all preceding requirements of legality. Although there are decided cases in favour of criminalising electricity theft and recognition of the crime in terms of common law definition, courts are warned not to develop new laws during trials or prosecution of the crime.

- **Unlawfulness**

This study found that electricity theft has an element of unlawfulness as indicated in its conceptualised and operationalised definition and decided cases in favour of

criminalising electricity theft. Unlawfulness is the condition of contravening the stipulations of statutory law, common law or customary law, and is one of the basic requirements in criminal law. The law permits that a person can be absolved of the unlawful conduct by relying on exceptional circumstances and conditions that occur regularly and ultimately developed as value judgements or normative by courts, and such conditions are known as grounds of justification.

- **Culpability**

This study found that the two main forms of criminal culpability are intention and negligence, with intention as the form of culpability suitable for electricity theft. Intention is the will of a person to commit an act, while also knowing that the law prohibits the act. On the other hand, negligence is a form of culpability that is established when persons conduct themselves irrationally and in transgression of the expected level of standards and/ or norms. This research established that the culpability or liability of persons who committed a crime should be tested before any punishment is imposed for their unlawful conduct. Strict liability is not a form of culpability. However, it can be used to hold the parties accountable where there is no proof of negligence or intention. Strict liability is not a suitable requirement to prove electricity theft because theft has an inherent criminal element.

- **Fulfilment of the definitional elements of electricity theft**

This study found that the fulfilment of the definitional elements of a crime is the ultimate indicator that the act is prohibited and punishable by law. In that regard, the study established that electricity theft conforms to elements that constitute a crime, namely: conduct, legality, unlawfulness and culpability.

The data obtained from the Samples A1, C and D participants reveals that the majority of the participants demonstrated knowledge of conduct, unlawfulness and consent. This relates to the understanding that these elements are in most instances, determined first in all crimes when establishing the probability that the accused have committed a crime.

7.4.2.2 Commonly reported electricity theft incidents for criminal investigation and prosecution

The reporting of electricity and disposition of electricity theft incidents was discussed to determine incidents commonly reported for criminal investigation and prosecution.

- **Outline reporting of electricity theft incidents**

This study found and identified a gap of reporting electricity theft by community members to utilities and law enforcement. The following reasons were attributed to the poor reporting of electricity theft: poor handling of data by utilities and law enforcement, as well as people's unwillingness and inability to report due to lack of resources by poor communities. Literature does not indicate specific numbers, but provide a general overview of the commonly reported electricity theft incidents. Tampering with electrical equipment constitutes the most common type of reported electricity theft for criminal investigations and prosecutions. Electricity vending fraud and billing irregularities are reported less compared to tampering of electrical infrastructure. The tampering of electricity meters are the most reported energy theft incidents, followed by tampering of network line compared to network line and other electrical infrastructures.

- **Disposition of electricity theft incidents**

It was found in this study that the distribution of energy theft incidents in South Africa aligns with patterns observed in other countries worldwide. Understanding the nature of electricity theft proves complex, shaped by dynamic influences within society. Available literature corroborates that energy theft incidents are not exclusive to Limpopo Province, but extend to other provinces in South Africa.

The analysis of data from participants in Samples A, C, and D concurs with the available literature, indicating that the prevalent types of electricity theft cases investigated and prosecuted commonly involve tampering with electrical infrastructure. In this regard, a total of 15 participants (six in Sample A, eight in Sample C, and one in Sample D) mentioned tampering with electrical infrastructure as a recurring issue. Furthermore, participant data suggests that tampering with electrical infrastructure is not confined to specific police precincts in Limpopo Province, as indicated by 16 participants. However, it was also mentioned that tampering with electricity infrastructure is also observable beyond the boundaries of the province, as noted by 11 participants.

7.4.2.3 Statutes relevant to electricity theft

This research study found that several statutes play a pivotal role in addressing matters related to electricity theft. The Electricity Regulation Act 4 of 2006 (ERA) serves as a valuable tool for regulating and addressing licensing and tariff determination within the electricity industry. Similarly, the National Energy Act 34 of 2008 (NEA) assigns the minister the responsibility to adopt measures ensuring diverse energy resources, sustainable energy quantities, and affordable prices for the people of South Africa. Notably, electricity theft violates the safety of individuals, prompting Section 5(2)(a) of the National Energy Act (Act 34 of 2008) to mandate that all ministerial supply duties prioritize safety, health, and environmental compliance.

Meanwhile, the Criminal Matters Amendment Act 18 of 2015 (CMA) outlines prohibited conduct related to electricity theft, with Section 3(1)(a) criminalizing and describing the conduct and sanctions for tampering, damaging, or destroying essential infrastructure. On the other hand, the Criminal Procedure Act, No. 51 of 1977 (CPA) establishes procedures and related matters for criminal proceedings, including those related to electricity theft. Additionally, the Prevention of Organised Crime Act 121 of 1998 (POCA) acknowledges that electricity theft can be committed in an organized manner. Accordingly, one of its objectives is to introduce measures to combat organized crime and recover the proceeds of unlawful activity.

Furthermore, municipal by-laws empower municipal councils to ratify and implement by-laws within their respective jurisdictions, specifically addressing conduct associated with electricity theft. Eleven of the 19 participants in Samples A1, C, and D aligns with literature, indicating that there is no specific legislation explicitly addressing electricity theft. However, eight of the 19 participants provided answers that contradicted dominant literature perspectives, suggesting that specific legislation does exist to address electricity theft.

7.4.2.4 Guidelines for investigating and prosecuting electricity theft

It was found in this study that guidelines for investigating and prosecuting electricity theft are derived from criminal procedures applicable to all crimes, as established in the literature. The adaptability of these guidelines allows for unique discretion within the confines of the law to address the distinct nature of each case. The data from the

majority of participants (18 out of 19) in Samples A1, C, and D align with the literature, indicating that there are no specific rules or procedures guiding the investigation and prosecution of electricity theft. Instead, the investigation and prosecution of electricity theft are based on criminal procedures.

7.4.2.5 Evidence for investigating and prosecuting electricity theft

The study found that there are four types of evidence, namely: real, testimonial, documentary and demonstrative evidence are applicable to proving electricity theft. The most common form of evidence to investigate and prosecute electricity theft relates mostly to physical evidence because is observable in an electrical infrastructure, or detectable by means of cyber methods commonly applied in smart grids. Evidence regarding electricity theft can take either direct or circumstantial forms. The data from Samples A1, C and D participants is in line with literature, which states that effective evidence is characterised by detailing crime information accurately, completely, holistically, objectively and comprehensively.

7.4.2.6 Stakeholders in the investigation and prosecution of electricity theft

It was found in this study that literature underscores the varying degrees of influence each stakeholder possesses in curbing electricity theft through the application of laws governing crime in South Africa. Law enforcement (police), prosecutors, electricity utilities, and community members are identified as key contributors to resolving electricity theft matters. Notably, law enforcement's multifaceted role encompasses security, prevention, investigations, and intelligence activities. Prosecutors, acting as custodians in electricity theft investigations and prosecutions, wield legal discretion to observe, direct, pursue, and uphold justice. In a criminal trial, prosecutors are responsible for leading and examining evidence. Electricity utilities, including major entities like Eskom and municipalities, play crucial roles in generating, distributing, and supplying electricity to communities, experiencing the direct repercussions of electricity theft. Municipalities, in turn, contribute by creating and administering by-laws to address electricity theft issues.

Literature perspectives highlight that Eskom faces challenges in criminally investigating and prosecuting electricity theft, primarily due to the absence of clear statutory laws that explicitly prohibit such conduct in South Africa. Finally, the community serves as a central point of influence on the decisions and actions of all

stakeholders. Influential community members, leaders, or politicians can either support efforts to curb electricity theft or, conversely, contribute to its promotion.

Data from participants in Samples A1, C, and D align with literature, indicating that the majority of participants' view police, prosecutors, employees of electricity utilities, and community members as essential stakeholders in the investigation and prosecution of electricity theft. Furthermore, participants emphasised that providing evidence in various forms (oral, written, and physical) constitutes the primary support required from stakeholders in the process of investigating and prosecuting electricity theft.

7.4.3 The dynamics of reporting, investigating and prosecuting electricity theft

This section focuses on answering the third question, namely: "What are the dynamics associated with reporting, investigating and prosecuting the perpetrators of electricity theft?"

7.4.3.1 The extent of electricity theft in Limpopo Province

The findings on the extent of electricity theft in Limpopo Province emanate from discussion of hotspot areas, reporting trends and reporting system of electricity theft.

7.4.3.2 Hotspot areas of electricity theft incidents in Limpopo Province

This study found that Nkowankowa, Mokgolobotho, GaKgapane and Lulekani are identified as the top four hotspot areas of electricity theft in the Mopani District of Limpopo Province. Literature attests that the areas in Mopani district were the most notable in almost all the operations to curb electricity theft initiated by Eskom. Among the areas that were targeted by Eskom's 'Operation Khanyisa', 'Operation Come Clean' and 'Operation Tima' aimed at curbing incidents associated with electricity theft were GaKgapane, Rasewana, Moshage, Mavele and Nkambako villages in the Greater Letaba municipality in Mopani District.

The outcome of 'Operation Tima' in Limpopo Province indicates that in a total of 322 illegal connections removed across all the districts in the province, 242 (75%) were from villages in the Mopani district of Greater Tzaneen Municipality. Meanwhile, 25% was attributed to the other four districts. The electricity theft hotspot areas identified in Limpopo Province during 'Operation Tima' were residential places and businesses in

the Greater Tzaneen (Mopani) districts of Botlokwa, Lenyenye, Nkowankowa, Mokgolobotho, Relela, Rasebalane and Motupa. Other areas which were identified by Eskom as electricity theft hotspots in the Mopani district include Namakgale and Lulekani in the Ba-Phalaborwa municipality.

The data from the Sample A1, Sample C and Sample D participants indicates that Lulekani and Nkowankowa were each listed 5 (five) times more than other areas which were mentioned by the participants as hot spot areas of electricity theft. Dan village, Giyani, GaKgapane, Nondweni, Talana Hostel, Mokgolobotho and Tiyani were the other areas that were identified as hotspot zones by not less than two participants from Samples A1, C and D.

7.4.3.3 Reporting trends of electricity theft incidents in Limpopo Province

The study found that there was a notable underreporting of electricity theft despite widespread awareness of the prevalence of this offence. Although community members express a willingness to report instances of electricity theft, their efforts are often deterred by a perceived lack of response from utilities and instances of corrupt conduct among utility employees. Approximately 70% of the community members choose not to report the crime, and even in cases where reports are made, they may represent less than 50% of the total instances of electricity theft.

The data from participants in Sample E align with the literature, indicating that communities have indeed demonstrated a readiness to report incidents of electricity theft and have taken proactive steps to do so. However, various discouraging factors, such as unreliable reporting systems, inadequate control measures, and instances of corruption among utility employees, impede the reporting initiatives undertaken by communities. Conversely, data from participants in Samples A1 and C reveals that only a few cases of electricity theft are reported for the purposes of investigation and prosecution, a perspective consistent with findings in the literature.

7.4.3.4 Reporting system of electricity theft incidents in Limpopo Province

Copious literature sources reveal the existence of electricity theft reporting systems within utilities. However, there is a noted lack of appropriate control and cohesiveness within these systems. The data obtained from the majority of the participants (i.e., 5 out of 6) in Sample A1 aligns with the literature, indicating that these participants are

aware of the existing reporting mechanisms within their working environment. However, they highlight certain impediments, such as unnecessary duplication and a disintegrated reporting mechanism for electricity theft, posing challenges to accurate reporting.

Literature further suggests that the reporting system employed by law enforcement is ineffective for reporting electricity theft. A contributing factor to this ineffectiveness is the lack of clearly defined legislation for electricity theft, leading to inconsistent recognition and definition of 'electricity theft' as an offense within the legal fraternity. The responses from all (10) participants in Sample C align with the literature, indicating that these participants are aware of the reporting mechanisms within their working environment (law enforcement). However, the participants did not confirm the effectiveness of the existing reporting mechanism, which is consistent with findings in the literature.

7.4.3.5 Dynamics of investigating and prosecuting electricity theft

This Sub-section outlines the findings drawn from discussing the dynamics of investigating electricity theft. Also included in this Sub-section are the findings on partnership in the investigations of electricity theft.

7.4.3.6 Understanding the investigation of electricity theft

In the investigation of electricity theft, participants from Samples A1 and C emphasised the complexity of addressing this particular crime within the broader principles of criminal investigation. The latter assertion is consistent with existing literature perspectives. Law enforcement agencies, however, face considerable constraints due to the limited number of electricity theft cases, which impedes the development of specialised expertise in investigating such incidents.

Regarding the dynamics of quantifying electricity theft reports, participants indicated a strikingly low number (0-5) of cases before court, at the decision-making stage, and post-trial without resulting in a conviction. The primary contributor to this trend is largely attributable to poor evidence, or a lack thereof, which affects all three stages of the investigative process. The study also sheds light on the varied approaches and practices utilities employ to address electricity theft in the absence of specific legislation. Participants from both Samples A1 (5 out of 6) and C (9 out of 10) align

with literature in asserting that electricity theft does not require a distinct investigative approach. Challenges in the investigation of electricity theft include poor reporting, leading to a lack of awareness within police and courts regarding the legal attention needed for such cases.

Participants identify the absence of electricity theft legislation, lack of evidence, and corruption among employees and contractors of utilities as the foremost challenges. Proposed solutions involve creating electricity theft laws, utilities supporting police investigations with evidence, and training utilities employees on the importance of providing evidence, coupled with disciplinary measures. Furthermore, this study found that lessons drawn from investigations stress the essential role of accurate reporting in equipping those involved in prosecutions with the necessary knowledge and experience. The absence of legislation for addressing electricity theft significantly impacts case handling through criminal procedures.

Notably, the reluctance or failure of utility employees to provide evidence during investigations and prosecutions emerged as a significant challenge. Participants across both Samples A1 and C underscore the urgent need for electricity theft legislation and emphasise the importance of evidential support from utilities in the investigative and prosecutorial processes.

7.4.3.7 Understanding the prosecution of electricity theft

The findings of the study underscore the significant impediments to prosecuting electricity theft, primarily attributed to the absence of well-defined legislation addressing this issue. This legislative gap results in conflicting court decisions on electricity theft cases and hinders the ability to secure necessary evidence for prosecution. The data from Sample D participants align with existing literature, emphasising the scarcity of reports on electricity theft as a hindrance to law enforcement and prosecutors gaining essential experience and insights into the dynamics of such crimes.

The lack of specific legislation governing electricity theft emerges as a primary obstacle to the prosecution of these cases. Concerning the dynamics of quantifying electricity theft reports for prosecution, this study found an exceptionally low number of cases prosecuted, with limited evidence available in the literature concerning exact

figures. Data from the participants indicate a significantly low number (0-2) of cases closed before court, during court decision, and post-trial without a conviction. The lack or poor quality of evidence, coupled with the absence of clearly defined legislation, is identified as a major contributing factor at all three stages before court, at decision, and post-decision.

The study also delves into approaches and practices related to electricity theft prosecutions. Existing literature suggests measures such as fines, disconnections, and load reductions to recover losses from stolen electricity. Data from the Sample D participants align with prevailing literature perspectives, indicating that electricity theft does not necessarily require a different prosecution approach. Challenges and possible solutions to the prosecution of electricity theft are highlighted in the study. The complexity of prosecuting electricity theft is underscored, with numerous conflicting court decisions on the matter. Participants from Sample D attributed these challenges to the absence of legislation to prosecute and secure evidence related to electricity theft.

The Sample D participants propose the use of alternative legislation in the absence of specific laws, and recommend that utilities reinforce support for prosecution while training employees to handle electricity theft matters for criminal investigations. Drawing lessons from literature, this study found that incidents of electricity theft are not prioritised by law enforcement and courts due to a lack of legislation and constrained resources.

Data from the Sample D participants align with such lessons, emphasising the need for specific legislation addressing electricity theft for effective prosecution. In the context of partnership in investigations and prosecutions of electricity theft, the study indicates that law enforcement and courts play crucial roles, but literature suggests that the necessary parties may not be fully leveraging collaboration. However, data obtained from the participants in Samples A1, C, and D shows a divergence from literature, with the majority of the participants indicating that the partnership between police, courts, and utilities is effective, while a minority suggests it is ineffective.

7.4.4 The practices to curb electricity theft by utilities

The findings obtained to answer the fourth question “What are utilities’ current practices for curbing electricity theft”

7.4.4.1 Current practices of curbing electricity theft as a response to challenges associated with electricity theft

This Sub-section discusses the current practices as responses to challenges associated with electricity theft.

- **Overloading of electricity equipment**

This study found that utilities use various technical methods, such as switching off the energy supply at different intervals in areas prone to severe threat of illegal connections. However, the contractual and technical obligations between utilities and some of the customers within the overloaded areas may restrict intentional load reduction by utilities.

- **Dishonest work force**

This study found that utilities are lenient when dealing with corrupt employees contributing to electricity theft. As a result, the illegal benefits from illegal acts by employees outweighs the punishment for committing electricity theft.

- **Legal implications and compliance issues**

This study found that electricity utilities are in dilemma of complying with the legal obligations in the electricity industry and accounting for violations incurred because of energy theft activities and defending the lawsuits posed following the consequences of energy theft to customers.

- **Loss of revenue and tariff increases**

This study found that compensating lost revenue by increasing electricity tariffs is not always helpful because it does not discourage the perpetrators from stealing electricity. Additionally, the lack of improvement in existing practices of protecting energy against theft is attributed to the implementation of incompatible solutions to energy theft.

- **Various interests of civil society**

The study found that the contribution of the societal actors to the development of society is necessary. However, it may escalate into undesired outcomes if not properly checked and controlled.

7.4.4.2 The rules, procedures and guidelines applied by utilities to curb electricity theft

This Sub-section examined the feasibility (practicality) of the general rules and procedures used by utilities to curb electricity theft.

- **Conducting public awareness on ways to curb electricity theft**

This study found that utilities are fairly conducting public awareness on ways to curb electricity theft.

- **Removing illegal connections and/ or recognizing the infrastructure**

This study found that utilities are removing illegal connections and normalising the electricity infrastructure as a measure to curb electricity theft. However, there is an indication that the illegal connections are recurring in informal settlements and areas where people live below the poverty line.

- **Audits and inspections**

This study found that utilities conduct audits to pursue incidents associated with electricity theft and other network problems contributing to unaccounted loss of electricity. However, it can be difficult to identify perpetrators with extensive skills and understanding of power operations because they use sophisticated methods to commit electricity theft.

- **Issue tamper fines or notices**

This study found that the practice in utilities is to issue fines to registered customers and not having recourse to issue fines to consumers that are non-customers. Such practice places utilities in a difficult situation in that, illegal consumers may not have compelling circumstances to stop illegal acquisition of electricity.

- **Replacement of damaged or tampered energy equipment found during the audits**

This study found that modern technology such as smart grid is not completely effective to curbing electricity theft because its communication can be compromised or hacked. The majority of participants in Samples A1, A2 and A3 indicate that utilities have rules and procedures to curb electricity theft.

7.4.4.3 Contribution of law enforcement and judicial system to the practices of curbing electricity theft

The discussion focused on the role of law enforcement and courts to electricity theft because they are key role players to activities central to criminal process.

- **The role of law enforcement in curbing electricity theft**

This study found that the police have a role to assist in prevention of electricity theft and responding to reports of the crime using criminal processes. The reaction or response of police to electricity theft matters include investigating by collecting, processing and analysing the crime. Moreover, literature indicates that the police have a role to keep the communication lines open to encourage the public to cooperate with criminal processes involving electricity theft.

- **The role of judicial system in curbing electricity theft**

This study found that the courts have a role to adjudicate matters of electricity theft using criminal processes. Among the criminal processes relevant to electricity theft is issuing of warrants (to search, seizure and arrest) and orders executable against the suspects. Furthermore, the courts have a role to educate and empower the public (including utilities) on management of cases for successful prosecution.

7.5 RECOMMENDATIONS

This section present recommendations responding to the question: “Which practical measures could be applied to curb electricity theft successfully within the framework of laws governing crime in South Africa?”

It is the researcher’s view that the developed conceptual framework in Section 6.5 (Chapter 6 of this study) will contribute meaningfully to address the research problem stated in Sub-section 1.2 (Chapter 1 of this study) and provide a response to the research question:

- “Which practical measures could be applied to curb electricity theft successfully within the framework of laws governing crime in South Africa?”

The following recommendations are proposed:

- Utilities, police and courts should consider the proposed conceptual framework in accordance with the findings and recommendations of this study.
- Utilities and police should develop guidelines to investigate, while courts should develop guidelines to prosecute electricity theft informed by decided cases recognising electricity theft as a crime punishable by criminal laws such as in *S v Ndebele and Another* (SS16/2010).
- Utilities should align the technology to detect electricity theft with the guidelines to investigate electricity theft for purposes of securing, retrieving, preserving and producing evidence in line with laws of evidence applied in investigations and court.
- Utilities should provide to their internal investigators and employees involved in matters of electricity theft a meaningful training aligned with the purpose to obtain and present evidential information as required by criminal related laws and law of evidence.
- The absence of a well-defined legislation addressing electricity theft directly affects utilities because they lose revenue from theft of energy that could have been converted into revenue. Accordingly, it is recommended that the utilities should establish a working team to pursue the creation and enactment of electricity theft legislation. The task team should also consider the possibility to subject electricity theft to private prosecution guided by the findings of this study.

7.5.1 The nature and extent of electricity theft

Recommendations in the above regard are as follows:

7.5.1.1 Explication of electricity

Since electricity is the core product of electricity utilities, it is recommended that the business strategies of electricity utilities should incorporate the basic description of electricity that will be understood by all employees within the employment of the utilities. The utilities should ensure that the strategy is communicated regularly in all business platforms to instil a sense of appreciating the importance of electricity as a core business product.

It is also recommended that utilities should regularly conduct awareness on the types and sources of electricity and indicate the relevance of awareness to the electricity business. The awareness should also empower employees on knowing the importance and rationale to have electricity industry regulated.

It is further recommended that the government should align the governance mandates relevant to electricity industry to prevent confusion in dealing with compliance matters in electricity industry. In addition, the governance mandates should cater for matters related to electricity theft.

7.5.1.2 Explication of electricity theft

As indicated in the researchers' contribution, the absence of a well-defined legislation addressing electricity theft is necessary for understanding of electricity theft and effectively dealing with the crime using laws governing crime. Furthermore, the utilities should establish a working team to pursue the creation and enactment of electricity theft legislation. The task team should also consider the possibility to factor the operationalised definition found in this study.

It is recommended that utilities should develop a centralised database to enable an understanding of methods and motives to stealing electricity. The central database should encompass all electricity theft incidents reported using various methods of reporting to enable proper analysis and improved estimation of electricity theft incidents.

7.5.2 The interpretation of electricity theft in relation to laws governing crime in South Africa

Recommendations concerning the above are as follows:

7.5.2.1 Criminal elements of electricity theft

Due to the contention in the legality element of electricity theft, it is recommended that legislation should be created to enable a clear description of electricity theft and eliminate the prospects of inconsistent messages from decided cases of electricity theft.

7.5.2.2 Commonly reported electricity theft incidents for criminal investigation and prosecution

It is recommended as in Sub-Section 7.5.1.2 *supra*, that utilities should develop a centralised database to enable a comprehensive understanding of electricity theft incidents from a central point of accountability. The central database should distinguish reports made with intention to investigate for prosecution and reports for non-criminal purposes. Furthermore, the central database should have capability to draw and analyse information according to geographical disposition of electricity theft incidents.

7.5.2.3 Relevant electricity theft statutes

Due to the nature of statutes relevant to electricity theft not being specific to dealing with electricity theft, it is recommended as indicated in Sub-section 7.5.1.2 *supra* that electricity theft legislation be created to give effect to dealing with electricity theft using laws governing crime in South Africa. Furthermore, it is recommended that alternative laws such as Criminal Matters Amendment Act, No. 18 Of 2015 should be utilised because their commission is associated with acts of stealing electricity.

7.5.2.4 Guidelines for investigating and prosecuting electricity theft

It is recommended that the developed conceptual framework in Section 6.5 of this study be adopted for guiding the investigations and prosecutions of electricity theft. Utilities and police should develop guidelines to investigate electricity theft, while courts should develop guidelines to prosecute electricity theft informed by decided cases recognising electricity theft as a crime punishable by criminal laws such as in *S v Ndebele and Another* (SS16/2010).

7.5.2.5 Evidence for investigating and prosecuting electricity theft

This study recommends that utilities should identify a pool of employees to be trained on obtaining and securing evidence effective in criminal processes. The utilities should further liaise with law enforcement and prosecutors to provide advice on the nature of the training to be developed.

7.5.2.6 Stakeholders in the investigation and prosecution of electricity theft

Utilities should incorporate the duty to support police and courts with evidence necessary to investigate and prosecute electricity theft in the performance compact of

employees referred to in Sub-section 7.4.2.2 *supra*. In addition, the utilities employees identified for training should also have a duty to support community members identified as witnesses with transport and logistics necessary in matters of investigating and prosecuting electricity theft. Lastly, utilities should consider including in their budget the funds for informers in matters of electricity theft.

7.5.3 The Dynamics of reporting, investigating and prosecuting electricity theft

Concerning the above, the recommendations are as follows:

7.5.3.1 The extent of electricity theft in Limpopo Province

This research recommends in Sub-sections 7.5.1.3 and 7.5.2.2 that utilities should centralise their reporting systems and databases to enable regular tracking of electricity theft patterns and changes from one area to the other. The central database should also enable utilities to monitor the trends of reporting necessary to measure the reporters' behaviour regarding the reporting electricity theft.

Furthermore, it is recommended that the police should assign a category specific to electricity theft in their crime reporting mechanism. Depending on the creation and enactment of legislation governing electricity theft, the police should assign a reporting code aligned to sections that indicate the prohibition of electricity theft.

7.5.3.2 Dynamics of investigating and prosecuting electricity theft

It is recommended that the law enforcement as the first contact in crime reports, should create a database to track the rate at which electricity theft cases are reported, investigated and prosecuted. The database should further be linked to the existing crime reporting within police echelons. The database should offer opportunity to draw lessons on feasible approaches to investigating and prosecuting electricity theft.

Depending on the creation and enactment of legislation specific to dealing with electricity theft, the police should create a crime code that will be linked with sections that prohibit electricity theft. It is also recommended that the utilities, police and courts should capitalise on the benefits of partnership in criminal processes in order to advance the course of successful investigations and prosecutions of electricity theft. Since the utilities suffer most of the consequences of electricity theft, it is

recommended that these utilities should assume and maintain the responsibility of continuous engagements with law enforcement and court.

7.5.4 The practices to curb electricity theft by utilities

The recommendations are as follows:

7.5.4.1 Current practices of curbing electricity theft as a response to challenges associated with electricity theft

It is recommended that the utilities should employ advance technology to detect and normalise or restore the equipment affected by electricity theft without impacting legitimate and loyal customers. The advanced technology should be able to retrieve data and evidence that can be presented in court.

Furthermore, utilities should make employees to sign a declaration and duty to protect the interests of utility including refraining from any conduct related to electricity theft or assisting any person to steal electricity. The declaration should be filed with the human resource department as future reference should it be found that an employee was involved in the conduct relating to electricity theft. Utilities should also include in the contract signed between utility representatives, legal department and the insourced contractors the clause stating in clear terms the responsibility of the contractor to protect and not be involved in activities relating to electricity theft.

The clause should indicate repercussions to the contractor should it be found it or its employees have violated the clause protecting utilities against electricity theft. It is recommended that utilities should ensure that they regularly monitor the electrical infrastructure for prompt recovery and normalisation of incidents associated with electricity theft. It is recommended that the regulator should consider charging legitimate consumers a reasonable fee should they request extra services such as replacement of electricity equipment wherein the customer cannot prove the cause of damage.

Non-customers interfering with electrical infrastructure should be dealt with using criminal laws in South Africa. The study recommends that utilities should create a system to screen for detection of risks the stakeholders who may potentially bring undesired outcomes to partnering with utilities. It is advisable that the utilities should

create a policy governing the screening and ascertain legal basis to implement the screening of stakeholders.

7.5.4.2 The rules, procedures and guidelines applied by utilities to curb electricity theft

Based on the findings of this research, it is recommended that utilities should form partnerships with community members who will volunteer to conduct regular campaigns in their communities to discourage any acts associated with electricity theft. Additionally, it is recommended that utilities should partner with local government when dealing with electricity theft in informal settlements because there might be issues of settlement impeding utilities to normalise the illegal installation.

It is recommended that utilities should employ modern technology capable of detecting and communicating the condition of electricity equipment in order to detect and eliminate sophisticated methods of stealing electricity. In addition, the utilities should ensure that they have manpower to promptly respond to the smart technology detection. For non-customer perpetrators of electricity theft, utilities should apply criminal laws to deal with these perpetrators.

7.5.4.3 Contribution of law enforcement and judicial system to the practices of curbing electricity theft

It is recommended that the law enforcement and courts should create guidelines that can be used during the investigation and prosecution of electricity theft. The development of the guidelines should take into consideration of the potential creation and enactment of legislation governing electricity theft. In addition, the police and courts should regularly conduct awareness to communities about the processes to be followed during investigations and prosecutions of crime (including electricity theft).

7.5.5 Additional research

Further research is recommended to explore the potential integration of private prosecution as a strategy for addressing incidents of electricity theft. This further research could include the practicality and complexities associated with public prosecution in cases of electricity theft.

7.6 CONCLUSIONS

The aim of this study was to explore and establish the extent to which adequate application of South African laws governing crime could assist in curbing electricity theft, rather than relying on engineering technology to enforce compliance. The study was conducted in the Mopani district of Limpopo Province in South Africa. Convergent parallel research design was selected for its usefulness in analysis and interpretation of data.

Despite the qualitative nature of the study, quantitative methods were incorporated to describe and interpret information because the selected convergent parallel research design allows the use of both qualitative and quantitative analysis and interpretation of data in the same study. The research began with exploration of electricity theft incidents reported through Eskom reporting systems in order to gain insight into the extent of the crime of electricity theft in Limpopo Province. Thereafter, the literature obtained from national and international sources was reviewed in order to determine whether similar studies were conducted previously, as well as the outputs generated from such studies. The semi-structured interview mode was used to obtain the participants' perspectives and experiences regarding the curbing of electricity theft.

Participant samples were drawn from Eskom employees, SAPS detectives, NPA prosecutors and community leaders who were believed to have had an opportunity to be involved in matters of electricity theft. The research determined that electricity is a natural phenomenon that is the product of different fuel types and energies, but difficult to explain despite its meaningfulness in the lives of people. In addition, electricity is characterised by the presence or movement of charges. The two distinctive sources of electricity are renewable sources that are replenishable by nature, and non-renewable sources from fossil fuels. The two types of electricity are static electricity and dynamic electricity, with dynamic electricity as comparatively the most used form.

The conventional supply and production of electricity involves a value chain that begins at the power stations (power plants) from where electricity is produced (generated), carried along the transmission infrastructure (sub-stations and lines) to supply various customers through distribution sub-stations. The modern value chain of electricity is in the form of a network. Fundamental to the continuous production of

electricity is commercialisation process, that is pivotal to maintaining and sustaining the electricity production and maintenance of electricity infrastructure. The commercialisation of electricity is crucial in that the profits gained can be useful to develop and improve the living conditions of poor communities.

Utilities rely on electricity revenue to develop new products and services needed to provide solutions to life problems, effective businesses and growing the economy. The impact associated with lack of electricity supply is that communities in the areas not electrified become impatient and illegally connect themselves to the nearest points of electricity supply. The conduct of illegal connections results in damaged electrical infrastructure and over loaded networks that will require utilities to reduce load by switching off the electricity supply regularly. Consequently, the reduction of loads from the network contributes to slow businesses, less production, less revenue, slow economic growth and unemployment.

Poor collection of revenue is likely to hamper the implementation of electrification projects and services in the areas not electrified, thus resulting in a vicious cycle of a lack of electricity supply problems. There are two statutes that are most pertinent to the regulation of generation, transmission and distribution of electricity. The statutes are Electricity Regulation Act, Act 4 of 2006 that determines the tariffs, licencing, trading, importing and exporting electricity. The Act also guides utilities on matters of disconnecting and reconnecting customers under certain circumstances. Another statute is National Energy Act, Act 32 of 2008 that is concerned with a mix of sustainable, renewable, efficient and environment friendly electricity.

The Act also addresses matters of energy in relation to economic growth, poverty alleviation and research. The Occupational Health and Safety Act 85 of 1993 (South Africa, 1993) is an example of a statute that is applicable to all employment sectors and is concerned with safety in the employment environment and the public space where employment activities affect public members. Available literature indicates that the governance mandates from government are overlapping and complicate the way various departments function in the handling of electricity supply matters. Literature also indicates that regulatory bodies do not have a well-defined legal base to deal with electricity matters.

Furthermore, South African regulatory bodies tended to overlook the protection of electricity from losses associated with theft. Such losses defeat the purpose of securing sustainable, efficient and competitive supply of electricity. The study found that municipalities create by-laws to deal with matters relating to electricity theft. However, such by-laws may not benefit all utilities because they are created for a particular municipality. The three identified methods of stealing electricity are: tampering with any electrical infrastructure in any manner, billing irregularities and/or evading payment of electricity as well as vendor fraud or illegal selling and buying of electricity.

Electricity theft can be detected by using data-oriented methods that involves the studying of customers' consumption data, network-oriented methods that involves the measuring and evaluating of the network to detect consumption patterns and hybrid methods that are a combination of data oriented and network-oriented methods. The utilities may implement regular load reductions, which may not be favourable to customers. Additionally, electricity theft reduces the utilities' ability to generate revenue and expand electricity infrastructure. Thus, utilities may need to recover the losses caused by electricity theft by increasing the tariffs that are likely to weigh heavily on the consumers or customers.

The motives of stealing electricity include unaffordability of electricity caused by increasing tariffs, criminal intentions, misconception that stealing from the State is better than stealing from the neighbour, volatile economic conditions, high unemployment rate; as well as weaknesses in the rule of law. Some of the reasons for the theft of electricity are: corrupt intentions by politicians who encourage people to use electricity to gain votes, unethicness of utility's employees, vengeance for loss incurred during load reductions or load shedding, belief that stealing electricity is a right to have basic electricity; as well as impatience from delays in electrifying new settlements.

Literature does not provide accurate quantification of electricity theft but gives an idea that South Africa losses approximately R20 billion per annum from electricity theft. Informed by the number of incidents reported to Eskom in Limpopo Province and the amount of the minimum fine per incident, the electricity theft losses are estimated at not less than 66,7 million per annum. Furthermore, the study established that the

legality of electricity theft is still disputable because there is no clearly defined statute describing electricity theft as a crime. Alternative legislations created to deal with other aspects relating to electricity theft or court decisions are relied upon to legally hold accountable persons involved in the crime.

'Electricity theft' was conceptualised and operationalised as a voluntary and intentional human conduct of appropriating the characteristics attached to the production of electricity. This phenomenon is further characterised as an unlawful conduct encroaching and depriving the utilities ownership of the produced energy. Persons involved in the commission of electricity theft display an attitude that can be tested for culpability or a blameful state of mind to commit the crime. All elements of electricity theft are to be attained in order to render the perpetrator as having committed the crime of electricity theft.

The reporting of electricity theft forms the basis for having an improved interpretation of the phenomenon of electricity theft, because it provides knowledge on the extent of the crime. There are low reports of electricity theft, notwithstanding the detrimental effects the crime has on utilities and public. Many factors such as poor data handling, public's lack of will to report, and resource constraints contribute to insufficient reports of electricity theft. Tampering with electrical infrastructure was the common case reported for purpose of investigation and prosecution, whereas vending fraud and billing irregularities are the least reported forms of electricity theft.

Electricity theft is a phenomenon causing distress to South Africa and major parts of the world. Therefore, it is not limited to Limpopo Province alone. Disposition of electricity theft incidents is complicated and influenced by dynamic societal factors. Notably, electricity theft is observable in areas affected by socio-economic problems such as poverty, densely populated and rural settings. The absence of a clearly defined electricity theft statute contributes to poor understanding of the crime, and that may lead to ineffective investigation and prosecution of the crime.

The legal gaps in matters of electricity theft limit the primary role players in the South African Criminal Justice System to deal with the crime using alternative legislations and decided court judgements. However, such a state of affairs may not always be helpful to successfully prosecute the crime. Moreover, there is the need for guidelines

to direct sound and just legal process in the investigation of electricity theft. Despite the National Regulator Services' provision of guidelines to investigate and audit electricity irregularities, the guidelines are not sufficiently comprehensive to deal with electricity theft, criminal investigation, and prosecution. Hence, each case of electricity theft is unique and may require investigators and prosecutors' discretion within the confines of the law.

Electricity theft evidence can take any form, from real, documentary, testimonial and demonstrative evidence. Similar to other crimes, the standard to prove electricity theft is not easy in that the evidential processes are premised on criminal procedures and may require the support from stakeholders. There are many stakeholders that can play a role in the investigation and prosecution of electricity theft. Despite other forms of support, stakeholders such as the police, prosecutors, utilities' employees and community members provide relevant support mechanisms for securing and presenting evidence at court. The study found that electricity theft is expansive in nature and affects many parts of Limpopo Province.

Both the literature and the participants overwhelmingly support the view that Nkowankowa, Lulekani and GaKgapane were the areas with the highest numbers of electricity theft incidents in the Mopani region of Limpopo Province. It is less likely for utilities to report electricity theft for purposes of criminal processes despite the willingness of some community members to assist in this regard. Among the causes of poor reporting are the corrupt utility members who perpetuate the crime. Similarly, most community members choose to not report electricity theft because they benefit from illegal consumption of energy. Despite the willingness of potential reporters to play a part, the reporting systems utilised by utilities and law enforcement agencies are not conducive to enabling accurate and reliable reports of electricity theft.

While it is necessary to understand the impediments in the investigation and prosecution of electricity theft for improvement purposes, it is acknowledged that the investigation and prosecution of electricity theft is complicated. The complication is attributed to utilities not supporting law enforcement and prosecutors with evidence required to prosecute the crime. Conversely, the law enforcement appears to prioritise other crimes over electricity theft because the crime is not regarded with the same vigour as other critical offences. There is also a strong indication that lack of

appropriate legislation has a detrimental effect on the curbing of crime by means of criminal processes.

Furthermore, it is important for utilities to lobby and influence for meaningful and effective legal interventions for curbing electricity theft since they are the most affected by electricity theft. The practices of curbing electricity theft are generally a response to challenges affecting effective supply of electricity. Common to these challenges are factors such as: overloading of electrical infrastructure, dishonest utilities' employees contributing to electricity theft menace, legal implications and compliance matters negatively impacting the financial stability of utilities, loss of revenue and tariff increases; as well as the various interests of civil society on electricity supply affairs. Nonetheless, these challenges also present opportunities to implement the practices of dealing with electricity theft.

Some of the challenges affecting the electricity supply environment are interrelated in that, a solution to one challenge may potentially present solutions to other challenges. In implementing the practices to curb electricity theft, utilities have institutionalised rules, guidelines and procedures to curb electricity theft. The measures also include conducting regular public awareness on matters of electricity supply, prohibited consumer conduct and consequences of stealing electricity. Utilities also have a procedure to remove illegal electrical connections, issue tamper fines where illegal acquisition of electricity is detected, replace infrastructure damaged by electricity theft related conduct; as well as involving law enforcement to investigate for prosecution of perpetrators.

Utilities have been noted to be generally passive in implementing the practice of involving criminal processes in dealing with electricity theft, notwithstanding that the police and courts have a meaningful role of assisting in investigations and prosecution of matters relating to electricity theft. However, various issues are instrumental in impeding the effectiveness of criminal processes in dealing with electricity theft. For instance, some of the legal processes implemented by utilities, police and courts may be challenged by the parties affected; thus, adding more responsibilities on utilities to defend the legal challenges or lawsuits instituted against them.

Moreover, there are some ambiguities in dealing with electricity theft due to the lack of clearly defined legislation in matters of electricity theft and different case decisions taken by courts on similar matters associated with the crime. In addition, various interests of civil society affect the practices of curbing electricity either positively or negatively. If not properly checked, the dynamics brought by different societal formations such as political groups, labour unions, non-governmental organisations (NGOs) and economic activists can hamper the practices to curb electricity theft. The analysis and interpretation of data enabled the researcher to develop a conceptual framework detailing practical measures recommendable to utilities, police and prosecutors in curbing electricity theft using the laws governing crime in South Africa.

It is the researcher's concerted view that the research questions have been answered by exploring and describing the nature and extent of electricity theft in South Africa; determining and evaluating the interpretation of electricity theft in relation to laws governing crime in South Africa; exploring the dynamics of reporting, investigating and prosecuting perpetrators of electricity theft; determining and evaluating the current practices of curbing electricity theft by utilities in South Africa; as well as determining and developing practical measures for curbing electricity theft successfully by applying laws governing crime in South Africa.

LIST OF REFERENCES

- Abdullateef, A.I., Salami, M.J.E., Musse, M.A., Aibinu, A.M. & Onasanya, M.A. 2012. Electricity theft prediction on low voltage distribution system using autoregressive technique. *Research in Engineering and Technology*, 1(5):2277-4378.
- Abuhamda, E.A.A, Ismail, I.A., Bsharat, T.R.K. 2021. Understanding quantitative and qualitative research methods: A theoretical perspective for young researchers. *International journal of research*, 8(2), February:71-87.
- Academy of International Humanitarian Law & Human Rights. 2019. *Guidelines on investigating violations of international humanitarian law*. Geneva: Academy of International Humanitarian Law & Human Rights.
- Acharya, A.S., Prakash, A., Saxena, P., Nigam, A. 2013. Sampling: why and how of it. *Indian Journal of Medical Specialities*, 4(2), July – Dec, 329-333.
- Adhabi, E. & Anozie, C.B. 2017. Literature review for the type of interview in qualitative research. *International Journal of Education*, 9(3), July: 86-97.
- Afiyah, S.N. 2023. Social learning process in household electricity theft: Case study in Tanjung Burung village, Teluknaga District, Tangerang Regency. *Journal of Research and Community Service*, 4(5):1088-1109.
- African Centre of Excellence for Inequality Research. 2020. Stakeholder engagement on inequality trends in South Africa: A multidimensional diagnostic of inequality. Rondebosch, Cape Town: ACEIR.
- African Legal Information Institute. 2020. *Critical criminal law*. From: <https://africanlii.org/book/chapter-18-fault-statutory-offences>. Accessed on 10 September 2020.
- Agirre, X., Bergsmo, M., De Smet, S. & Stahn, C. (eds.). 2020. *Quality control in criminal investigation*. Brussels: Torkel Opsahl Academic Epubisher.
- Ahmad, T., Chen, H., Wang, J. & Guo, Y. 2018. Review of various modelling techniques for the detection of electricity theft in smart grid environment. *Renewable & Sustainable Energy Reviews*, 82:2916-2933.
- Ahmad, M. & Jan, M.A. 2019. Evaluating research: Diversity and credibility of information sources. Germany: ResearchGate.
- Ahmed, R. 2012. Corruption and inefficiency in the delivery of public utilities: Case study of electricity services. *Public Policy & Administration Research*, 2(4):1-12.

- Ahmed, R. 2019. The influence of reasonableness on the element of conduct in delictual or tort liability-comparative conclusions. Pretoria: University of South Africa.
- Ajayi, T.O., Ebohon, O.J. & Ganiyu, S. 2021. Understanding research paradigm in social sciences: A critique of two papers on critical success factors for BIM implementation. Germany: ResearchGate.
- Alge, D. 2019. *Autism, Culpability and the criminal law*. London, England: University of West London.
- Alvi, M.H. 2016. *A manual for selecting sampling*. Pakistan: University of Karachi.
- Ambos, K. 2013. *Treatise on international criminal law*. Volume 1: Foundations and general part. UK, Oxford: Oxford University press.
- Amri, F. 2017. The relationship amongst energy consumption (renewable and non-renewable), and GDP in Algeria. *Renewable & sustainable energy*, 76:62-71.
- Antonoadis, N., Cordy, M., Sifaleras, A. & Traon, Y. 2020. Preventing overloading incidents on smart grids: A multi-objective combinatorial optimization approach. Germany: ResearchGate.
- Arango, L., Deccache, E., Bonatto, B.D. & Ribeiro, P.F. 2016. *Impact of electricity theft on power quality*. Germany: Research gate.
- Aramide, K.A., Jacob, U.S. & Pillay, J. 2023. Conceptualisation and contextualisation of mixed-methods research: A review. *Research in Social Sciences and Technology*, 8(4), November: 14-36.
- Araya-Moreno, J. 2022. How to not have to know: legal technicalities and flagrant criminal offenses in Santiago, Chile. *Law and Society Review*, 56(3):329-343.
- Arisukwu, O., Igbolekwu, C., Oye, J., Oyeyipo, E., Asamu, F., Rasak, B. & Oyekola, I. 2020. Community participation in crime prevention and control in rural Nigeria. *Science Direct*, 6(9):1-7.
- Arkkelin, D. 2014. Using SPSS to understand research and data analysis. *Psychology Curricular Materials*. From: https://scholar.valpo.edu/psych_oer/1. Accessed on 11 September 2018.
- Aschendorf, C.B. 2013. Handwriting as individualisation technique in fraud investigation. Pretoria: University of South Africa.
- Ashworth, A. & Horder, J. 2013. *Principles of criminal law*. Hampshire, UK: Oxford University Press.

- Asiamah, N., Mensah, H.K. & Oteng-Abayie, E.P. 2017. General, target, and accessible population: Demystifying the concepts for effective sampling. *The Qualitative Report*, 22(6), 1607-1621.
- Association of Convenience Stores. 2020. *Evidence for action*. From: https://www.acs.org.uk/sites/default/files/acs_crime_report_2020_online_version_b_spreads.pdf. Accessed on 01 November 2020.
- Atomberg Technologies. 2016. *Different types of electricity*. From: <https://atomberg.com/different-types-of-electricity/>. Accessed on 10 February 2020.
- Awa, L.T. 2019. The interpretation and application of dolus eventualis in South African Criminal law. Pretoria: University of South Africa.
- Bachman, R. & Schutt, R.K. 2012. *Fundamentals of research in criminology and criminal justice*. 2nd ed. Los Angeles: Sage.
- Bachman, R. & Schutt, R.K. 2014. *The practice of research in criminology and criminal justice*. London: Sage.
- Badore, F.W. 2018. Evaluation of modus operandi as a perpetrator identification technique in the investigation of rape cases. Pretoria: University of South Africa.
- Baier, W., Warnet, J.M., Payne, M. & Williams, M.A. 2018. Introducing 3D printed models as demonstrative evidence at criminal trials. *Forensic science*, 63(4), July: 1298-1302.
- Baird, C.S. 2016. *Does a source of electricity ever run out of electrons?* From: <https://wtamu.edu/~cbaird/sq/2016/03/17/does-a-source-of-electricity-ever-run-out-of-electrons/>. Accessed on 19 February 2020.
- Baker, L. & Phillips, J. 2019. Tensions in the transition: The politics of electricity distribution in South Africa. *Politics & Space*, 37(1):177-196.
- Baloyi, T.B. 2016. *The role of traditional leadership in local government*. Johannesburg: University of Witwatersrand.
- Banda, S., Mpolomoka, D.L., Dube, M. & Sampa, R.L. 2017. Use of questions I qualitative research: how questions guided our study. *International journal of development research*, 7(12), December: 17895-17898.
- Ba-Phalaborwa Municipality. 2016. *Model electricity supply by-laws*. Ba-Phalaborwa Municipality: Ba-Phalaborwa.
- Balaam, D.N. & Dillman, B. 2015. *Introduction to international political economy*. London, UK: Routledge.

- Barnett, A. & McCulloch, N. 2019. *The political economy of energy access and power sector reform: Energy Insight*. From: <https://www.worldenergy.org/assets/>. Accessed on 15 March 2021.
- Beaty, W. 1999. *Electricity is not a form of energy*. From: <http://amasci.com/miscon/energ1.html>. Accessed on 14 February 2020.
- Bekink, M. *Hearsay evidence and the testimony of child witnesses*. From: <http://www.saflii.org/za/journals/DEJURE/2017/12.pdf>. Accessed on 02 August 2020.
- Bele, J.L., Dimc, M., Rozman, D. & Jemec, A.S. 2014. Raising awareness of cybercrime: the use of education as a means of prevention and protection. *10th International Conference Mobile Learning 28 February 2014-02 March 2014*. Madrid, Spain: ICML.
- Bellanca, R. & Wilson, E. 2012. *Sustainable energy for all and the private sector*. From: <https://www.osti.gov/etdeweb/servlets/purl/22031425>. Accessed on 21 April 2021.
- Ben, S., Abratt, R. & O'Leary, B. 2016. *Defining and identifying stakeholders: Views from management and stakeholders*. Johannesburg: University of Witwatersrand.
- Bento, J.P.C. & Moutinho, V. 2016. Co2 emissions, non-renewable and renewable electricity production, economic growth, and international trade in Italy. *Renewable & Sustainable Energy*, 55:142-155.
- Bernard, T.J. 2019. *Crime*. From: <https://www.britannica.com/topic/crime-law>. Accessed on 09 November 2020.
- Bhorat, H., Lilenstein, A., Monnakgotla, A., Thornton, A. & Van der Zee, K. 2017. *The socio-economic determinants of crime in South Africa: An empirical assessment*. Cape Town: University of Cape Town.
- Bhorat, H., Naidoo, K. & Yu, D. 2014. *Trade unions in an emerging economy. The case of South Africa*. Tokyo, Japan: United Nations University.
- Bihl, T.J. & Hajjar, S. 2017. Electricity theft concerns within advanced energy technologies. Berlin, Germany: ResearchGate.
- Bilolikar, R. 2019. Importance of public awareness in energy conservation and efficiency: Techniques on energy conservation and efficiency in building. From: <https://www.saarcenergy.org/wp-content/uploads/2019/09/3.-Importance-of-Public-Awareness-Rajkiran.pdf>. Accessed on 01 September 2021.
- Binder-Aviles, H. 2012. *The NGO handbook: A handbook series edition*. Shutterstock, US: Bureau of International Information.

- Bin-Halabi, A., Nouh, A. & Abouelela, M. 2019. *Remote detection and identification of illegal consumers in power grids*. From: <https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=8726294>. Accessed on 01 September 2021.
- Blazakis, N., Kapetanakis, T.N. & Stavrakakis, G.S. 2020. Effective electricity theft detection in power distribution grids using an adaptive neuro fuzzy inference system. *Energies*, 13:3110-3122.
- Bless, C., Higson-Smith, C. & Sithole, L. 2013. *Fundamentals of Social research methods*. Claremont, Cape Town: Juta.
- Blimpo, M.P. & Cosgrove-Davies, M. 2019. Electricity access in Sub-Saharan Africa: uptake, reliability, and complementary factors for economic impact. Washington, DC: World Bank.
- Blood, E.A. 2011. From static to dynamic electric power network state estimation: The role of bus component Dynamics. Pittsburgh, Pennsylvania: Carnegie Mellon University.
- Boateng, 2016. F.D. Crime reporting behaviour: Do attitudes toward the police matter? *Journal of Interpersonal Violence*, 33(18):1-26.
- Boffo, R. & Patalano, R. 2020. *ESG investing: Practices, progress and challenges*. From: <https://www.oecd.org/finance/ESG-Investing-Practices-Progress-Challenges.pdf>. Accessed 21 March 2021.
- Borawska, A. 2017. The role of public awareness campaigns in sustainable development, economic and environmental studies (E&ES). *Economic and Environmental studies*, 17(4):865-877.
- Boskovic, I. 2019. A comparison between positive and negative incentives in students' willingness to malingering. *Educational Psychology*, 40(8):1022-1032. doi.org/10.1080/01443410.2019.1704400.
- Botha, C. 2012. *Statutory interpretation: An introduction for students*. 5th edition. Cape Town: Juta.
- Botha, C.E. 2018. The role of the NGO in local government. The case of World Vision in Ubuhlebezwe Municipality. Stellenbosch: Stellenbosch University.
- Botshe, A.R. 2016. 'Assessing corporate social responsibility on sustainable community development at Eskom: A case of Camden and Grootvlei power stations'. Published Doctoral Thesis. Pretoria: University of South Africa.
- Brink, D.O. 2019. The nature and significance of culpability. *Criminal law & philosophy*, 13:347-373.

- Broughton, D.W.M. 2020. *The South African prosecutor in the face of adverse pre-trial publicity*. From: <http://www.scielo.org.za/pdf/pelj/v23n1/12.pdf>. Accessed on 29 June 2021.
- Brown, E.T. 2019. *Evidence (real & demonstrative)*. Atlanta, Georgia: Hawkins Parnell Thackston & Young LLP.
- Bryman, A. 2016. *Social research methods*. 5th edition. London: Oxford university press.
- Buell, S.W. 2015. Culpability and modern crime. *Georgetown Law*, 103:602-603.
- Bun, M.J.G., Kelaher, R., Sarafidis, V. & Weatherburn, D. 2019. Crime, deterrence and punishment revisited. *Empirical Economics*, 59:2303-2333.
- Burchell, J. 2013. *Principles of criminal law*. 4th edition. Pretoria: Juta.
- Burke, J.B. & Stephen, J.C. 2018. Political power and renewable energy futures: A critical review. *Energy Research & Social Science*, 35:78-93.
- Business Leadership South Africa. 2023. *Business against crime South Africa*. From: <https://www.blsa.org.za/bac/>. Accessed on 20 September 2023.
- Byczkowska-Owczarek, 2014. Researcher's personal experiences as a method of embodiment research. *Theory, Society & Culture*, 1(1), June: 11-18.
- Cambridge Dictionary. 2020. Source. From: <https://dictionary.cambridge.org/dictionary/english/source>. Accessed on 27 February 2020.
- Cant, M. 2012. Challenges faced by SMEs in South Africa: Are marketing skills needed. *International Business & Economics Research*, 11(10):1107-1116.
- Cameron, E. 2020. *South African crime quarterly: Comment and analysis*. Cape Town: Institute for Security Studies & Cape Town University.
- Cernusca, M. 2018. A comparative approach to normative elements in the definition of international crimes. Freiburg, Germany: University of Freiburg.
- Chamberlain, D., Ncube, S., Mahori, N. & Thom, M. (eds.). 2014. Labour unions and financial inclusion in South Africa: How labour unions facilitate the provision of financial services for their members. Geneva, Switzerland: International Labour Office.
- Chandel, P., Thakur, T. & Sawale, B.A. 2016. Energy meter tampering: major cause of non-technical losses in Indian distribution sector. 2016 *International Conference on Electrical Power and Energy Systems (ICEPES)*. Maulana Azad National Institute of Technology, Bhopal, India. Dec 14-16, 2016.

- Chaturvedi, K. 2012. *Sampling methods*. From: <http://www.pitt.edu/~super7/43011-44001/43911.ppt>. Accessed on 23 August 2023.
- Chavez, A., Lai, C., Jacobs, N., Hossain-McKenzie, S., Jonas, C.B., Johnson, J. & Summers, A. 2019. *Hybrid intrusion detection system design for distributed energy resource systems*. Research Gate: Berlin, Germany.
- Chen, B. 2015. *The principle of legality: Issues of rationale and application*. *Monash University Law Review*, 41(2): June:329-376.
- Cheng, E.K. & Nunn, G.A. 2019. *Beyond the witness: Bringing a process perspective to modern evidence law*. Nashville, US: Vanderbilt University Law School.
- Chetty, V.G. 2018. *The combating of unauthorised electrical connections in KwaZulu-Natal, South Africa*. Pretoria: University of South Africa.
- City of Polokwane Municipality. 2020. *Draft Integrated Development Plan 2020/2021*. From: <https://www.polokwane.gov.za/>. Accessed on 01 September 2021.
- City Power Johannesburg. 2019. *Final Draft: Subject to NERSA Approval of the Tariffs*. Johannesburg: City Power Johannesburg.
- City of Tshwane. *By-laws*. From: <http://www.tshwane.gov.za/sites/business/Bylaws/>. Accessed on 05 October 2020.
- Ciuni, R. & Tuzet, G. 2019. *Inevitable ignorance as a standard for excusability: An epistemological analysis*. Germany: ResearchGate.
- Civilian Secretariat for Police Service. 2020. *Strategic Plan 2020/2025*. Pretoria: Civilian Secretariat for Police Service.
- Clarke, L. 2016. *Issues run deep in the fight against electricity theft*. From: <https://www.energize.co.za/issues-run-deep-fight-electricity-theft/>. Accessed on 09 September 2020.
- Clauser, C. & Ewert, M. 2018. *The renewables cost challenge: Levelized cost of geothermal electric energy compared to other sources of primary energy-review and case study*. *Renewable & Sustainable energy*, 82:3683-3693.
- Cobigo, V., Martin, L. & Mcheimech, R. 2016. *Understanding community*. *Canadian Journal of Disability Studies*, 5(4):181-203.
- Cohn, A., Fehr, E. & Marechal, M.A. 2014. *Business culture and dishonesty in the banking industry*. Germany: ResearchGate.
- Congressional Research Service. 2020. *South Africa: Current issues, economy, and U.S. relations*. From: <https://fas.org/sgp/crs/row/R45687.pdf>. Accessed on 20 July 2021.

- Collins Dictionary. 2020. *Definition of 'source'*. From: <https://www.collinsdictionary.com/>. Accessed on 27 February 2020.
- Cooper, R. 2018. *What is civil society, its role and value in 2018?* Birmingham, UK: University of Birmingham.
- Council for Scientific and Industrial Research. 2000. *Guidelines for human settlement planning and design: Volume 1*. Pretoria: CSIR.
- Creswell, J.W. 2006. *Collecting data in mixed methods research*. From: https://www.sagepub.com/sites/default/files/upm-binaries/10983_Chapter_6.pdf. Accessed on 03 November 2018-11-03.
- Creswell, J.W. 2013. *Qualitative inquiry and research design: Choosing among five approaches*. 3rd edition. Los Angeles: Sage.
- Creswell, J.W. 2014. *Research design*. 4th edition. London: Sage.
- Creswell, J.W. & Poth, C.N. 2018. *Qualitative inquiry and research design choosing among five approaches*. 4th edition. Thousand Oaks: Sage.
- Crofton, K., Wanless, E. & Wetzal, D. 2015. *The electricity system value chain*. Colorado, U.S.A: Rocky Mountain Institute.
- Czechowski, R. & Kosek, A.M. 2016. *The most frequent energy theft techniques and hazards in present power energy consumption*. From: <https://project-sparks.eu/wp-content/uploads/2016/04/>. Accessed on 26 January 2021.
- Dar, F. 2015. Emerging role of NGOs in the world's socio-political affairs. *International Journal of Peace & Development Studies*, 6(1):1-9.
- Darmstadter, J. 2004. Energy and population. *Resources for the Future*, 4(1):1-9.
- Da Silva Costa Lima, D. 2015. Solar power versus electricity theft in Brazillian Favela: Sunshine into low-income communities. Amsterdam, Netherlands: University of Amsterdam.
- Datta, A., Mukherjee, D. & Jessup, L. 2014. Understanding commercialisation of technological innovation: Taking stock and moving forward. Research Gate: Berlin, Germany.
- Datzberger, S. & Nguyen, T. 2018. Deconstructing civil society actors and functions: on the limitations of international frameworks for fragile states. *Social Sciences*, 7(3):10-18.
- Dawadi, S. 2021. Mixed-methods research: a discussion on its types, challenges and criticisms. *Journal of practical studies in Education*, 2(2), March:25-36.

- Dayalan, M. 2019. Top challenges in data mining research. *Journal of Emerging Technologies and Innovative Research*, 6(3):67-71.
- Deloitte Touche Tohmatsu Limited. 2020. *Stakeholder engagement report 2019/2020*. From: <https://www2.deloitte.com/content/dam/Deloitte/>. Accessed on 24 October 2020.
- Department of Energy. 2017. *Annual performance plan 2016/2017*. Pretoria: Department of Energy.
- Department of Justice & Constitutional Development. 2016. A practical guide: Court and case flow management for regional and district criminal courts in the South African Lower court division. Pretoria: Department of Justice & Constitutional Development.
- Department of Justice & Constitutional Development. 2020. *2018/19 Annual Report*. Pretoria: Department of Justice & Constitutional Development.
- Department of Labour. 2012. From: https://www.gov.za/sites/default/files/gcis_document/201409/35180gen258.pdf. Accessed on 07 May 2019.
- Department of Mineral Resources & Energy. 2019a. *Integrated resource plan (IRP 2019)*. Pretoria: Department of Mineral Resources & Energy.
- Department of Mineral Resources & Energy. 2019b. *Immediate measures to ensure energy supply for the country*. From: <https://www.dmr.gov.za/newsroom/post/1833/immediate-measures-to-ensure>. Accessed on 11 February 2020.
- Department of Public Enterprises. *Roadmap for Eskom in a reformed electricity supply industry*. Pretoria: Department of Public Enterprises.
- Depoy, E & Gitlin, L.N. 2016. *Introduction to research: understanding and applying multiple strategies*. 5th edition. Missouri: Elsevier.
- Depuru, S.S.S.R., Wang, L. & Devabhaktuni, V. 2011. Electricity theft: Overview, issues, prevention and a smart meter-based approach to control theft. *Energy Policy*, 39:1007–1015.
- Derakhshanalavijeh, R., Turner, R. & Mancini, M. 2019. Project governance and stakeholders; A literature review. *International Journal of Project Management*, 37(1):98-116.
- Desai, V. & Potter, R.B (eds.). 2011. Literature reviews and bibliographic searches. In Meth, P. & Williams, G. 2006. *Doing development research*. London: Sage.
- Devidas, A.R. & Ramesh, M.V. 2010. Wireless smart grid design for monitoring and optimising electric transmission in India. Research Gate: Berlin, Germany.

- De Wachter, B., De Keulenaer, H., Nuño, F. & Targosz, R. 2019. *Electrical conductors*. Research Gate: Berlin, Germany.
- Dike, D., Obiora, U.A., Euphemia, N. & Dike, B.C. 2015. Minimizing household electricity theft in Nigeria using gsm based prepaid meter. *Engineering Research*, 4(1):59-69.
- Diko, B., Olofinbiyi, S.A. & Steyn, J. 2019. A cause to unravel the role of criminologists in compiling pre-sentence report: A South African perspective. *Cogent Social Sciences*, 5(1), December: 1-18.
- Dileep, J. 2016. Customer compliance approach: A new innovative behaviour change approach to improve revenue recovery. *Operation Khanyisa*, August: 1-13.
- Diski, R., Chapman, A. & Kumar, C. 2021. Powering the just transition: putting workers and unions at the centre of industrial change in Yorkshire and the Humber. London, United Kingdom: New Economics Foundation.
- Dobbie, S., Goel, L. & Maldonado, J. 2017. *Circuits and electricity*. From: <https://www.bu.edu/lernet/artemis/years/2017/projects/FinalPresentations/Circuit> Accessed on 20 February 2020.
- Doody, O. & Bailey, M.E. 2016. Setting a research question, aim and objective. *Nurse Researcher*, 23(4), March:19-23.
- D'Oliveira, J.A.V. 2012. Theft of electricity: A short circuit? *Journal of Contemporary Roman Dutch Law*, 75:312-322.
- Dörfler, V. & Stierand, M. 2020. Bracketing: a phenomenological theory applied through transpersonal reflexivity. *Journal of Organizational Change Management*. From: <https://doi.org/10.1108/JOCM-12-2019-0393>. Accessed on 10 January 2022.
- Dostal, J. 2015. Theory of problem solving. *Social & Behavioural Sciences*, 1-2.
- Doukas, A. & Ballesteros, A. 2015. Clean energy access in developing countries: Perspectives on policy & regulation. Washington, DC: World Resources Institute.
- Dragan, I. & Isaic-Maniu, A. 2013. Snowball sampling completion. *Journal of Studies in Social Sciences*, 5(2):160-177.
- DSC Attorneys. 2021. *Claims for electric shock injuries and electrocution*. From: <https://www.dsclaw.co.za/articles/electric-shock-injuries/>. Accessed on 16 May 2023.
- Dsouza, M. 2015. Criminal culpability after the act. *King's Law*, 26(3):440-462.

- Dube, F. & Moyo, C.G. 2022. The right to electricity in South Africa. *Potchefstroom Electronic Law Journal (PELJ)*, 25(1):1-21.
- Du Bois-Pedain, A. 2020. Participation in crime. In K. Ambos, A. Duff, J. Roberts, T. Weigend & A. Heinze (Eds.). *Core concepts in criminal law and criminal justice* (pp. 94-134). Cambridge: Cambridge University Press.
- Du Preez, D.J. 2016. Dolus eventualis: The subjective test to establish the “reconciliation with the risk” or “the taking into the bargain” of the foreseen result by the accused with specific reference to S v Pistorius. KwaZulu-Natal: University of KwaZulu-Natal.
- Du Toit, P.G. & Ferreira, G.M. 2015. Reasons for prosecutorial decisions. *Electronic Law Journal*, 18 (5):1507-1526.
- Dzansi, D.Y., Rambe, P. & Mathe, L. 2014. Cable theft and vandalism by employees of South Africa’s electricity utility companies: A theoretical explanation and research agenda. *Social Science*, 39(2):179-190.
- Eggert, A., Hogleve, J., Ulaga, W. & Muenkhoff, E. 2014. Revenue and profit implications of industrial service strategies. *Service Research*, 17(1):23-39.
- Ekundayo, G. 2015. Review of sustainable energy and electricity generation from non-renewable energy sources. *Energy Technologies and Policy*, 5(1):2015: 53-57.
- Erickson, D., Fawcett, H., Thompson, T.J.U. & Campbell, A. 2020. The effect of different imaging techniques for the visualisation of evidence in court on jury comprehension. *Legal Medicine*, 134:1451-1455.
- Eriksson, O. 2017. Nuclear power and resource efficiency-a proposal for a revised primary energy factor. *Sustainability*, 9:1-10.
- Eriksson, P. & Kovalainen, A. 2016. *Qualitative methods in business research*. 2nd edition. London: Sage.
- ESI Africa. 2018. *Finally, a solution to eradicate ghost vending!* From: <https://www.esi-africa.com/top-stories/finally-a-solution-to-eradicate-ghost-vending-2/>. Accessed on 02 September 2020.
- Eskom. 2016a. *Prison sentence should serve as a warning to electricity thieves*. From: <https://www.eskom.co.za/news/Pages/Sep16.aspx>. Accessed on 29 April 2020.
- Eskom. 2016b. *Electricity theft poses serious threat to the growth of small businesses*. Sunninghill: Eskom.
- Eskom. 2016c. *Taking action against electricity theft*. From: <http://www.eskom.co.za/news/Pages/Dec7.aspx>. Accessed on 01 September 2018.

- Eskom. 2016d. Process control manual for managing energy losses. Sunninghill: Eskom.
- Eskom. 2017a. *Promoting legal use of power*. Sunninghill: Eskom.
- Eskom. 2017b. Eskom Holdings Revenue Application FY 2018/19. Sunninghill: Eskom.
- Eskom. 2017c. *Integrated report 31 March 2017*. Sunninghill: Eskom.
- Eskom. 2017d. Corporate plan: Financial years 2016/17-2020/21. Sunninghill: Eskom holdings.
- Eskom. 2018a. *EELM-Customer Incentive Campaign*. From: <http://dx.eskom.co.za/dxmno/meetingsite/>. Accessed on 12 December 2020.
- Eskom. 2018b. Multi-year price determination (MYPD 3): Regulatory clearing account submission to Nersa for year 2017/2018. Sunninghill: Eskom.
- Eskom. 2018c. *Infrastructure crime*. Sunninghill: Eskom.
- Eskom. 2019a. *Update: Eskom electricity supply*. Sunninghill: Eskom holdings.
- Eskom. 2019b. *Customer Care and Interaction report*. Sunninghill: Eskom holdings.
- Eskom. 2019c. *Integrated report: 31 March 2019*. Sunninghill: Eskom.
- Eskom. 2019d. *Customers urged to come clean*. From: <https://fliphtml5.com/tliuo/vsyp/basic>. Accessed on 13 December 2020.
- Eskom. 2020a. Integrated report 31 March 2020: Restoring trust. Sunninghill: Eskom.
- Eskom. 2020b. *Eskom commences the 282km 400kV line construction with stakeholder engagements*. From: <https://www.eskom.co.za/news/>. Accessed on 02 November 2020.
- Eskom. 2020c. Tackling energy and revenue losses with urgency. *Eskom news*, 6, July: 1-13.
- Eskom. 2020d. Full steam ahead: distribution's fight against energy losses gathers momentum. Sunninghill: Eskom.
- Eskom. 2021a. *The Eskom factor*. Sunninghill: Eskom.
- Eskom. 2021b. *Integrated report 31 March 2021*. Sunninghill: Eskom.
- Eskom. 2021c. *Eskom is experiencing an increase in electricity theft and distribution infrastructure failure due to illegal connections*. From <https://www.eskom.co.za/eskom-is-experiencing-an-increase-in-electricity-theft-and-distribution-infrastructure-failure-due-to-illegal-connections/>. Accessed on 21 November 2023.
- Eskom. 2021d. Supplementary pricing information 2021/2022. Sunninghill: Eskom.

- Eskom. 2022a. Eskom condemns the killing of security contractors. Sunninghill: Eskom.
- Eskom. 2022b. *Eskom withdraws electricity supply services in Sibangweni*. From: <https://www.eskom.co.za/eskom-withdraws-electricity-supply-services-in-sibangweni/>. Accessed on 18 August 2023.
- Eskom. 2023a. The fine line between not paying electricity and stealing electricity. *Forensic insights*, 10, January: 1-2.
- Eskom. 2023b. *What is Eskom public safety and why it is important to Eskom*. From: <https://www.eskom.co.za/distribution/customer-service/public-safety/>. Accessed 03 September 2023.
- Etikan, I., Musa, S.A. & Alkassim, R.S. 2016. Comparison of convenience sampling and purposive sampling. *American journal of theoretical and applied statistics*, 5(1), December: 1-4.
- Fallah, S.N., Deo, R., Shojafar, M., Conti, M. & Shamshirband, S. 2018. Computational intelligence approaches for energy load forecasting in smart energy management grids: State of the art, future challenges, and research directions. *Energies*, 11:596-627.
- Fatima, N. & Mustafa, J. 2016. *Production of electricity by the method of road power generation*. Research Gate: Berlin, Germany.
- Faqir, D., Chouliaras, N., Sofia, V., Olga, K. & Maglaras, L. 2021. Cybersecurity in smart grids, challenges and solutions. *AIMS Electronics & Electrical Engineering*, 5(1):24-37.
- Felin, T. & Zenger, T.R. 2017. The theory-based view: Economic actors as theorists. *Strategy Science*, 2(4):258-271.
- Flick, U. 2011. *An introduction to qualitative research*. 4th edition. Los Angeles: Sage.
- Franks, L. 2014. The impact of rising electricity tariffs on the urban poor: South African case study. Cape Town: University of Cape Town.
- Franzitta, V., Curto, D., Rao, D. & Viola, D. 2016. Hydrogen production from sea wave for alternative energy vehicles for public transport in Trapani (Italy). *Energies*, 9:1-17.
- Freedman, W. 2014. The legislative authority of the local sphere of government to conserve and protect the environment: A critical analysis of *Le Sueur v EtheKwini Municipality* [2013] *Zakzphc* 6 (30 January 2013). doi.org/10.4314/pelj.v17i1.14.

- Fredman, S. 2016. Substantive equality revisited. *International Journal of Constitutional Law*, 14 (3):712–38.
- Fusch, P.R. & Ness, L.I. 2015. Are We There Yet? Data saturation in qualitative research. *The Qualitative Report*, 20 (9):1408-1416.
- Gaunt, T., Salida, M., Macfarlane, R., Maboda, S., Reddy, Y. & Borchers, M. 2012. *Informal electrification in South Africa: Experience, opportunities and challenges*. Cape Town: Sustainable Energy Africa.
- Gaur, V. & Gupta, E. 2016. The determinants of electricity theft: an empirical analysis of Indian states. *Energy Policy*, 93:127-136.
- Geddes, A., Bridle, R., Mostafa, M., Roth, J., Sanchez, L., Garg, V., Scholtz, L. & Fakir, S. 2020. *Rethinking Eskom: Lessons from electricity sector reform in India and Mexico*. Geneva, Switzerland: International Institute for Sustainable Development.
- Gehl, R. & Plecas, D. 2016. *Introduction to criminal investigation: processes, practices and thinking*. From: <https://pressbooks.bccampus.ca/criminalinvestigation/>. Accessed on 19 May 2020.
- Geldard, C. 2013. *Token vending and regulation*. From: https://www.ee.co.za/wp-content/uploads/legacy/Energize_2013/07_TT_03_Token.pdf. Accessed on 08 September 2020.
- Geyevu, M. & Mbandlwa, Z. 2022. Economic conditions that lead to illegal electricity connections at Quarry Road informal settlement in South Africa. *International Journal of Special Education*, 37(3):11069-11078.
- Gilvanejad, M., Abyaneh, H.A. & Mazlumi, K. 2013. Estimation of the overload-related outages in distribution networks considering the random nature of the electrical loads. *IET Generation, Transmission & Distribution*, 7(8):855-865.
- Gina, M. 2016. Customer satisfaction analysis of Conlog electricity prepayment meters in KwaZulu-Natal: A customer perspective. Durban, Kwa-Zulu Natal: Durban University of Technology.
- Gladwin-Wood, C., Gohl, M. & Sing, A. 2021. *Is it lawful for ESKOM to implement load reduction?* Johannesburg: Schindlers Attorneys.
- Godina, R., Rodrigues, E.M.G., Matias, J.C.O. & Catalão, J.P.S. 2015. Effect of loads and other key factors on oil-transformer ageing: Sustainability benefits and challenges. *Energies*, 8:12147-12186.
- Golden, M. & Min, B. 2012. *Theft and loss of electricity in an Indian state*. London, UK: International Growth Centre.

- Gomes de Pinho, M.I. & Pires, da Rosa, M.J.M. 2017. *Research Evaluation: The need to include processes and impact*. Aveiro, Portugal: University of Aveiro.
- Gould, C., Mufamadi, D., Hsia, C. & Amisi, M. 2017. *Reducing violence in South Africa: from policing to prevention*. Pretoria: Institute for Security Studies.
- Govender, R. 2017. *Is Dolus eventualis a weaker currency in sentencing for murder*. From: <https://www.ResearchGate.net/publication/320810690>. Accessed on 26 June.
- Govindarajan, G., Meikandasivam, S. & Vijayakumar, D. 2019. Comparison of smart energy monitoring systems in real-time for future smart grid. *International Conference on Artificial Intelligence, Smart Grid and Smart City Applications*, 319, January: 186-193.
- Grant, J. 2018. *Critical criminal law*. From: <http://www.saflii.org/images/criticalcrimlaw.pdf>. Accessed on 13 April 2020.
- Greater Tzaneen Municipality. 2013. *Electricity by-laws*. Tzaneen: Greater Tzaneen Municipality.
- Green Cape. 2020. *Utility-scale renewable energy: Market intelligence report 2020*. From: <https://www.greencape.co.za/assets/>. Accessed on 01 August 2021.
- Grosvenor Services Group. 2018. *Energy theft: A focus on consumer awareness and attitudes*. Sheffield, UK: Grosvenor Services Group.
- Guisasola, J. 2014. Teaching and learning electricity: The relations between macroscopic level theories. Research Gate: Berlin, Germany.
- Gunawan, A., Harjono, H., Sahidu, H. & Herayanti, L. 2017. Virtual laboratory to improve students' problem-solving skills on electricity concept. *Pendidikan IPA Indonesia*, 6(2):257-264.
- Gunawan, J. 2015. Ensuring trustworthiness in qualitative research. *Belitung Nursing Journal*, 1(1), November: 10-11.
- Hakimah, Y., Nugraha, A.T., Surya, A., Ananda, R.W.A. & Astuty, P. 2019. Does the electricity consumption determine the economic growth and energy prices in Asean countries? *Security & Sustainability Issues*, 9(2):489-503.
- Halcomb, E.J. 2016. Understanding the importance of collecting data creatively. *Nurse researchers*, 23(3):6-7.
- Hamman, A., Albertus, C. & Nortje, W. 2019. Deciphering dangerousness: A critical analysis of Section 286 A and B of the criminal procedure Act 51 of 1977. Cape Town: University of Western Cape.

- Handhal, F.K. & Rashid, A.T. 2018. Design and building a single-phase smart energy meter using Arduino and RF communication system. Germany: ResearchGate.
- Han, W., Xiao, Y., Hong, X., Vrbsky, S., Zhang, J. & Zheng, O. 2017. *Non-technical loss fraud detection in smart grid*. Tuscaloosa, Alabama: University of Alabama.
- Harangozo, G. & Zilahy, G. 2014. Cooperation between business and non-governmental organisations to promote sustainable development. *Cleaner Production*, 89:18-31.
- Harmon, K. 2011. *Bend Water with Static Electricity*. From: <https://sciencebob.com/bend-water-with-static-electricity/>. Accessed on 27 February 2020.
- Harvey, L. 2019. *Social Research glossary, quality research international*. From: <http://www.qualityresearchinternational.com/socialresearch/sampling.htm>. Accessed on 12 August 2023.
- Haskins, P.A. 2019. Research will shape the future of proactive policing. *National Institute of Justice Journal*, 281:1-9.
- Hatton, S.B. 2017. Criminal modus operandi and psychoanalysis as genealogical evidence. *Genealogy*, 1(8):1-10.
- Hernández-Hernández, F. 2016. Documentary sources of museology: Reflections and perspectives. *ICOFOM Study Series*. From: <http://journals.open-edition.org/iss/693>. Accessed on 20 January 2021.
- Hlengwa, S.P. 2016. Street vending and the use of urban public spaces in Tongaat central business district. KwaZulu Natal. KwaZulu Natal: University of KwaZulu Natal.
- Houdek, P. 2020. Fraud and understanding the moral mind: Need for implementation of organizational characteristics into behavioral ethics. *Science & Engineering Ethics*, 26:291-707.
- Hu, W., Yang, Y., Wang, J., Huang, X., Cheng, Z. 2020. *Understanding electricity theft behaviour via multi-source data*. From: <https://arxiv.org/pdf/2001.07311.pdf>. Accessed on 10 May 2020.
- Hussain, Z., Memon, S., Shah, R., Bhutto, Z.A., Aljawarneh, M. 2016. Methods and techniques of electricity thieving in Pakistan. *Power & Energy Engineering*, 4:1-10.
- Igwemezie, C.J.P. 2016. A critical analysis of electricity distribution process in Nigeria: a management perspective. Cape Town: University of Western Cape.

- Ikejemba, E.C.X. & Schuur, P.C. 2018. Analysing the impact of theft and vandalism in relation to the sustainability of renewable energy development projects in Sub-Saharan Africa. *Sustainability*, 10:814-830.
- Immigration Enforcement. 2020. *Evidence in criminal investigations*. Home Office, UK.
- Infrastructure Health and Safety Association. 2019. *Incident investigation*. Ontario, Canada: IHSA.
- International Conference on Electricity Distribution (CIRED). 2017. *Reduction of technical and non-technical losses in distribution networks*. Glasgow, Scotland: CIRED.
- International Renewable Energy Agency (IRENA). 2017. *Electricity storage and renewables: Costs and markets to 2030*. Masdar City, Abu Dhabi: IRENA.
- Irianto, G., Novianti, N., Rosalina, K. & Firmanto, Y. 2012. *Integrity, unethical behavior, and tendency of fraud*. Malang, Indonesia: Brawijaya University.
- Isering, G.L., Mugellini, G. & Killias, M. 2015. The willingness to report employee offences to the police in the business sector. *European Journal of Criminology*, 13(3):372-392.
- Islam, I. 2019. Role of police in the criminal justice system of Bangladesh: Need for reformation. *International Journal of Management, Technology, and Social Sciences (IJMTS)*, 4(1):46-51.
- Jacobson, M.Z. 2019. *Evaluation of nuclear power as a proposed solution to global warming, air pollution, and energy security*. Cambridge: Cambridge University Press.
- Jack, B.K. & Smith, G. 2016. *Charging ahead: Pre-paid electricity metering in South Africa*. Cambridge: National Bureau of Economic Research.
- Jamil, F. 2013. On the electricity shortage, price and electricity theft nexus. *Energy Policy*, 54:267–272.
- Jassim, M.A. & Abdulwahid, S.N. 2021. Data mining preparation: Process, techniques and major issues in data analysis. *IOP Conference series: materials science and engineering*. From: <https://iopscience.iop.org/article/10.1088/1757-899X/1090/1/012053/pdf>. Accessed on 19 May 2023.
- Jiyane-Tshikomba, S. 2019. *Technical analysis and mitigation of electricity theft for domestic and commercial end users*. Durban, KwaZulu-Natal: Durban University Technology.

- Johns Hopkins University and Freya Sonenstein. 2012. *Issues in Survey Research Design*. From: <https://jhu.semester.ly/c/PH.380.711>. Accessed on 12 November 2023.
- Joubert, C.D. 2018. *Applied law for police officials*. Pretoria: Juta.
- Jubaer, S. 2019. A basic guideline towards criminal intention. Germany: ResearchGate.
- Júnior, L.A.P., Ramos, C.C.O., Rodrigues, D., Pereira, D.R., De Souza, A.N., Costa, K.A.P & Papa, J.P. 2016. Unsupervised non-technical losses identification through optimum-path forest. *Electric Power Systems Research*, 413-423.
- Kambule, N. 2018. A review and identification of persistent and emerging prepaid electricity meter trends. *Energy for Sustainable Development*, 43:173–185.
- Kambule, N., Yessofofu, K., Nwulu, N. & Mbohwa, C. 2019. Exploring the driving factors of prepaid electricity meter rejection in the largest township of South Africa. *Energy Policy*, 124:199-205.
- Karabiber, A. 2017. The technical revisions required to prevent electricity theft. *Faculty of Engineering & Architecture*, 32(2):121-130.
- Karius, T. 2016. Intellectual property and intangible assets: Alternative valuation and financing approaches for the knowledge economy in Luxembourg. *European Institute for Knowledge & Value Management*, 3:1-75.
- Katyora, K. 2019. *Electricity theft detection and prevention using artificial intelligence for African utilities*. From: <https://energycentral.com/c/pip/electricity-theft-detection-prevention-using-artificial-intelligence-african>. Accessed on 27 March 2020.
- Keating, G. 2015. *Is negligence lawless objective than we think?* From: <https://torts.jotwell.com/is-negligence-law-less-objective-than-we-think/>. Accessed on 30 July 2020.
- Kelley, K.L. 2021. A convergent parallel mixed methods study measuring the impact of maths economics cross curricular intervention. Columbus, Georgia: Columbus State University.
- Kets de Vries, M.F.R. 2016. *The greed syndrome: Working paper series 2016/26/EFE*. Fontainebleau, Europe: Insead.
- Khan, Y.H., Riaz, M., Khan, I.J., Khan, J.A., Rehman, I. & Khan, S. 2016. Comparison of power theft techniques and their identification: An overview concerning Pakistan. *Science International (Lahore)*, 28(3):3163-3167.

- Kwanje, S.N. 2016. Distinguishing between intention and negligence in South African criminal law. Potchefstroom: North West University.
- Khan, Z.A., Adil, M., Javaid, N., Saqib, M.N., Shafiq, M. & Choi, J. 2020. Electricity theft detection using supervised learning techniques on smart meter data. *Sustainability*, 12:80-8047.
- Khonjelwayo, B. & Nthakheni, T. 2021. Determining the causes of electricity losses and the role of management in curbing them: A case study of City of Tshwane Metropolitan Municipality, South Africa. *Journal of Energy in Southern Africa*, 32(4):45-57.
- Khwela, H. 2019. An exploratory study on electricity theft in Staram informal settlement in Tongaat in Durban, KwaZulu-Natal Province. Durban-Westville: University of KwaZulu-Natal.
- King, N.A.S., Milanzi, M.C., Massoi, L. & Kyando, N. 2015. The role of political leaders in enhancing peace and tranquillity: thinking big. *International Journal of Managerial Studies and Research (IJMSR)*, 3(6):84-90.
- Kirchherr, J. & Charles, K. 2018. Enhancing the sample diversity of snowball samples: Recommendations from a research project on anti-dam movements in South-East Asia. *Plos One*, 13(8), August: 1-17.
- Kivunja, C. & Kuyini, A.B. 2017. Understanding and applying research paradigms in educational contexts. *International Journal of Higher Education*, 6(5), September: 26-41.
- Klein, S. & Lee, C. 2019. Towards a dynamic theory of civil society: The politics of forward and backward infiltration. *Sociological Theory*, 37(1):62-88.
- Kojima, M. & Trimble, C. 2016. Making power affordable for Africa and viable for its utilities. Washington, DC: World Bank.
- Komolafe, O.M. & Udofia, K.M. 2020. Review of electrical energy losses in Nigeria. *Nigerian Journal of Technology (NIJOTECH)*, 39(1):246-254.
- Koop, C. 2015. *What is regulation? An interdisciplinary concept analysis*. Wiley: London, UK.
- Kotzé, T. Referencing in academic documents: Official referencing guidelines of the Department of Business Management: Pretoria: Pretoria University.
- Kruse, J. & Martens, K. 2015. NGOs as actors in global social governance. In Kaasch, A. & Martens, K. (eds.) *NGOs as actors in global social governance*. Oxford, UK: Oxford University press.

- Kumar, R. 2014. *Research methodology: A step-by-step guide for beginners*. London: Sage.
- Kumi, E.N. 2017. *The electricity situation in Ghana: Challenges and opportunities*. Washington, DC. Center for Global Development.
- Kusumawati, I., Atmadja, I.S., Hasanah, E. & Cahyati, S. 2020. The role of law enforcement agencies in the effort of corruption prevention and eradication in the perspective of progressive law in Indonesia. *International Journal of Psychosocial Rehabilitation*, 24(3):2492-2501.
- Labour Guide. 2023. *Employees have lion's share of legal rights*. From: <https://labourguide.co.za/employment-condition/employees-have-lions-share-of-legal-rights/>. Accessed on 31 August 2023.
- Lamb, G. 2018. Security and sustainable development in Cape Town, South Africa: A case study for the DCAF policy and research division project. Geneva: A Centre for Security, Development & the Rule of Law.
- Lamparello, A. 2019. IQ, Culpability, and the criminal law's gray area: Why the rationale for reducing the culpability of juveniles and intellectually disabled adults should apply to low-IQ adults. Germany: ResearchGate.
- Lawrence, D.S., Gourded, C., Banks, D., Planty, M.G., Woods, D. & Jackson, B.A. 2019. *Prosecutor priorities, challenges and solutions*. California, U.S.A: Rand Corporation.
- Laybourn-Langton, 2016. *Community and local energy: Challenges and opportunities*. London, United Kingdom: Institute for Public Policy Research.
- Lebeya, S.G. 2012. *Defining organised crime: A comparative analysis*. Pretoria: University of South Africa.
- Lee, H., Palmbach, T.M., Primorac, D. & Andelinović, Š. 2014. *Collection and preservation of physical evidence*. Germany: ResearchGate.
- Leedy, P.D. & Ormrod, J.E. 2013. *Practical research: Planning and design*. 10th edition. Boston, MA: Pearson.
- Leedy, P.D. & Ormrod, J.E. 2015. *Practical research: planning and design*. 11th edition. Boston, MA: Pearson.
- Legotlo, T.G. & Mutezo, A. 2018. Understanding the types of fraud in claims to South African Medical schemes. *South African Medical*, 108(4):299-303.

- Letaba Herald. 2018. *Campaign incentivises local illegal electricity users to come clean*. From: <https://letabaherald.co.za/57910/campaign-incentivises-local-illegal-electricity-users-come-clean/>. Accessed on 13 November 2020.
- Lewis, D. 2015. *NGOs and civil society*. From: <https://core.ac.uk/download/pdf/35433237.pdf>. Accessed on 22 April 2021.
- Levin, B. 2019. Mens reform and its discontents. *Criminal Law & Criminology*, 109(3):491-558.
- Lexico. 2020. *Mode*. From: <https://www.lexico.com/definition/mode>. Accessed on 16 July 2020.
- Lin, J. & Magnago, F.H. 2017. *Electricity markets: Theories and applications*. New Jersey: John Wiley & sons. Research.
- Li, R. 2015. *Political parties and party systems*. Germany: ResearchGate.
- Li, J. & Wang, F. 2020. Non-technical loss detection in power grids with statistical profile images based on semi-supervised learning. *Sensors*, 20:1-19.
- Li, Y. & Qi, M. 2019. An approach for understanding offender modus operandi to detect serial robbery crimes. *Journal of Computational Science* 36(2019):101024. doi.org/10.1016/j.jocs.2019.101024.
- Lopez, V. & Whitehead, D. 2013. *Sampling data and data collection in qualitative research*. From: <https://www.ResearchGate.net/publication/255950308>. Accessed on 05 August 2019.
- Loubser, M. 2015. *Unlawfulness in the South African law of delict: Focus areas in the debate*. From: <http://blogs.sun.ac.za/law/files/2015/12/Unlawfulness-in-the-South-African-law-of-delict>. Accessed on 18 June 2020.
- Louw, Q. 2019a. The impact of non-technical losses: A South African perspective compared to global trends. Research Gate: Berlin, Germany.
- Louw, Q. 2019b. Illegal connections in South African power utilities-is it a pervasive problem. ResearchGate: Germany.
- Louw, Q. & Bokoro, P. 2019. An alternative technique for the detection and mitigation of electricity theft in South Africa. *South African Institute of Electrical Engineers*, 110 (4):209-216.
- Luthra, S., Kumar, S., Garg, D. & Haleem, A. 2015. Barriers to renewable -sustainable energy technologies adoption: Indian perspective. *Renewable & Sustainable Energy Reviews*, 41, September:762-776.

- Mabasa, C., Olutola, A. & Mofokeng, J. (2022). The role of social media in combating organised crime in the Limpopo Province, South Africa. *International Journal of Research in Business and Social Science* (2147- 4478), 11(1), 252–262. <https://doi.org/10.20525/ijrbs.v11i1.1553>
- Manning, P.K. 2014. *The role and function of the police*. Boston, United States: Northeastern University.
- Manyaka, R.K. & Nkuna, N.E. 2014. The phenomenon of corruption in the South African public sector: Challenges and opportunities. *Mediterranean Journal of Social Sciences*, 5(27):1572-1580.
- Manyika, G.K. 2016. The rule of law, the principle of legality and the right to procedural fairness: A critical analysis of the jurisprudence of the constitutional court of South Africa. KwaZulu-Natal: University of KwaZulu-Natal.
- Marangoz, C. 2013. *Illegal electricity use in Turkey: Causes and policy implications*. Nashville, Tennessee: Vanderbilt University.
- Marchuk, I. 2014. *The fundamental concept of crime in international criminal law: A comparative law analysis*. New York: Springer.
- Margaryan, L. 2017. *Commercialization of nature through tourism*. Östersund: Mid Sweden University.
- Martin, C., Starace, F. & Tricoire, J.P. 2017. *The future of electricity: New technologies transforming the grid edge*. Geneva, Switzerland: World Economic Forum.
- Masatoshi, K. 2017. World Engineers Summit – Applied Energy Symposium & Forum: Low Carbon Cities & Urban Energy Joint Conference, WES-CUE 2017, 19–21 July 2017, Singapore: Smart and safe energy society. *Energy procedia*, 143, July:880-883.
- Massachusetts Institute of Technology. 2016. *Utility of the future: An MIT energy initiative response to an industry in transition*. Massachusetts: Massachusetts Institute of Technology.
- Mathe, L.S. 2017. Perceptions and attitudes of Centlec maintenance employees towards theft of copper cables. Central University of Technology: Free State.
- Matlhabe, G. 2023. *Eskom raises concerns over acts of intimidation, harassment and violence against technicians*. From: <https://www.iol.co.za/the-star/news/eskom-raises-concerns-over-acts-of-intimidation-harassment>. Accessed on 20 September 2024.

- Martínez-Mesa, J., González-Chica, D.A. & Bastos, J.L. 2014. Sample size: how many participants do I need in my research? *Brazilian Annals of Dermatology*, 89(4) May:609-615.
- Matthews, N.L. 2017. *Levels of measurement*. Research Gate: Berlin, Germany.
- Matuleviciene, M. & Stravinskiene, J. 2015. *The importance of stakeholders for corporate reputation*. Kaunas University of Technology. Germany: ResearchGate.
- Mazibuko, G.P. 2013. The impact of the municipal billing system on revenue collection in selected South African cities. Pretoria: University of Pretoria.
- Mbanjwa, T. 2017. An analysis of electricity theft: The case study of KwaXimba in eThekweni, Kwazulu-Natal. Kwazulu-Natal: University of Kwazulu-Natal.
- Méjean, A. 2019. Static and dynamic characterization of power semi-conductors: Degree project in Electrical engineering, second cycle, 30 credits. Stockholm, Sweden: KTH Royal Institute of Technology.
- Mensah, J.T. 2018. *Jobs! Electricity shortages and unemployment in Africa*. Uppsala-Sweden: Swedish University of Agricultural Sciences.
- Merriam, S.B. & Tisdell, E.J. 2016. *Qualitative research: A guide to design and implementation*. 4th edition. Montgomery: Wiley & Sons.
- Mhaule, Z. 2017. The effects of electricity theft on Eskom distribution in KwaZulu-Natal Operating Unit. KwaZulu-Natal: University of KwaZulu-Natal.
- Mhlanga, P.V. 2016. An analysis of the impact of the admission of hearsay evidence on the accused's right to a fair trial. Pretoria: University of South Africa.
- Minnie, R. 2018. Competition as a means to reform the South African electricity sector. Stellenbosch: Stellenbosch University.
- Modern, H.K. & Palys, T. 2019. *Measuring crime*. From: <https://www.sfu.ca/~palys/Morden&Palys-2019-MeasuringCrime.pdf>. Accessed on 10 August 2020.
- Mohajan, H. 2018. Qualitative research methodology in social sciences and related subjects. *Journal of Economic Development, Environment and People*, 7(1), March:23-48.
- Mokwena, R.J. 2012. The value of photography in the investigation of crime scenes. Pretoria: University of South Africa.
- Monyeki, P. 2021. *Data mining to analyse recurrent crime in South Africa*. Durban, KwaZulu-Natal: Durban University of Technology.

- Moser, A. & Korstjens, I. 2018. Series: Practical guidance to qualitative research. Part 3: Sampling, data collection and analysis. *European journal of general practice*, 24(1):9–18.
- Moshoeu, L.B. 2017. Critical analysis of the right to access electricity for the destitute in South Africa: Issues and Challenges. Turfloop: University of Limpopo.
- Motlagh, N.H., Mohammadrezaei, M., Hunt, J. & Zakeri, B. 2020. Internet of things (IoT) and the energy sector. *Energies*, 13:494-520.
- Mozersky, J., Parsons, M., Walsh, H., Baldwin, K., McIntosh, T. & Du Bois, J.M. 2020. Research participant views regarding qualitative data sharing. *Ethics & Human Research*, 42(2), March:13-27.
- Msunduzi Municipality. 2019. *Msunduzi annual report 2017/2018 draft*. Pietermaritzburg: Msunduzi Municipality.
- Mucheli, N.K., Nanda, U., Nayak, D., Rout, P.K., Swain, S.K., Das, S.K. & Biswal, S.M. 2019. *Smart power theft detection system*. Research Gate: Berlin, Germany.
- Mufassirin, M.M.M., Hanees, A.L. & Shafana, M.S. 2016. Energy theft detection and controlling system model using wireless communication media. *5th Annual Science Research Sessions-2016*, December:123-130.
- Mujuzi, J.D. 2020. Electricity theft in South Africa: Examining the need to clarify the offence and pursue private prosecution? Cape Town: University of Western Cape.
- Municipalities. 2016. *Municipalities*. From: <https://municipalities.co.za/>. Accessed on 10 September 2018.
- Muntingh, L. & Dereymaeker, G. 2013. *Understanding impunity in the South African law enforcement agencies*. Cape Town: Community Law Centre.
- Muntingh, L. 2015. *Arrested in Africa: An exploration of the issues*. Cape Town: Dullar Omar Institute.
- Murombo, T. 2015. Law, regulation, and the promotion of renewable energy in South Africa. Johannesburg: University of Witwatersrand.
- Musungwini, S. 2016. A framework for monitoring electricity theft in Zimbabwe using mobile technologies. *Journal of Systems Integration*, 7(3):54-65.
- Muszynski, M. 2023. *Research questions*. San José, United states: San José State University Writing Center.
- Mutambo, H., Kawimbe, S., Meki-Kombe, C. & Mwange, A. 2023. Impact of electricity loadshedding on operations of small-scale enterprises in selected developing

- countries: a review of literature. *Journal of Economics & Sustainable Development*, 14 (13), August:54-82.
- Muthaphuli, P. 2012. Crime prevention and sentencing: A practical penological perspective. Pretoria: University of South Africa.
- Mutingh, L. & Redpath, J. 2020. *Recommendations for reform of the National Prosecuting Authority*. From: <https://acjr.org.za/resource-centre/npa-recommendations-2-11-2020.pdf>. Accessed on 31 July 2021.
- Myers, G. 2018. *Caught red handed: Using AMI to address power theft wherever it occurs*. From: <https://www.power-grid.com/2018/11/09/caught-red-handed-using-ami-to-address-power-theft-wherever-it-occurs/#gref>. Accessed on 14 December 2019.
- Mzolo, N. 2016. The rule of law, the principle of legality and the test for rationality: A critical analysis of the South African jurisprudence in the light of the separation of powers. KwaZulu-Natal: University of KwaZulu-Natal.
- Naicker, K. 2017. The recruitment and management of agents in undercover drug trafficking criminal investigations. Pretoria: University of South Africa.
- Nakutis, Ž. & Kaškonas, P. 2020. A contemplation on electricity meters in-service surveillance assisted by remote error monitoring. *Energies*, 13:5245-5257.
- National Energy Regulator of South Africa. 2019. *NERSA rules for licensable distribution areas of supply*. Pretoria: Nersa.
- National Prosecuting Authority. 2019. Enquiry in terms of Section 12(6) of the National Prosecuting Authority Act 32 of 1998. Pretoria: National Prosecuting Authority.
- National Treasury of South Africa. 2011. *Local government budgets and expenditure review 2006/07 – 2012/13*. Pretoria: Government printer.
- Ncube, N. 2015. 'Procedures for searching evidence in the investigation of computer-related crime in Bulawayo, Zimbabwe'. Published Doctoral Thesis. Pretoria: University of South Africa.
- Ndlovu, N.A. 2014. 'The admission of hearsay evidence, evidence obtained from entrapment and the interception and monitoring of communications in arbitration proceedings conducted in terms of the Labour Relations Act, 1995'. Published Doctoral Dissertation. KwaZulu-Natal: University of KwaZulu-Natal.
- Nebey, A.H. 2020. Automatic load sharing of distribution transformer for overload protection. *BMC*, 13(17):1-6.

- Neculcea, M. 2017. Testimonial evidence: Perspectives and confluences. *Legal Studies*, 19(33):75-83.
- Nederhand, J. & Klijn, E.H. 2017. Stakeholder involvement in public-private partnerships: its influence on the innovative character of projects and on project performance. *Administration and society*, 51, December:1-27.
- Neethling, J. & Potgieter, J.M. 2018. Foreseeability: Wrongfulness and negligence of omissions in delict – the debate goes on MTO Forestry (Pty) Ltd v Swart No 2017 5 SA 76 (SCA). *Journal of Juridical science*, 43(1):145-161.
- Nel, D. 2018. An assessment of emerging hybrid public-private partnerships in the energy sector in South Africa. *International Journal of Economics and Finance Studies*, 10(1):33-49.
- Networked Energy Services. 2020. *Energy theft and fraud reduction*. From: <https://networkedenergy.com/en/news-events/energy-theft-and-fraud-reduction>. Accessed on 22 August 2020.
- Newbery, D. & Eberhard, A. 2008. *South African network infrastructure: Electricity*. Pretoria: Government printer.
- Ngcobo, N.F. 2022. The crime prevention role of street committees in selected townships in the eThekweni Municipal area. KwaZulu-Natal: KwaZulu-Natal University.
- Ngulube, P. 2015. Qualitative data analysis and interpretation: Systematic search for meaning. Germany: ResearchGate.
- Nikonowicz, J., Kubczak, P. & Matuszewski, L. 2016. Hybrid detection based on energy and entropy analysis as a novel approach for spectrum sensing. *International Conference on Signals and Electronic Systems (ICSES)*, Krakow, September: 206-211.
- Njotini, M.N. 2016. Re-positioning the law of theft in view of recent developments in ICTS-the case of South Africa. *Potchefstroom Electronic Law Journal/ Potchefstroomse Elektroniese Regsblad* 19(1):1016.
- Nkabane, P. 2017. *Illegal electricity disconnected*. From: http://www.durban.gov.za/Resource_Centre/new2/Pages/Illegal-electricity-disconnected.aspx. Accessed on 13 September 2020.
- Nkashe, M.S. 2015. *The role of the investigator in the prosecution process*. Pretoria: University of South Africa.

- Nkosi, N.P. & Dikgang, J. 2018. *Pricing electricity blackouts among South African households*. Pretoria: Economic Research Southern Africa.
- Nkukwana, Z.W. 2016. *The rights of victims of crime in South Africa*. Port Elizabeth: Nelson Mandela Metropolitan University.
- Noor, S., Tajik, O. & Golzar, J. Simple random sampling. *International Journal of Education & Language Studies*, 1(2), December:78-82.
- Nordier, J.P. 2020. *Aspirant prosecutor programme: Study guide*. Pretoria: National Prosecuting Authority.
- Northern Highlands. 2023. *Electric circuits*. <https://www.northernhighlands.org/cms/lib>. Accessed on 20 April 2023.
- Nortjé, J.G.J. & Myburgh, D.C. 2018. Search and seizure of digital evidence by forensic investigators in South Africa. Potchefstroom: University of North-West.
- O'Brien, D. & Rantis, C.P. 2012. *Essentials of demonstrative evidence*. Springfield, Illinois: Illinois Association of Defense Trial Counsel.
- Office of the District Attorney. 2012. *The elements of a crime*. From: https://saylordotorg.github.io/text_criminal-law/s08-the-elements-of-a-crime.html. Accessed on 10 May 2020.
- Okafor, C., Uzoamaka, O.E. & Iloanya, K. 2015. An analysis of the policy framework on electricity in South Africa: A public interest approach. *International Journal of Arts & Humanities*, 4(1), March:148-167.
- Okur, P. 2020. Criminal law general provisions course notes. Germany: ResearchGate.
- Olaborede, A. & Meintjes-van der Walt, L. 2020. *The dangers of convictions based on a single piece of forensic evidence*. Alice, Eastern Cape: University of Fort Hare.
- Onat, N. 2018. Electricity theft problem and effects of privatization policies on distribution losses of Turkey. *Celal Bayar University Journal of Science*, 14(2):163-176.
- Open University. 2020. *Substantive justice*. From: <https://www.open.edu/openlearn/ocw/mod/oucontent/>. Accessed on 12 September 2020.
- Opperman, S.K. 2014. Perceptions on fraud and corruption policies and strategies in public procurement within the Western Cape provincial treasury (WCPT). Western Cape: Stellenbosch University.

- Oprisor, T., Tiron-Tudor, A. & Nistor, C.S. 2016. The integrated reporting system: a new accountability enhancement tool for public sector entities. *Audit financial*, 7(139):749-762.
- Ornes, S. 2019. *Energy scavengers: Static electricity could power the world*. From: <https://www.discovermagazine.com/technology/energy-scavengers-static-electricity-could-power-the-world>. Accessed on 20 February 2020.
- Osterburg, J.W. & Ward, R.H. 2015. *Criminal investigation: A method for reconstructing the past*. 7th edition. New York: Routledge.
- Owusu, P.A. & Asumadu-Sarkodie, S. 2016. A review of renewable energy sources, sustainability issues and climate change mitigation. *Cogent Engineering*, 3:1-14.
- Organisation for Economic Co-operation and Development (OECD). 2018. *A chain reaction: Disruptive innovation in the electricity sector*. From: <https://www.oecd.org/competition/A-chain-reaction-disruptive-innovation-in-the-electricity-sector.pdf>. Accessed on 07 June 2021.
- Otchere-Appiah, G., Takahashi, S., Yeboah, M.S. & Yoshida, Y. 2021. The impact of smart prepaid metering on non-technical losses in Ghana. *Energies*, 14, March:1852-1867.
- Otuoze, A.O., Mustafa, M.W., Mohammed, O.O., Saeed, M.S., Surajudeen-Bakinde, N.T. & Salisu, S. 2019. *Electricity theft detection by sources of threats for smart city planning*. Germany: ResearchGate.
- Pace, D.S. 2021. Probability and non-probability sampling-an entry point for undergraduate researchers. *International Journal of Quantitative and Qualitative Research Methods*, 9(2), May:1-15.
- Panko, B. 2017. *New invention puts the power of static in your pocket*. From: <https://www.smithsonianmag.com/innovation/new-invention-puts-power-static-your-pocket-180963482/>. Accessed on 20 February 2020.
- Papadimitrou, C.N., Messins, G. & Hatziaargyriou, N.D. 2017. *Non-technical losses: detection methods and regulatory aspects overview*. Research Gate: Berlin, Germany.
- Parbhoo, N., Pillai, J. & Madhoo, H. 2011. *The effectiveness of the Judicial System and its enforcement in successfully prosecuting electricity offenders*. From: <http://web.vdw.co.za/Portals/25/Documents/Papers/2009/10.%20Nerita%20Parbhoo.pdf>. Accessed on 02 September 2018.

- Pardede, P. 2018. *Identifying and formulating the research problem*. Jakarta, Indonesia: Universitas Kristen Indonesia.
- Pardhoothman, S. 2015. *An analysis of the modus operandi of perpetrators in human trafficking*. Pretoria: University of South Africa.
- Pardo, M.S. 2015. *The law of evidence and the practice of theory*. Philadelphia, Pennsylvania: University of Pennsylvania.
- Pargal, S. & Barnerjee, S.G. 2014. *More power to India: The challenge of electricity distribution*. Washington DC: The World Bank.
- Parker, M. 2015. *Combating power theft*. Johannesburg: Pagemark Africa.
- Paton, C. 2019. *Gwede Mantashe moves on electricity crisis*. From: <https://www.businesslive.co.za/bd/national/2019-12-10-gwede-mantashe-moves-urgently-on-electricity-crisis/>. Accessed on 25 February 2020.
- Parliament of Australia. 2006. *Pathways to technological innovation: House of representatives standing committee on science and innovation*. Canberra: Australia.
- Penn Foster College. 2019. *Nature of electronics: Nature of electricity*. Pennsylvania: Penn Foster.
- Perera, H., Arumapperumas, S. & Munasinghe, M. 2014. *Criminal short-listing and crime forecasting based on modus operandi*. ResearchGate: Germany.
- Petrovych, K.B. 2018. *Fault in tort law: Moral justification and mathematical explication*. Ukraine, Kharkiv: Yaroslav Mudryi National Law University.
- Pew Charitable. 2016. *The smart grid: how energy technology is evolving*. From: <https://www.pewtrusts.org/en/research-and-analysis/issue-briefs/2016/02/the-smart-grid-how-energy-technology-is-evolving>. Accessed on 28 February 2020.
- Phalatse, S. 2020. *Eskom: The roots of a crisis and avenues forward*. Johannesburg: Institute for Economic Justice.
- Phiri, B. 2014. *A critical investigation into how the corroborative evidence 'rule' in rape and defilement cases traumatises and violates the rights of women and girls who are victims of rape and defilement in Zambia: A study carried out in Lusaka City of Zambia*. Harare, Zimbabwe: University of Zimbabwe.
- Picinali, F. 2022. *Acquittal vs conviction*. Illinois, Aurora University.
- Pless, J. 2014. *Bribes, bureaucracies, and blackouts: Towards understanding how corruption impacts the quality of electricity supply to end-users in transition and developing economies*. Golden, Colorado: Colorado School of mines.

- Polanin, J.R., Tanner-Smith, E.E. & Hennessy, E.A. 2016. *Estimating the difference between published and unpublished effect sizes: A meta-review*. Nashville, Tennessee: Vanderbilt University.
- Polokwane Municipality. 2020. *Polokwane municipality gives amnesty for illegal connections*. From: <https://www.polokwane.gov.za/>. Accessed on 19 August 2020.
- Prakash, T. 2015. *Power theft prevention in distribution system using smart devices*. Germany: ResearchGate.
- Prendergast, D. 2020. Recklessness without the risk. *Criminal Law & Philosophy*, 14:31-50.
- Pretorius, J. 2019. *Impact of poor revenue collection and non-technical losses on utilities*. From: <https://www.ee.co.za/article/impact-of-revenue-collection-and-non-technical-losses.html>. Accessed on 21 March 2020.
- Punch, K.F. 2014. *Introduction to social research: Quantitative and qualitative approaches*. 3rd edition. London: Sage.
- Putri, M. 2020. Indonesian Criminal law assignment: Dolus & culpa. Germany: ResearchGate.
- Răducu, L.D. 2019. The legal consequences of the constitutional court's decisions in the context of the legality principle of the criminal procedure. Bucharest, Romania: University of Bucharest.
- Ratshomo, K. & Nembahe, R. 2018. *South African energy sector*. Pretoria: Department of Energy.
- Rautenbach, C. & Matthee, J. 2011. *Common law crimes and indigenous customs dealing with issues in South African law*. ResearchGate: Berlin, Germany.
- Razavi, R. & Fleury, M. 2019. Socio-economic predictors of electricity theft in developing countries: An Indian case study. *Energy for Sustainable Development*, 49(5), April:1-10.
- Redaelli, C. 2013. *Tackling electricity theft-Consultation*. From: <https://www.ofgem.gov.uk/ofgem-publications/75268/20130703tackling-electricity-theft.pdf>. Accessed on 07 July 2020.
- Reddy, D. 2019. Understanding the legal principle of dolus eventualis in the context of fatalities arising from motor vehicle collisions. KwaZulu-Natal: University of KwaZulu-Natal.

- Rees, W. 2015. *Economics vs Economy*. From: https://greattransition.org/images/Rees-Economics-vs-Economy_1.pdf. Accessed on 24 March 2021.
- Reiter, B. 2017. *Theory and methodology of exploratory social research*. From <https://www.semanticscholar.org/paper/Theory-and-Methodology-of-Exploratory-Social-Reiter/f49ef5c1c8219589b906ce5f1221c40832aee805>. Accessed on 03 September 2022.
- Ricketts, M. 2020. The case of the overloaded electrical circuit. *Professional Safety*, 65(1), January:52-55.
- Riffe, D., Lacy, S. & Fico, F. 2014. *Analysing media messages using quantitative content analysis in research*. 3rd edition. New York: Routledge.
- Roberts, R.E. 2020. Qualitative Interview Questions: Guidance for Novice Researchers. *The Qualitative Report*, 25(9).
- Roodt, M. 2018. *Economic empowerment for the disadvantaged: a better way to empower South Africa's poor*. Johannesburg: South African Institute of Race Relations.
- Roos, E. & Rasool, S. 2019. *You go to campus with fear and come back with fear: university students' experiences of crime*. From: <https://journals.assaf.org.za/index.php/sacq/article/view/4895/878&usg>. Accessed on 05 November 2020.
- Rubino, A. 2016. Energy transmission and distribution: A power theft in India. *Energy Policy*, 93, April:127-136.
- Saeed, M.S., Mustafa, M.W., Hamadneh, N.N., Alshammari, N.A., Sheikh, U.U., Jumani, T.A., Khalid, S.B.A. & Khan, I. 2020. Detection of non-technical losses in power utilities: A comprehensive systematic review. *Energies*, 13:4742-4741.
- Safehouse. 2018. *A Safehouse guide to the regulation of electrical products in South Africa*. From: <https://www.voltex.co.za/wp-content/uploads/2018/07/A-SAFE-house-Guide-to-the-Regulation-of-Electrical>. Accessed on 09 January 2021.
- Safer Spaces. 2020. *What is the situation in South Africa?* From: <https://www.saferspaces.org.za/understand/entry/what-is-the-situation-in-south-africa>. Accessed on 10 October 2020.
- Sage Publications. 2017. *The role of evidence in criminal investigations*. Thousand Oaks, California: Sage.

- Sage Publications. 2018. *The purpose of research*. From: https://us.sagepub.com/sites/default/files/upm-assets/83269_book_item_83269.pdf. Accessed on 23 December 2023.
- Sage Publications. 2020. *An introduction to crime and the criminal justice system*. From: <https://us.sagepub.com/sites/default/>. Accessed on 16 June 2021.
- Saini, S. 2017 Social and behavioural aspects of electricity theft: An explorative review. *International Journal of Research in Economics and Social Sciences (IJRESS)*, 7(6), June:26-37.
- Saini, S. 2018. Electricity theft-a primary cause of high distributing losses in Indian state. *Management & Commerce*, 5, January:187-203.
- Saleh, G., Alizadeh, R. & Dalili, A. 2020. Why the electron is negatively charged and the proton is positively? *International Journal of Science & Technology*, 6(1):26-32.
- Santee, D.S. 2012. *More than words: rethinking The role of modern demonstrative evidence*. California: Santa Clara University.
- Santos, R.B. 2014. The effectiveness of crime analysis for crime reduction: Cure diagnosis? *Journal of Contemporary Criminal Justice*, 30(2), May:147-168.
- Saputra, N. 2021. *Research framework and conceptualisation in social research*. Jakarta, Indonesia: Universitas Muhammadiyah Jakarta.
- Sardar, S. & Ahmad, S. 2015. *Detecting and minimising electricity theft: A review*. Research Gate: Berlin, Germany.
- Scherman, J. 2019. 20 Types of Evidence You May Encounter as a Paralegal. <https://www.rasmussen.edu/degrees/justice-studies/blog/types-of-evidence/>. Accessed on 11 October 2020.
- Schneider, J., Ghetas, S., Merdaci, N., Brown, M., Martyniuk, J., Alshehri, W. & Trojan, A. 2013. Towards sustainability in the oil and gas sector: Benchmarking of environmental, health, and safety efforts. *Environmental Sustainability*, 3(3):103-117.
- Schönteich, M. 2014. *Strengthening prosecutorial accountability in South Africa*. Pretoria: Institute for Security Studies.
- Schweppe, F.C., Caramanis, M.C., Tabors, R.D. & Bohn, R.E. 2013. *Spot pricing of electricity: Business & economics*. London: Kluwer.

- Scott, A. & Seth, P. 2013. The political economy of electricity distribution in developing countries: A review of the literature. London, UK: UK Department for International Development (DFID).
- Sguazzin, A. & Burkhardt, P. 2020. *Gwede Mantashe accused of hindering efforts to tackle SA's electricity crisis*. From: <https://www.fin24.com/Economy/Eskom/gwede-mantashe-accused>. Accessed on 25 February 2020.
- Shahid, M.B., Shahid, M.O., Tariq, H. & Saleem, S. 2019. Design and development of an efficient power theft detection and prevention system through consumer load profiling. *Proc. of the 1st International Conference on Electrical, Communication and Computer Engineering (ICECCE) 24-25 July 2019, Swat, Pakistan*.
- Sheptycki, J. 2017. The police intelligence division-of-labour. *Policing & Society*, 27(6):620-635.
- Sherman, L.W., Williams, S., Ariel, B., Strang, L.R., Wain, N., Slothower, M. & Norton, A. 2014. An integrated theory of hot spots patrol strategy: implementing prevention by scaling up and feeding back. *Journal of Contemporary Criminal Justice*, 30(2):95-122.
- Shinabarger, N. 2017. Literacy and Criminality. The idea of an essay, *Journal of Contemporary Criminal Justice* 4(29):156-167.
- Shokoya, N.O. & Raji, A.K. 2019a. Electricity theft: A reason to deploy smart grid in South Africa. *Proceedings of the 27th Domestic Use of Energy Conference, 25-27 March 2019, Wellington*.
- Shokoya, O. & Raji, A. 2019b. Electricity theft mitigation in the Nigerian power sector. Germany: *International Journal of Engineering & Technology*, 8(4):467-472.
- Shukla, S. 2020. *Concept of population and sample*. Ahmedabad, India: Gujarat University.
- Sibuyi, B. 2021. *Phalaborwa: Eskom loses R5.1m revenue*. From: <https://farnorthbulletin.co.za/2021/05/25/phalaborwa-eskom-loses-r5-1m-revenue/>. Accessed on 25 May 2021.
- Silber, G. & Geffen, N. 2016. Silber, Race, class and violent crime in South Africa: Dispelling the 'Huntley thesis'. Germany: ResearchGate.
- Sileyew, K.J. 2019. Research design and methodology. From: <https://books.google.co.za/books?hl=en&lr=&id=eqf8DwAAQBAJ&oi=fnd&pg=PA27&dq=Research+approach,+design+pdf&ots=cLM45R9gN8&sig=DrWVJXqzXB4VNos8llqO-EL4CII#v=onepage&q&f=false>. Accessed on 20 December 2023.

- Simiti, M. 2017. *Civil society and the economy*. Germany: ResearchGate.
- Simonov, M. 2014. Hybrid scheme of electricity metering in smart grid. *IEEE Systems*, 8(2), June:422-429.
- Singh, S. 2019. *Purpose and process of research*. Bhubaneswar, Odisha, India: Kalinga Institute of Industrial Technology (KIIT) University.
- Singh, H.N. 2021. Crime investigation. *International Journal of Science and Research (IJSR)*, 10(11), November:642-648.
- Skripak, S., Parsons, R., Cortes, A. & Walz, A. 2016. *Fundamentals of Business*. Blacksburg: Pamplin College of Business.
- Sløk-Maden, S., Ritter, S. & Sornn-Friese, H. 2017. Commercialisation in innovation management: defining the concept and a research agenda. *Academy of Management Proceedings*, (1):1-38.
- Smart Energy International. 2018. *Meter tampering accused sentenced*. From: <https://www.smart-energy.com/industry-sectors/smart-meters/meter-tampering-accused-sentenced/>. Accessed on 28 August 2020.
- Smart Energy International .2020. *Energy theft and fraud reduction*. From: <https://www.smart-energy.com/industry-sectors/energy-grid-management/energy-theft-and-fraud-reduction/>. Accessed on 11 September 2020.
- Smith, T.B. 2004. Electricity theft: A comparative analysis. *Energy Policy*, 32:2067–2076.
- Snyman, C.R. 2008. *Criminal law*. 5th edition. Lexis Nexis Durban.
- Soffar, H. 2019. Static electricity and dynamic electricity. From: <https://www.online-sciences.com/wp-content/uploads/2015/01/static-electricity-and-dynamic-electricity-1.jpg>. Accessed on 29 February 2020.
- Stahl, N.A. & King, J.R. 2020. Expanding approaches for research: Understanding and using trustworthiness in qualitative research *Journal of Developmental Education*, 44(1):26-28.
- Strambo, C., Burton, J. & Atteridge, A. 2019. *The end of coal?: Planning a “just transition” in South Africa*. Cape Town: Stockholm Environment Institute.
- Soeparna, I. 2015. An analysis of the role of economic actors in the WTO dispute settlement system: Legal or political issue? Germany: ResearchGate.
- Solomon, P.H. 2015. *Law and courts in authoritarian states*. Toronto: University of Toronto.
- South Africa. 1977. *Criminal Procedure Act 51 of 1977*. Pretoria: Government printer.

South Africa. 1987. *Electricity Act 41 of 1987*. Pretoria: Government printer.

South Africa. 1993. *Occupational Health and Safety Act 85 of 1993*. Pretoria: Government printer.

South Africa. 1995. *South African Police Service Act 68 of 1995*. Pretoria: Government printer.

South Africa .1996. *The Constitution of the Republic of South Africa Act 108 of 1996*. Pretoria: Government Printer.

South Africa. 1998. *The Prevention of Organised Crime Act 121 of 1998*. Pretoria: Government Printer.

South Africa. 2000. *Municipal Systems Act 32 of 2000*. Pretoria: Government Printer.

South Africa. 2002. *Electronic Communications and Transactions Act 25 of 2002*. Pretoria: Government Printer.

South Africa. 2006. *Electricity Regulation Act 4 of 2006*. Pretoria: Government printer.

South Africa. 2008. *National Energy Act 32 of 2008*. Pretoria: Government printer.

South Africa. 2015. *Criminal Matters Amendment Act No. 18 of 2015*. Pretoria: Government printer.

South African Tax Guide. 2015. South Africa political map. From: <https://www.sataxguide.co.za/south-africa-political-map/>. Accessed on 10 September 2018.

South African Government. 2023. *National Crime Prevention Strategy: Summary*. From: <https://www.gov.za/documents/national-crime-prevention-strategy-summary>. Accessed on 20 September 2023.

South African Institute of Race Relations (SAIRR). 2019. *SA's unemployment crisis: no end in sight*. Pretoria: South African Institute of Race Relations.

South African Law Reform Commission. 2015. *The review of the law of evidence: Discussion paper 131 on the review of the law of evidence*. Pretoria: SALRC.

South African Police Service. 2017. *SAPS Annual Report 2017/2018*. Pretoria: South African Police Service.

South African Police Service. 2018. *SAPS Annual Report 2017/2018*. Pretoria: South African Police Service.

South African Police Service. 2020. *Crime statistics: Crime situation in the Republic of South Africa-quarter three (October to December 2020)*. Pretoria: South African Police Service.

- South African Revenue Service. 2021. *What is tax crime?* From: <https://www.sars.gov.za/targeting-tax-crime/what-is-a-tax-crime/>. Accessed on 19 September 2023.
- Splynx. 2019. *ISP Framework*. From: <https://splynx.com/wp-content/uploads/2019/04/Billing-Engine.pdf>. Accessed on 27 February 2020.
- Stark, F. 2019. *The reasonableness in recklessness*. Cambridge, UK: University of Cambridge.
- Statistics South Africa. 2017. *Electricity: Big business for municipalities*. From: <http://www.statssa.gov.za/?p=10186>. Accessed on 01 September 2018.
- Statistics South Africa. 2018. *Electricity: Coal use inches lower as solar, wind and diesel rise*. from: <https://www.statssa.gov.za/?p=11292>. Accessed on 18 April 2023.
- Steadman, K.U. 2011. *Essays on electricity theft*. New York: State University of New York.
- Stoian, A. & Drăghici, T. 2015. The principle of legality, principle of public law. *International Conference Knowledge-Based Organisation*, 21(2):512-515.
- Suhail, S.M., Ahmed, A.D., Aamir, P.J. & Ranjan, P. 2017. *Prevention of illegal distribution line tapping*. Germany: ResearchGate.
- Sulla, L., Victor, S. & Zikhali, P. 2018. *Overcoming poverty and inequality in South Africa: An assessment of drivers, constraints and opportunities (English)*. Washington, DC: World Bank.
- Swales, L. 2018a. *An analysis of the regulatory environment governing electronic Evidence in South Africa: Suggestions for reform*. Cape Town: University of Cape Town.
- Swales, L. 2018b. *An analysis of the regulatory environment governing hearsay electronic evidence in South Africa: Suggestions for reform – part two*. Kwa-Zulu Natal: University of KwaZulu-Natal.
- Swanepoel, M. 2017. *Polokwane Municipality to conduct audit on prepaid electricity meters*. From: <https://reviewonline.co.za/213081/polokwane-municipality-conduct-audit-prepaid-electricity-meters/>. Accessed on 12 August 2018.
- Swanepoel, A.P. & Meiring, J. 2018. *Adequacy of law enforcement and prosecution of economic crimes in South Africa*. Pretoria: University of South Africa.
- Taherdoost, H. 2022. *What are different research approaches? Comprehensive review of qualitative, quantitative and mixed method research, their applications,*

- types, and limitations. *Journal of management science & engineering research*, 5(1), March:53-63.
- Tahseen, S. & Karney, B.W. 2017. Reviewing and critiquing published approaches to the sustainability assessment of hydropower. *Renewable & Sustainable Energy*, 67:225-234.
- Talagala, P.D., Hyndman, J. & Smith-Miles, K. 2019. *Anomaly detection in high dimensional data*. Australia: Monash University.
- Tandwa, L. 2017. *Electricity theft kingpin sentenced to 42 years*. From: <https://www.news24.com/SouthAfrica/News/electricity-theft-kingpin-sentenced-to-42-years-20170523>. Accessed on 11 August 2018.
- Technical Learning College. 2019. *Basic electricity: Continuing education professional development course*. From: [https://www.abctlc.com/downloads/courses/Basic Electricity.pdf](https://www.abctlc.com/downloads/courses/Basic%20Electricity.pdf). Accessed on 28 February 2020.
- Tembely, M. 2015. Engineering and engineering technology: What is the difference? *International Journal of Engineering Technology & Computer Research*, 3(4), August: 82-84.
- Thangalakshmi, P. 2015. Power theft prevention in distribution system using Smart devices. *International Journal of Applied Engineering Research*, 10(42):30841-30845.
- Theofanidis, D. & Fountouki, A. 2018. Limitations and delimitations in the research process. *Perioperative Nursing*, 6(3), December:155-162.
- Thompson II, R.M. 2016. *Mens rea reform: A brief overview*. Washington D.C., US: Congressional Research Service.
- Tomasi, J., Warren, C., Kolodzey, L., Pinkney, S., Guerguerian, A., Kirsch, R., Hubbert, J., Sperling, C., Sutton, P., Laussen, P. & Trbovich, P. 2018. *Convergent parallel mixed-methods study to understand information exchange in paediatric critical care and inform the development of safety enhancing interventions: a protocol study*. From: <http://dx.doi.org/10.1136/bmjopen-2018-023691> (Accessed: 2023-02-19).
- Tompson, L., Steinbach, R., Johnson, S.D., The, C.S., Perkins, C., Edwards, P. & Armstrong, P. 2022. *Absence of street lighting may prevent vehicle crime, but spatial and temporal displacement remains a concern*. Germany: ResearchGate.
- Tortajada, C. 2016. Nongovernmental Organizations and influence on Global public policy. *Asia & the Pacific Policy Studies*, 3(2):266–274.

- Tshikomba, S.C. 2020. *Curbing electricity theft using wireless technique with communication constraints*. From: <https://openscholar.dut.ac.za/bitstream/10321/3468/2/09183812.pdf>. Accessed on 21 July 2021.
- United Nations. 2013. Department of economic and social affairs world economic and social survey 2013: Sustainable development challenges. New York: United Nations.
- United Nations. 2021a. Digital technologies for a new future. Santiago: United Nations.
- United Nations. 2021b. Technology and innovation report 2021: Catching technological waves-innovation with equity. Geneva: United Nations Conference on Trade & Development.
- United Nations Office on Drugs and Crime (UNODC). 2011. *Handbook on police accountability, oversight and integrity*. New York: United Nations.
- United Nations Office on Drugs and Crime (UNODC). 2014. The status and role of prosecutors. A united nations office on drugs and crime and international association of prosecutors' guide. New York: United Nations.
- United Nations Office on Drugs and Crime. 2019. *Maritime crime: A manual criminal justice practitioners*. Vienna: United Nations.
- United Nations Office on Drugs and Crime. 2020. Implementation of the United Nations convention against transnational organised crime: Needs assessment tools. New York: United.
- United Nations Office on Drugs and Crime (UNODC). 2020. *Handbook of restorative justice programmes*. Second edition. Vienna: United Nations.
- United Nations Statistics Division. 2015. *Concepts and definitions*. From: <https://unstats.un.org/unsd/energy/Eprofiles/2015/03.pdf>. Accessed on 11 February 2020.
- University of Cape Town. 2020. *Introduction to law school*. Cape Town: University of Cape Town.
- University of Colorado Boulder. 2019. *What is electricity. Teach engineering*. From: https://www.teachengineering.org/lessons/view/ucd_electricity_lesson01. Accessed on 14 February 2020.
- University of Pittsburgh. 2020. *Why Commercialise?* From: <https://www.innovation.pitt.edu/innovators/why-commercialize/>. Accessed on 21 February 2020.

- University of Pretoria. 2020. *General rules and regulations*. Pretoria: University of Pretoria.
- University of South Africa (UNISA). 2016. *Policy on research ethics*. Pretoria: UNISA.
- Utility Regulator. 2018. *Energy theft codes of practice*. From: <https://www.uregni.gov.uk/sites/uregni/files/media-files/2018-03-20>. Accessed on 13 October 2020.
- Van der Bijl, C. 2018. Parental criminal responsibility for the misconduct of their children: A consideration. Pretoria. Pretoria: University of South Africa.
- Van der Linde, D. 2020. *Criminalisation of gang activity in South Africa*. Cape Town: University of Cape Town.
- Van der Meulen, H.G. 2011. Civil liability of Eskom and municipalities in light (or lack thereof) of load shedding. Pretoria: University of Pretoria.
- Van der Watt, M., Van Graan, J. & Labuschagne, C. 2014. Modus operandi, signature and fantasy as distinctive behaviour: Fundamental considerations in the case linkage of child rape cases. *Child Abuse Research: A South African Journal*, 15(1), January:61-72.
- Van Dyck, C.K. 2017. *Concept and definition of civil society sustainability*. Washington, DC: Centre for strategic & International studies
- Vanson, S. 2014. *What on earth are Ontology and Epistemology?* From: <https://theperformancesolution.com/earth-ontology-epistemology/>. Accessed on 22 October 2018.
- Van Tonder, G.P. 2013. The admissibility and evidential weight of electronic evidence in South African legal proceedings: A comparative perspective. Cape Town: University of Western Cape.
- Van Verseveld, A. 2012. *Mistake of law. Excusing perpetrators of international crimes*. Amsterdam, Netherlands: University of Amsterdam.
- Varney, H., De Silva, S. & Raleigh, A. 2019. Guiding and protecting prosecutors: comparative overview of policies guiding decisions to prosecute. *International Centre for Transitional Justice (ICTJ)*. New York, US: ICTJ.
- Vasileiou, K., Barnett, J., Thorpe, S. & Young, T. 2018. Characterising and justifying sample size sufficiency in interview-based studies: Systematic analysis of qualitative health research over a 15-year period. *BMC Medical Research Methodology*. From: <https://doi.org/10.1186/s12874-018-0594-7>. Accessed on 01 February 2020.

- Veresha, R.V. 2016. Determination motive through the prism of the general concept of the motives of human behaviour. *Environmental & Science Education*, 11(11):4739-4750.
- Viljoen, E. 2018. Statement taking by police officers from persons with complex communication needs who report being a victim of crime. Pretoria: University of Pretoria.
- Volmink, J. & Van der Elst, L. 2017. The evolving role of 21st century education NGOs in South Africa: Challenges and opportunities. Centurion: National Education Collaboration Trust.
- Von Caues, S., Herbst, C.I. & Wadee, S.A. 2018. A retrospective review of fatal electrocution cases at Tygerberg forensic pathology services, Cape Town, South Africa, over the 5-year period 1 January 2008 - 31 December 2012. *South African Medical*, 108(12):1042-1045.
- Walls, R.S., Eksteen, R., Kahanji, C. & Cicione, A. 2019. Appraisal of fire safety interventions and strategies for informal settlements in South Africa. *An International Journal of Disaster Prevention and Management*, 28 (3): 343-358.
- Ward, S. & Walsh, V. 2010. Cape Town energy case study: "Energy for large cities" World energy council study. Cape Town: City of Cape Town.
- Weidenstedt, L. 2017. Sweden: A sociology of empowerment: the relevance of communicative contexts for workplace change. Stockholm, Sweden: Stockholm University.
- Wessels, A.B. 2018. Developing the South African law of delict: the creation of a statutory compensation fund for crime victims. Stellenbosch: Stellenbosch University.
- Williams, M.W. 2012. What creates static electricity? *American Scientist*, 100(4):316-323.
- Williams, G. 2020. Taking responsibility for negligence and non-negligence. *Criminal Law, Philosophy* 14:113–134.
- Wilson, W. 2016. *Criminal Law*. London, UK: University of London.
- Winther, T. 2012. Electricity theft as a relational issue: A comparative look at Zanzibar, Tanzania, and the Sunderban Islands, India. *Energy for Sustainable Development*, 16(1):111-119.
- Woodford, C. 2018. *Energy*. From: <https://www.explainthatstuff.com/energy.html>. Accessed on 15 September 2018.

- Woolman, S. & Bishop, M. 2013. Constitutional law of South Africa. 2nd edition. *Revision Service 5*, January: [RS 5: 01–13]- [RS 4: 03–12].
- World Bank Group. 2017. *Formalising the electricity grid connection*. From: <https://www.innovationpolicyplatform.org/www.innovationpolicyplatform.org>. Accessed on 03 September 2021.
- Worthington, N.M. 2014. *Scholarly versus non-scholarly sources*. <https://writing.ecu.edu/wp-content/pv-uploads/sites/175/2019/04/Scholarly-vs-Non-Scholarly-Sources.pdf>.
- Xiao, L., Huijie, C., Jia, S., Huiyan, C., Yingying, Y., Hua, W., Ling, J., Jianchun, X., Hainan, S. & Jingxin, J. 2018. Discussion on common electricity stealing methods and preventive measures of user electric energy measurement. *Advances in Engineering Research*, 152:364-367.
- Xue, Y., Cai, B., James, G., Dong, Z., Wen, F. & Xue, F. 2018. Primary energy congestion of power, *Modern Power Systems & Clean Energy*, 2(1):39-49.
- Yakubu, O. & Narendra, B.C. 2017. Type and nature of electricity theft: A case study of Ghana. *International Journal of Mechanical Engineering and Technology (IJMET)* 8(10):170–179.
- Yurtseven, Ç. 2015. The causes of electricity theft: An econometric analysis of the case of Turkey. *Utilities Policy*, 37:70-78.
- Zheng, K., Wang, Y., Chen, Q. & Li, Y. 2017. *Electricity theft detecting on density-clustering method*. From: <https://ieeexplore.ieee.org/document/8378347>. Accessed on 05 October 2020.
- Zikmund, W.G., Babin, B.J., Carr, J.C. & Griffin, M. 2013. *Business research methods*. 9th edition. Canada: Cengage learning.
- Zohuri, B. 2016. Electricity, an essential necessity in our life. Germany: ResearchGate.

COURT DECIDED CASES

- Dlamini & Another v State* (A225/2016) [2017] ZAGPPHC 215 [20 April 2017].
- Lekwa Rate Payers Association NPC v Eskom Holdings SOC Ltd and Others* (31813/20) [2020] ZAGPPHC 429 (28 August 2020).
- Masetlha v President of the Republic of South Africa and Another* (CCT 01/07) [2007] ZACC 20; 2008(1) SA 566 (CC); 2008(1) BCLR 1 (3 October 2007).
- Masiya v Director of Public Prosecutions Pretoria (The State) and Another* (CCT54/06) [2007] ZACC 9; 2007(5) SA 30 (CC); 2007(8) BCLR 827 (10 May).

S v Harper and Another, 1981(2) SA 638 at 664.

S v Mintoor, 1996(1) SACR 514 (C) at 515.

S v Ndebele and Another (SS16/2010) [2011] ZAGPJHC 41; 2012(1) SACR 245 (GSJ); 2012(3) SA 226 (GSJ) (21 February 2011).

S v Scoulides, decided in the 50's (1956(2) SA 388 (AD) at 394 G).

ANNEXURES

9.1 ANNEXURE A (1): SAMPLE A1 INTERVIEW SCHEDULE (ESKOM SECURITY AND INVESTIGATIONS PERSONNEL)

INTERVIEW SCHEDULE: SAMPLE A1

PARTICIPANT NUMBER: _____

TOPIC: AN EXPLORATIVE STUDY OF ELECTRICITY THEFT IN LIMPOPO

I am Kate Iketsi Masango a post graduate student that is currently busy conducting research for the degree - "Doctor of Philosophy in Criminal Justice: Police Science, Forensic Science and Technology (PFS)" at the University of South Africa. My supervisor is Dr Juanida Home who can be contacted at the university on 012 433 9415 with regards to any matters pertaining to my research.

The aim of the research is to establish if the adequate application of laws governing crime in South Africa, as compared to relying on engineering technology, can assist in curbing electricity theft in Limpopo. The following research questions will be answered in this study:

Research question 1: What is the nature and extent of electricity theft?

Research question 2: How is electricity theft interpreted in relation to laws governing crime in South Africa?

Research question 3: What are the dynamics associated with reporting, investigating, prosecuting and convicting the perpetrators of electricity theft?

Research question 4: What could be practically done to curb electricity theft in a successful manner utilising laws governing crime in South Africa?

Research question 5: What practical suggestions, guidelines, procedures and recommendations can be offered to police investigators and utility employees to curb electricity theft in Limpopo through the application of laws governing crime in South Africa?

My research seeks to determine the nature and extent of electricity theft; determine and evaluate how electricity theft relates to the context of criminal justice; determine and evaluate utilities' current practices for curbing electricity theft; explore the dynamics of reporting, investigating, prosecuting and convicting electricity theft perpetrators; determine what could be done to curb electricity theft successfully utilising the criminal justice system and develop practical guidelines to curb electricity theft in Limpopo using the criminal justice system. Your participation in this research is of major importance for the successful answering of the research questions.

The researcher is bound to his assurances and guarantees by the research ethics code of the University of South Africa. The information you provide will be used in a research project for a Doctor of Philosophy in Criminal Justice: Police Science, Forensic Science and Technology (PFS) at the University of South Africa. The analysed and processed data will be published in a research report.

The interviewer will personally note your answers on paper and record the interview. Should any question be unclear, please ask the researcher for clarification. Only one answer per question is required. When answering the questions, it is very important to give your own opinion.

All interviews will be treated as strictly confidential

Your participation in this study is voluntary and can be terminated at any time. All responses will be treated with the utmost confidentiality by the researcher and all participants will remain anonymous. The names of the organisations participating in this will not be included. All participants will be allocated a number and completed interview schedules will be captured in an electronic database. All computerised notes will be stored on a secure, password-protected computer. Transcribed interviews will be kept in a secure place for a period of three years as required by the university rules. The transcribed interviews will thereafter be destroyed.

Research agreement between researcher and participant:

I undertake not to disclose your name.

All information will be treated confidentially.

When reporting on the findings, no names of individuals or companies will be mentioned.

You are free to terminate the questioning at any stage of the interview.

The above information has been explained to me and I understand it. My name will not be disclosed, and I will allow my information or responses to be used in a confidential manner that will not harm me or my employer in any way and I am also aware that the thesis might be published in future.

If you have any queries about this interview schedule, please contact Kate Iketsi Masango on 082 456 1860 and via email at iketsi76@gmail.com

Thank you for your cooperation.

KI Masango
Doctor of Philosophy in Criminal Justice student
UNISA

Signature of participant Place Date

PARTICIPANT

I hereby give permission to be interviewed and that information supplied by me can be used in this research.

YES	NO
-----	----

SECTION A: BACKGROUND INFORMATION

1. What is the name of your current employer?

2. What is your current position?

3. What are your tertiary qualifications relevant to your current position?

4. What are your primary roles in the position you occupy?

5. Did you undergo training to perform your duties within your current position?

6. If the answer to question 5 was yes, please specify which training?

7. How long have you served in your current position? Please choose by ticking the most relevant option below.

A – (0 to 3 years)	B – (4 to 6 years)	C – (7 to 9 years)	D – (10 and more years)

SECTION B: "INTERPRETING ELECTRICITY THEFT" IN RELATION TO LAWS GOVERNING CRIME IN SOUTH AFRICA

8. What do you understand by the concept electricity theft?

9. In your experience, what are the methods of stealing electricity?

10. Based on your experience, is electricity theft considered a crime in South Africa?

YES	NO
-----	----

11. If your answer to question number 10 is yes, what are the criminal elements entailed in the crime of electricity theft?

11. Based on your experience, what are the forms or types of electricity theft cases that are commonly received by you for investigation?

12. In your opinion, are the types of electricity theft mentioned in question number 12 unique to your work precinct or are they general to other police precincts in Limpopo? Please choose one option to answer the question.

Unique	General
--------	---------

13. Please give reason/s why you think the types of electricity theft mentioned in question number 11 conform to your answer option in question number 12.

14. To your knowledge, does South Africa have specific electricity theft legislation?

YES	NO
-----	----

15. If your answer to question number 14 is yes, list the specific electricity theft legislation.

16. Based on your knowledge, is there a formal protocol, guideline, procedure or policy that guides the investigation of electricity theft cases within Eskom?

YES	NO
-----	----

17. If your answer to question number 16 is yes:

(a) List the name of the protocols, guidelines, procedures or policies that guide the investigation of electricity theft.

(b) How useful is formal protocols or guidelines or procedures or policies that guide the investigation of electricity theft in Eskom? Please choose by ticking the most relevant option below.

A – Not useful	B – Less useful	C – Useful	D – More useful	E – Very useful

18. Based on your knowledge, what evidential information is needed in your statements regarding electricity theft cases to have a reasonable ground that there is a crime of electricity theft?

19. In your opinion, who are the stakeholders relevant to the successful investigation of electricity theft cases?

20. What support do you need from the stakeholders you mentioned in question number 21?

SECTION D: DYNAMICS ASSOCIATED WITH REPORTING, INVESTIGATING, PROSECUTING AND CONVICTING THE PERPETRATORS OF ELECTRICITY THEFT

21. In your own opinion, how much likely is the crime of electricity theft to be committed within your work precinct? Select one answer option below:

A – Not likely	B – Less likely	C – Likely	D – More likely	E – Very likely

22. From which specific areas, villages, suburbs or towns within your working precinct you often receive high numbers of electricity theft cases? List up to a maximum of five areas.

23. Based on your experience, how many cases of electricity theft you receive for investigation in a month?

24. Based on your knowledge, does Eskom has a reporting mechanism in place that can be used to track electricity theft cases?

YES	NO
-----	----

25. If your answer to question number 24 is yes, describe the reporting mechanism that Eskom uses to trace cases of electricity theft.

26. Describe your experience in investigating cases of electricity theft.

27. Based on your knowledge, how many electricity theft cases that you receive per month are closed before they could reach the court decision and court prosecution stages?

28. Based on your experience, what are the reasons for cases mentioned above are closed before they could reach a court decision and/or court prosecution stage?

29. Based on your knowledge, how many cases of electricity theft that you receive per month reach a prosecution stage but are dismissed or withdrawn before trial stage or on *nolle-prosequere*?"

30. Based on your experience, what are the reasons for cases mentioned above reach a prosecution stage but are dismissed or withdrawn before trial stage or on *nolle-prosequere*?

31. Based on your knowledge, how many cases of electricity theft that you receive per month reach the prosecution and trial stage but end in a 'not guilty' verdict and without a conviction?"

32. Based on your experience, what are the reasons for cases mentioned above reach the prosecution and trial stage but end in a 'not guilty' verdict and without a conviction?

33. Based on your experience, does the investigation of electricity theft cases require an investigation approach different from other criminal cases within your work precinct?

YES	NO
-----	----

34. If your answer to question number 33 is yes, explain the distinction between investigation approaches to electricity theft cases and other criminal cases.

35. Based on your experience, what are the investigation practices you have implemented in the past during the investigation of electricity theft cases?

36. What were the outcomes of the investigation practices mentioned in the previous question number 35?

37. What are the challenges of investigating electricity theft?

38. What do you think might be helpful in overcoming the challenges you mentioned in question number 37?

39. What are the most important lessons you have drawn from the investigation of electricity theft?

40. Based on your experience, how effective is the working partnership between your department, SAPS detectives and the state prosecutors in terms of securing evidence required for successful prosecution of electricity theft cases reported for criminal investigation purposes? Please choose by ticking the most relevant option below

A – Not effective	B – Less effective	C – Effective	D – More effective	E – Most effective

41. If your answer to question number 40 is option A or B, please elaborate on reason/s of your answer choice.

SECTION C: CURRENT PRACTICES BY UTILITIES IN CURBING ELECTRICITY THEFT

42. What are the challenges related to illegal consumption of electricity you experience in your work networks?

43. How do you overcome the challenges you mentioned above in question number 42?

42. What do you think can be done by utilities to improve the practices of curbing electricity theft?

43. Does Eskom have rules and procedures in place that are applied to curb electricity theft?

YES	NO
-----	----

44. If your answer to the above question number 43 is yes, name the rules and procedures in place to curb electricity theft.

45. If your answer to the above question number 43 is 'no', what practices are used in your organisation to curb electricity theft incidents?

46. How effective are the rules and procedures to curb electricity theft mentioned in question number 44?

A – Not effective	B – Less effective	C – Effective	D – More effective	E – Most effective

47. In your opinion, do you think that the police and courts have a role to play in curbing electricity theft incidents?

YES	NO
-----	----

48. Please give reason/s for your response in question number 47.

49. What practical guidelines, procedures and recommendations can be offered to curb electricity theft in Limpopo province?

50. If you have any additional comments or views about how electricity theft can be curbed in a successful manner using the laws governing crime in South Africa, please write them below

Thank you for participating in this interview.

9.2 ANNEXURE A (2): SAMPLE A2 INTERVIEW SCHEDULE (ESKOM CUSTOMER SERVICES, OPERATIONS AND MAINTENANCE PERSONNEL)

INTERVIEW SCHEDULE: SAMPLE A2

PARTICIPANT NUMBER: _____

TOPIC: AN EXPLORATIVE STUDY OF ELECTRICITY THEFT IN LIMPOPO

I am Kate Iketsi Masango a post graduate student that is currently busy conducting research for the degree - "Doctor of Philosophy in Criminal Justice: Police Science, Forensic Science and Technology (PFS)" at the University of South Africa. My supervisor is Dr Juanida Home who can be contacted at the university on 012 433 9415 with regards to any matters pertaining to my research.

The aim of the research is to establish if the adequate application of laws governing crime in South Africa, as compared to relying on engineering technology, can assist in curbing electricity theft in Limpopo. The following research questions will be answered in this study:

Research question 1: What is the nature and extent of electricity theft?

Research question 2: How is electricity theft interpreted in relation to laws governing crime in South Africa?

Research question 3: What are the dynamics associated with reporting, investigating, prosecuting and convicting the perpetrators of electricity theft?

Research question 4: What could be practically done to curb electricity theft in a successful manner utilising laws governing crime in South Africa?

Research question 5: What practical suggestions, guidelines, procedures and recommendations can be offered to police investigators and utility employees to curb electricity theft in Limpopo through the application of laws governing crime in South Africa?

My research seeks to determine the nature and extent of electricity theft; determine and evaluate how electricity theft relates to the context of criminal justice; determine and evaluate utilities' current practices for curbing electricity theft; explore the dynamics of reporting, investigating, prosecuting and convicting electricity theft perpetrators; determine what could be done to curb electricity theft successfully utilising the criminal justice system and develop practical guidelines to curb electricity

theft in Limpopo using the criminal justice system. Your participation in this research is of major importance for the successful answering of the research questions.

The researcher is bound to his assurances and guarantees by the research ethics code of the University of South Africa. The information you provide will be used in a research project for a Doctor of Philosophy in Criminal Justice: Police Science, Forensic Science and Technology (PFS) at the University of South Africa. The analysed and processed data will be published in a research report.

The interviewer will personally note your answers on paper and record the interview. Should any question be unclear, please ask the researcher for clarification. Only one answer per question is required. When answering the questions, it is very important to give your own opinion.

All interviews will be treated as strictly confidential

Your participation in this study is voluntary and can be terminated at any time. All responses will be treated with the utmost confidentiality by the researcher and all participants will remain anonymous. The names of the organisations participating in this will not be included. All participants will be allocated a number and completed interview schedules will be captured in an electronic database. All computerised notes will be stored on a secure, password-protected computer. Transcribed interviews will be kept in a secure place for a period of three years as required by the university rules. The transcribed interviews will thereafter be destroyed.

Research agreement between researcher and participant:

I undertake not to disclose your name.

All information will be treated confidentially.

When reporting on the findings, no names of individuals or companies will be mentioned.

You are free to terminate the questioning at any stage of the interview.

The above information has been explained to me and I understand it. My name will not be disclosed, and I will allow my information or responses to be used in a confidential manner that will not harm me or my employer in any way and I am also aware that the thesis might be published in future.

If you have any queries about this interview schedule, please contact Kate Iketsi Masango on 082 456 1860 and via email at iketsi76@gmail.com

Thank you for your cooperation.

KI Masango
Doctor of Philosophy in Criminal Justice student
UNISA

Signature of participant Place Date

PARTICIPANT

I hereby give permission to be interviewed and that information supplied by me can be used in this research.

YES	NO
-----	----

SECTION A: BACKGROUND INFORMATION

1. What is the name of your current employer?

2. What is your current position?

3. What are your tertiary qualifications relevant to your current position?

4. What are your primary roles in the position you occupy?

5. Did you undergo training to perform your duties within your current position?

6. If the answer to question 5 was yes, please specify which training?

7. How long have you served in your current position? Please choose by ticking the most relevant option below.

A – (0 to 3 years)	B – (4 to 6 years)	C – (7 to 9 years)	D – (10 and more years)

SECTION B: THE NATURE AND EXTENT OF ELECTRICITY THEFT

8. What is your understanding of electricity?

9. What are the sources of electricity?

10. What are the types of electricity?

11. How do you describe in simple terms the process from generating to supplying of electricity to customers?

12. Why is the production and supply of electricity commercialised?

13. What is the impact of not having electricity supply in your work precinct?"?

14. Why is generation, transmission and distribution of electricity regulated?

15. In your own opinion, why electricity cannot be generated, transmitted and distributed by any other person or institution without a licence to do so?

16. What do you understand by the concept 'electricity theft'?

17. In your experience, what are the methods of stealing electricity?

18. Based on your experience, how is the conduct of electricity theft detected?

19. In your opinion, how does electricity theft impact the sustainability of utilities?

20. In your opinion, what motivates the stealing of electricity?

21. How many electricity theft incidents are experienced per month on Eskom networks in your working precinct? Please select one answer option in the below table:

A – 100 or less	B – 101 to 500	C – 501 to 1000	D – 1000 to 1500	E – 1500 or more

SECTION C: CURRENT PRACTICES BY UTILITIES IN CURBING ELECTRICITY THEFT

22. What are the challenges related to illegal consumption of electricity you experience in your work networks?

23. How do you overcome the challenges you mentioned above in question number 22?

24. What do you think can be done by utilities to improve the practices of curbing electricity theft?

25. Does Eskom have rules and procedures in place that are applied to curb electricity theft?

26. If your answer to the above question number 23 is yes, name the rules and procedures in place to curb electricity theft.

27. If your answer to the above question number 23 is 'no', what practices are used in your organisation to curb electricity theft incidents?

28. How effective are the rules and procedures to curb electricity theft mentioned in question number 24?

A – Not effective	B – Less effective	C – Effective	D – More effective	E – Most effective

27. In your opinion, do you think that the police and courts have a role to play in curbing electricity theft incidents?

YES	NO
-----	----

28. Please give reason/s for your response in question number 27.

29. What practical guidelines, procedures and recommendations can be offered to curb electricity theft in Limpopo province?

30. If you have any additional comments or views about how electricity theft can be curbed in a successful manner using the laws governing crime in South Africa, please write them below

Thank you for participating in this interview.

9.3 ANNEXURE A (3): SAMPLE A3 INTERVIEW SCHEDULE (ESKOM ENERGY TRADING AND ENERGY PROTECTION PERSONNEL)

INTERVIEW SCHEDULE: SAMPLE A3

PARTICIPANT NUMBER: _____

TOPIC: AN EXPLORATIVE STUDY OF ELECTRICITY THEFT IN LIMPOPO

I am Kate Iketsi Masango a post graduate student that is currently busy conducting research for the degree - "Doctor of Philosophy in Criminal Justice: Police Science, Forensic Science and Technology (PFS)" at the University of South Africa. My supervisor is Dr Juanida Home who can be contacted at the university on 012 433 9415 with regards to any matters pertaining to my research.

The aim of the research is to establish if the adequate application of laws governing crime in South Africa, as compared to relying on engineering technology, can assist in curbing electricity theft in Limpopo. The following research questions will be answered in this study:

Research question 1: What is the nature and extent of electricity theft?

Research question 2: How is electricity theft interpreted in relation to laws governing crime in South Africa?

Research question 3: What are the dynamics associated with reporting, investigating, prosecuting and convicting the perpetrators of electricity theft?

Research question 4: What could be practically done to curb electricity theft in a successful manner utilising laws governing crime in South Africa?

Research question 5: What practical suggestions, guidelines, procedures and recommendations can be offered to police investigators and utility employees to curb electricity theft in Limpopo through the application of laws governing crime in South Africa?

My research seeks to determine the nature and extent of electricity theft; determine and evaluate how electricity theft relates to the context of criminal justice; determine and evaluate utilities' current practices for curbing electricity theft; explore the dynamics of reporting, investigating, prosecuting and convicting electricity theft perpetrators; determine what could be done to curb electricity theft successfully utilising the criminal justice system and develop practical guidelines to curb electricity

theft in Limpopo using the criminal justice system. Your participation in this research is of major importance for the successful answering of the research questions.

The researcher is bound to his assurances and guarantees by the research ethics code of the University of South Africa. The information you provide will be used in a research project for a Doctor of Philosophy in Criminal Justice: Police Science, Forensic Science and Technology (PFS) at the University of South Africa. The analysed and processed data will be published in a research report.

The interviewer will personally note your answers on paper and record the interview. Should any question be unclear, please ask the researcher for clarification. Only one answer per question is required. When answering the questions, it is very important to give your own opinion.

All interviews will be treated as strictly confidential

Your participation in this study is voluntary and can be terminated at any time. All responses will be treated with the utmost confidentiality by the researcher and all participants will remain anonymous. The names of the organisations participating in this will not be included. All participants will be allocated a number and completed interview schedules will be captured in an electronic database. All computerised notes will be stored on a secure, password-protected computer. Transcribed interviews will be kept in a secure place for a period of three years as required by the university rules. The transcribed interviews will thereafter be destroyed.

Research agreement between researcher and participant:

I undertake not to disclose your name.

All information will be treated confidentially.

When reporting on the findings, no names of individuals or companies will be mentioned.

You are free to terminate the questioning at any stage of the interview.

The above information has been explained to me and I understand it. My name will not be disclosed, and I will allow my information or responses to be used in a confidential manner that will not harm me or my employer in any way and I am also aware that the thesis might be published in future.

If you have any queries about this interview schedule, please contact Kate Iketsi Masango on 082 456 1860 and via email at iketsi76@gmail.com

Thank you for your cooperation.

KI Masango
Doctor of Philosophy in Criminal Justice student
UNISA

Signature of participant

Place

Date

PARTICIPANT

I hereby give permission to be interviewed and that information supplied by me can be used in this research.

YES	NO
-----	----

SECTION A: BACKGROUND INFORMATION

1. What is the name of your current employer?

2. What is your current position?

3. What are your tertiary qualifications relevant to your current position?

4. What are your primary roles in the position you occupy?

5. Did you undergo training to perform your duties within your current position?

6. If the answer to question 5 was yes, please specify which training?

7. How long have you served in your current position? Please choose by ticking the most relevant option below.

A – (0 to 3 years)	B – (4 to 6 years)	C – (7 to 9 years)	D – (10 and more years)

SECTION B: THE NATURE AND EXTENT OF ELECTRICITY THEFT

8. What is your understanding of electricity?

9. What are the sources of electricity?

10. What are the types of electricity?

11. How do you describe in simple terms the process from generating to supplying of electricity to customers?

12. Why is the production and supply of electricity commercialised?

13. What is the impact of not having electricity supply in your work precinct??

14. Why is generation, transmission and distribution of electricity regulated?

15. In your own opinion, why electricity cannot be generated, transmitted and distributed by any other person or institution without a licence to do so?

16. What do you understand by the concept 'electricity theft'?

17. In your experience, what are the methods of stealing electricity?

18. Based on your experience, how is the conduct of electricity theft detected?

19. In your opinion, how does electricity theft impact the sustainability of utilities?

20. In your opinion, what motivates the stealing of electricity?

21. How many electricity theft incidents are experienced per month on Eskom networks in your working precinct? Please select one answer option in the below table:

A – 100 or less	B – 101 to 500	C – 501 to 1000	D – 1000 to 1500	E – 1500 or more

SECTION C: CURRENT PRACTICES BY UTILITIES IN CURBING ELECTRICITY THEFT

22. What are the challenges related to illegal consumption of electricity you experience in your work networks?

23. How do you overcome the challenges you mentioned above in question number 22?

24. What do you think can be done by utilities to improve the practices of curbing electricity theft?

23. Does Eskom have rules and procedures in place that are applied to curb electricity theft?

YES	NO
-----	----

24. If your answer to the above question number 23 is yes, name the rules and procedures in place to curb electricity theft.

25. If your answer to the above question number 23 is 'no', what practices are used in your organisation to curb electricity theft incidents?

26. How effective are the rules and procedures to curb electricity theft mentioned in question number 24?

A – Not effective	B – Less effective	C – Effective	D – More effective	E – Most effective

27. In your opinion, do you think that the police and courts have a role to play in curbing electricity theft incidents?

YES	NO
-----	----

28. Please give reason/s for your response in question number 27.

29. What practical guidelines, procedures and recommendations can be offered to curb electricity theft in Limpopo province?

30. If you have any additional comments or views about how electricity theft can be curbed in a successful manner using the laws governing crime in South Africa, please write them below

Thank you for participating in this interview.

9.4 ANNEXURE B: SAMPLE B INTERVIEW SCHEDULE (LOCAL MUNICIPALITY PERSONNEL RESPONSIBLE FOR ELECTRICITY MATTERS)

INTERVIEW SCHEDULE: SAMPLE B

PARTICIPANT NUMBER: _____

TOPIC: AN EXPLORATIVE STUDY OF ELECTRICITY THEFT IN LIMPOPO

I am Kate Iketsi Masango a post graduate student that is currently busy conducting research for the degree - "Doctor of Philosophy in Criminal Justice: Police Science, Forensic Science and Technology (PFS)" at the University of South Africa. My supervisor is Dr Juanida Home who can be contacted at the university on 012 433 9415 with regards to any matters pertaining to my research.

The aim of the research is to establish if the adequate application of laws governing crime in South Africa, as compared to relying on engineering technology, can assist in curbing electricity theft in Limpopo. The following research questions will be answered in this study:

Research question 1: What is the nature and extent of electricity theft?

Research question 2: How is electricity theft interpreted in relation to laws governing crime in South Africa?

Research question 3: What are the dynamics associated with reporting, investigating, prosecuting and convicting the perpetrators of electricity theft?

Research question 4: What could be practically done to curb electricity theft in a successful manner utilising laws governing crime in South Africa?

Research question 5: What practical suggestions, guidelines, procedures and recommendations can be offered to police investigators and utility employees to curb electricity theft in Limpopo through the application of laws governing crime in South Africa?

My research seeks to determine the nature and extent of electricity theft; determine and evaluate how electricity theft relates to the context of criminal justice; determine and evaluate utilities' current practices for curbing electricity theft; explore the dynamics of reporting, investigating, prosecuting and convicting electricity theft perpetrators; determine what could be done to curb electricity theft successfully utilising the criminal justice system and develop practical guidelines to curb electricity

theft in Limpopo using the criminal justice system. Your participation in this research is of major importance for the successful answering of the research questions.

The researcher is bound to his assurances and guarantees by the research ethics code of the University of South Africa. The information you provide will be used in a research project for a Doctor of Philosophy in Criminal Justice: Police Science, Forensic Science and Technology (PFS) at the University of South Africa. The analysed and processed data will be published in a research report.

The interviewer will personally note your answers on paper and record the interview. Should any question be unclear, please ask the researcher for clarification. Only one answer per question is required. When answering the questions, it is very important to give your own opinion.

All interviews will be treated as strictly confidential

Your participation in this study is voluntary and can be terminated at any time. All responses will be treated with the utmost confidentiality by the researcher and all participants will remain anonymous. The names of the organisations participating in this will not be included. All participants will be allocated a number and completed interview schedules will be captured in an electronic database. All computerised notes will be stored on a secure, password-protected computer. Transcribed interviews will be kept in a secure place for a period of three years as required by the university rules. The transcribed interviews will thereafter be destroyed.

Research agreement between researcher and participant:

I undertake not to disclose your name.

All information will be treated confidentially.

When reporting on the findings, no names of individuals or companies will be mentioned.

You are free to terminate the questioning at any stage of the interview.

The above information has been explained to me and I understand it. My name will not be disclosed, and I will allow my information or responses to be used in a confidential manner that will not harm me or my employer in any way and I am also aware that the thesis might be published in future.

If you have any queries about this interview schedule, please contact Kate Iketsi Masango on 082 456 1860 and via email at iketsi76@gmail.com

Thank you for your cooperation.

KI Masango
Doctor of Philosophy in Criminal Justice student
UNISA

Signature of participant

Place

Date

PARTICIPANT

I hereby give permission to be interviewed and that information supplied by me can be used in this research.

YES	NO
-----	----

SECTION A: BACKGROUND INFORMATION

1. What is the name of your current employer?

2. What is your current position?

3. What are your tertiary qualifications relevant to your current position?

4. What are your primary roles in the position you occupy?

5. Did you undergo training to perform your duties within your current position?

6. If the answer to question 5 was yes, please specify which training?

7. How long have you served in your current position? Please choose by ticking the most relevant option below.

A – (0 to 3 years)	B – (4 to 6 years)	C – (7 to 9 years)	D – (10 and more years)

SECTION B: THE NATURE AND EXTENT OF ELECTRICITY THEFT

8. What is your understanding of electricity?

9. What are the sources of electricity?

10. What are the types of electricity?

11. How do you describe in simple terms the process from generating to supplying of electricity to customers?

12. Why is the production and supply of electricity commercialised?

13. What is the impact of not having electricity supply in your *municipal precinct*??

14. Why is generation, transmission and distribution of electricity regulated?

15. In your own opinion, why electricity cannot be generated, transmitted and distributed by any other person or institution without a licence to do so?

16. What do you understand by the concept 'electricity theft'?

17. In your experience, what are the methods of stealing electricity?

18. Based on your experience, how is the conduct of electricity theft detected?

19. In your opinion, how does electricity theft impact the sustainability of utilities?

20. In your opinion, what motivates the stealing of electricity?

21. How many electricity theft incidents are experienced per month on municipal networks in your working precinct? Please select one answer option in the below table:

A – 100 or less	B – 101 to 500	C – 501 to 1000	D – 1000 to 1500	E – 1500 or more

SECTION C: CURRENT PRACTICES BY UTILITIES IN CURBING ELECTRICITY THEFT

22. What are the challenges related to illegal consumption of electricity you experience in your work networks?

23. How do you overcome the challenges you mentioned above in question number 22?

24. Does your municipality have by-laws in place that are applied to curb electricity theft?

YES	NO
-----	----

25. If your answer to the above question number 22 is yes, name the by-laws in place to curb electricity theft.

26. If your answer to the above question number 22 is 'no', what practices are used in your municipality to curb electricity theft incidents?

27. How effective are the by-laws to curb electricity theft mentioned in question number 25?

A – Not effective	B – Less effective	C – Effective	D – More effective	E – Most effective

29. If your answer to question number 28 is A or B, what do you think contributes to the level of effectiveness chosen in question in question number 28?

- (b) What do you think can be done by utilities to improve the practices of curbing electricity theft?

30. If your answer to question number 26 is no, what practices are used in your organisation to curb electricity theft incidents?

31. In your opinion, do you think that the police and courts have a role to play in curbing electricity theft incidents?

YES	NO
-----	----

32. Please give reason/s for your response in question number 31.

33. What practical guidelines, procedures and recommendations can be offered to curb electricity theft in Limpopo province?

34. If you have any additional comments or views about how electricity theft can be curbed in a successful manner using the laws governing crime in South Africa, please write them below

Thank you for participating in this interview.

9.5 ANNEXURE C: SAMPLE C INTERVIEW SCHEDULE (SAPS DETECTIVES)

INTERVIEW SCHEDULE: SAMPLE C

PARTICIPANT NUMBER: _____

TOPIC: AN EXPLORATIVE STUDY OF ELECTRICITY THEFT IN LIMPOPO

I am Kate Iketsi Masango a post graduate student that is currently busy conducting research for the degree - "Doctor of Philosophy in Criminal Justice: Police Science, Forensic Science and Technology (PFS)" at the University of South Africa. My supervisor is Dr Juanida Home who can be contacted at the university on 012 433 9415 with regards to any matters pertaining to my research.

The aim of the research is to establish if the adequate application of laws governing crime in South Africa, as compared to relying on engineering technology, can assist in curbing electricity theft in Limpopo. The following research questions will be answered in this study:

Research question 1: What is the nature and extent of electricity theft?

Research question 2: How is electricity theft interpreted in relation to laws governing crime in South Africa?

Research question 3: What are the dynamics associated with reporting, investigating, prosecuting and convicting the perpetrators of electricity theft?

Research question 4: What could be practically done to curb electricity theft in a successful manner utilising laws governing crime in South Africa?

Research question 5: What practical suggestions, guidelines, procedures and recommendations can be offered to police investigators and utility employees to curb electricity theft in Limpopo through the application of laws governing crime in South Africa?

My research seeks to determine the nature and extent of electricity theft; determine and evaluate how electricity theft relates to the context of criminal justice; determine and evaluate utilities' current practices for curbing electricity theft; explore the dynamics of reporting, investigating, prosecuting and convicting electricity theft perpetrators; determine what could be done to curb electricity theft successfully utilising the criminal justice system and develop practical guidelines to curb electricity

theft in Limpopo using the criminal justice system. Your participation in this research is of major importance for the successful answering of the research questions.

The researcher is bound to his assurances and guarantees by the research ethics code of the University of South Africa. The information you provide will be used in a research project for a Doctor of Philosophy in Criminal Justice: Police Science, Forensic Science and Technology (PFS) at the University of South Africa. The analysed and processed data will be published in a research report.

The interviewer will personally note your answers on paper and record the interview. Should any question be unclear, please ask the researcher for clarification. Only one answer per question is required. When answering the questions, it is very important to give your own opinion.

All interviews will be treated as strictly confidential

Your participation in this study is voluntary and can be terminated at any time. All responses will be treated with the utmost confidentiality by the researcher and all participants will remain anonymous. The names of the organisations participating in this will not be included. All participants will be allocated a number and completed interview schedules will be captured in an electronic database. All computerised notes will be stored on a secure, password-protected computer. Transcribed interviews will be kept in a secure place for a period of three years as required by the university rules. The transcribed interviews will thereafter be destroyed.

Research agreement between researcher and participant:

I undertake not to disclose your name.

All information will be treated confidentially.

When reporting on the findings, no names of individuals or companies will be mentioned.

You are free to terminate the questioning at any stage of the interview.

The above information has been explained to me and I understand it. My name will not be disclosed, and I will allow my information or responses to be used in a confidential manner that will not harm me or my employer in any way and I am also aware that the thesis might be published in future.

If you have any queries about this interview schedule, please contact Kate Iketsi Masango on 082 456 1860 and via email at iketsi76@gmail.com

Thank you for your cooperation.

KI Masango
Doctor of Philosophy in Criminal Justice student
UNISA

Signature of participant Place Date

PARTICIPANT

I hereby give permission to be interviewed and that information supplied by me can be used in this research.

YES	NO
-----	----

SECTION A: BACKGROUND INFORMATION

1. What is your rank?

2. How many years of service do you have in the SAPS?

3. How many years of service do you have as an investigator?

4. Do you have any qualifications? If yes, elaborate.

5. Have you received internal training or attended seminars relating to criminal investigations? If yes, elaborate.

SECTION B: "INTERPRETING ELECTRICITY THEFT" IN RELATION TO LAWS GOVERNING CRIME IN SOUTH AFRICA

6. What do you understand by the concept 'electricity theft'?

7. In your experience, what are the methods of stealing electricity?

8. Based on your experience, is electricity theft considered a crime in South Africa?

YES	NO
-----	----
9. If your answer to question number 8 is yes, what are the criminal elements entailed in the crime of electricity theft?

11. Based on your experience, what are the forms or types of electricity theft cases that are commonly received by you for investigation?

12. In your opinion, are the types of electricity theft mentioned in question number 11 unique to your work precinct or are they general to other police precincts in Limpopo? Please choose one option to answer the question.

Unique	General
--------	---------

13. Please give reason/s why you think the types of electricity theft mentioned in question number 11 conform to your answer option in question number 12.

14. To your knowledge, does South Africa have specific electricity theft legislation?

YES	NO
-----	----

15. If your answer to question number 14 is yes, list the specific electricity theft legislation.

16. Based on your knowledge, is there a formal protocol, guideline, procedure or policy in the SAPS that guides the investigation of electricity theft cases?

YES	NO
-----	----

17. If your answer to question number 16 is yes:

(a) List the name of the protocols, guidelines, procedures or policies that guide the investigation of electricity theft.

(b) How useful is formal protocols or guidelines or procedures or policies in the SAPS that guide the investigation of electricity theft cases? Please choose by ticking the most relevant option below.

A – Not useful	B – Less useful	C – Useful	D – More useful	E – Very useful
----------------	-----------------	------------	-----------------	-----------------

18. Based on your knowledge, what evidential information is needed in your statements regarding electricity theft cases to have a reasonable ground that there is a crime of electricity theft?

19. In your opinion, who are the stakeholders relevant to the successful investigation of electricity theft cases?

20. What support do you need from the stakeholders you mentioned in question number 21?

SECTION C: DYNAMICS ASSOCIATED WITH REPORTING, INVESTIGATING, PROSECUTING AND CONVICTING THE PERPETRATORS OF ELECTRICITY THEFT

21. In your own opinion, how much likely is the crime of electricity theft to be committed within your work precinct? Select one answer option below:

A – Not likely	B – Less likely	C – Likely	D – More likely	E – Very likely

22. From which specific areas, villages, suburbs or towns within your working precinct you often receive high numbers of electricity theft cases? List up to a maximum of five areas.

23. Based on your experience, how many cases of electricity theft you receive for investigation in a month?

24. Based on your knowledge, does SAPS has a reporting mechanism in place that can be used to track electricity theft cases?

YES	NO
-----	----

25. If your answer to question number 24 is yes, describe the reporting mechanism that Eskom uses to trace cases of electricity theft.

26. Describe your experience in investigating cases of electricity theft.

27. Based on your experience, can you suggest practical guidelines on how to investigate cases of electricity theft?

28. Based on your knowledge, how many electricity theft cases that you receive per month are closed before they could reach the court decision and court prosecution stages?

29. Based on your experience, what are the reasons for cases mentioned above are closed before they could reach a court decision and/or court prosecution stage?

30. Based on your knowledge, how many cases of electricity theft that you receive per month reach a prosecution stage but are dismissed or withdrawn before trial stage or on *nolle-prosequere*?

31. Based on your experience, what are the reasons for cases mentioned above reach a prosecution stage but are dismissed or withdrawn before trial stage or on *nolle-prosequere*?

32. Based on your knowledge, how many cases of electricity theft that you receive per month reach the prosecution and trial stage but end in a 'not guilty' verdict and without a conviction?

33. Based on your experience, what are the reasons for cases mentioned above reach the prosecution and trial stage but end in a 'not guilty' verdict and without a conviction?

34. Based on your experience, does the investigation of electricity theft cases require an investigation approach different from other criminal cases within your work precinct?

YES	NO
-----	----

35. If your answer to question number 34 is yes, explain the distinction between investigation approaches to electricity theft cases and other criminal cases.

36. Based on your experience, what are the investigation practices you have implemented in the past during the investigation of electricity theft cases?

37. What were the outcomes of the investigation practices mentioned in the previous question number 35?

38. What are the challenges of investigating electricity theft?

39. What do you think might be helpful in overcoming the challenges you mentioned in question number 37?

40. What are the most important lessons you have drawn from the investigation of electricity theft?

41. Based on your experience, how effective is the working partnership between your department, SAPS detectives and the state prosecutors in terms of securing evidence required for successful prosecution of electricity theft cases reported for criminal investigation purposes? Please choose by ticking the most relevant option below

A – Not effective	B – Less effective	C – Effective	D – More effective	E – Most effective

42. If your answer to question number 41 is option A or B, please elaborate on reason/s of your answer choice.

SECTION C: CURRENT PRACTICES BY UTILITIES IN CURBING ELECTRICITY THEFT

43. What practical guidelines, procedures and recommendations can be offered to curb electricity theft in Limpopo province?

44. If you have any additional comments or views about how electricity theft can be curbed in a successful manner using the laws governing crime in South Africa, please write them below

Thank you for participating in this interview.

9.6 ANNEXURE D: SAMPLE D INTERVIEW SCHEDULE (NPA PROSECUTORS)

INTERVIEW SCHEDULE: SAMPLE D

PARTICIPANT NUMBER: _____

TOPIC: AN EXPLORATIVE STUDY OF ELECTRICITY THEFT IN LIMPOPO

I am Kate Iketsi Masango a post graduate student that is currently busy conducting research for the degree - "Doctor of Philosophy in Criminal Justice: Police Science, Forensic Science and Technology (PFS)" at the University of South Africa. My supervisor is Dr Juanida Home who can be contacted at the university on 012 433 0415 with regards to any matters pertaining to my research.

The aim of the research is to establish if the adequate application of laws governing crime in South Africa, as compared to relying on engineering technology, can assist in curbing electricity theft in Limpopo. The following research questions will be answered in this study:

Research question 1: What is the nature and extent of electricity theft?

Research question 2: How is electricity theft interpreted in relation to laws governing crime in South Africa?

Research question 3: What are the dynamics associated with reporting, investigating, prosecuting and convicting the perpetrators of electricity theft?

Research question 4: What could be practically done to curb electricity theft in a successful manner utilising laws governing crime in South Africa?

Research question 5: What practical suggestions, guidelines, procedures and recommendations can be offered to police investigators and utility employees to curb electricity theft in Limpopo through the application of laws governing crime in South Africa?

My research seeks to determine the nature and extent of electricity theft; determine and evaluate how electricity theft relates to the context of criminal justice; determine and evaluate utilities' current practices for curbing electricity theft; explore the dynamics of reporting, investigating, prosecuting and convicting electricity theft perpetrators; determine what could be done to curb electricity theft successfully utilising the criminal justice system and develop practical guidelines to curb electricity

theft in Limpopo using the criminal justice system. Your participation in this research is of major importance for the successful answering of the research questions.

The researcher is bound to his assurances and guarantees by the research ethics code of the University of South Africa. The information you provide will be used in a research project for a Doctor of Philosophy in Criminal Justice: Police Science, Forensic Science and Technology (PFS) at the University of South Africa. The analysed and processed data will be published in a research report.

The interviewer will personally note your answers on paper and record the interview. Should any question be unclear, please ask the researcher for clarification. Only one answer per question is required. When answering the questions, it is very important to give your own opinion.

All interviews will be treated as strictly confidential

Your participation in this study is voluntary and can be terminated at any time. All responses will be treated with the utmost confidentiality by the researcher and all participants will remain anonymous. The names of the organisations participating in this will not be included. All participants will be allocated a number and completed interview schedules will be captured in an electronic database. All computerised notes will be stored on a secure, password-protected computer. Transcribed interviews will be kept in a secure place for a period of three years as required by the university rules. The transcribed interviews will thereafter be destroyed.

Research agreement between researcher and participant:

I undertake not to disclose your name.

All information will be treated confidentially.

When reporting on the findings, no names of individuals or companies will be mentioned.

You are free to terminate the questioning at any stage of the interview.

The above information has been explained to me and I understand it. My name will not be disclosed, and I will allow my information or responses to be used in a

confidential manner that will not harm me or my employer in any way and I am also aware that the thesis might be published in future.

If you have any queries about this interview schedule, please contact Kate Iketsi Masango on 082 456 1860 and via email at iketsi78@gmail.com

Thank you for your cooperation.

KI Masango
Doctor of Philosophy in Criminal Justice student
UNISA

Signature of participant

Place

Date

PARTICIPANT

I hereby give permission to be interviewed and that information supplied by me can be used in this research.

YES	NO
-----	----

SECTION A: BACKGROUND INFORMATION

1. What is your rank (state advocate/senior state advocate/senior public prosecutor/prosecutor)?

2. How many years of service do you have in your current position mentioned above?

3. What is/are your qualification/s?

4. What are your primary roles in the position you occupy?

SECTION B: "INTERPRETING ELECTRICITY THEFT" IN RELATION TO LAWS GOVERNING CRIME IN SOUTH AFRICA

5. What do you understand by the concept 'electricity theft'?

6. In your experience, what are the methods of stealing electricity?

7. Based on your experience, is electricity theft considered a crime in South Africa?

YES	NO
-----	----

8. If your answer to question number 7 is yes, what are the criminal elements entailed in the crime of electricity theft?

9. Based on your experience, what are the forms or types of 'electricity theft' cases that are commonly received by you for prosecution?

10. To your knowledge, does South Africa have specific electricity theft legislation?

YES	NO
-----	----

11. If your answer to question number 10 is yes, list the specific electricity theft legislation.

12. Based on your knowledge, is there a formal protocol, guideline, procedure or policy that guides the prosecution of electricity theft cases?

YES	NO
-----	----

13. If your answer to question number 12 is yes:

- (a) List the name of the protocols, guidelines, procedures or policies that guide the prosecution of electricity theft.

- (b) How useful is formal protocols or guidelines or procedures or policies that guide the investigation of electricity theft cases? Please choose by ticking the most relevant option below.

A – Not useful	B – Less useful	C – Useful	D – More useful	E – Very useful

14. Based on your knowledge, what evidence should be contained in the statements to prosecute the cases of electricity theft?

15. In your opinion, who are the stakeholders relevant to the successful prosecution of electricity theft cases?

16. What support do you need from the stakeholders you mentioned in question number 15?

SECTION C: DYNAMICS ASSOCIATED WITH REPORTING, INVESTIGATING, PROSECUTING AND CONVICTING THE PERPETRATORS OF ELECTRICITY THEFT

11. From which specific areas, villages, suburbs or towns within your working precinct do you receive high numbers of electricity theft cases for prosecution or decision? List up to a maximum of five areas.

12. Based on your experience, how many cases of electricity theft you receive prosecution in a month?

13. Describe your experience in prosecuting electricity theft cases.

14. Based on your experience, can you suggest practical guidelines on how to prosecute cases of electricity theft?

16. Based on your knowledge, how many electricity theft cases that you receive per month reach a court decision stage, but are dismissed or withdrawn before a prosecution (trial stage) or on *nolle-prosequere*?

17. Based on your experience, what are the reasons for cases mentioned above are dismissed or withdrawn before a prosecution (trial stage) or on *nolle-prosequere*?

18. Based on your knowledge, how many cases of electricity theft that you receive per month reach a prosecution stage, but end with a 'not guilty' verdict and without a conviction?
-
19. Based on your experience, what are the reasons for cases mentioned in number 18 above ending with a 'not guilty' verdict and without a conviction?
-
20. Based on your knowledge, how many cases of electricity theft that you receive per month from SAPS reached a conviction stage?
-
21. Based on your experience, what are the reasons for cases mentioned in number 20 above reaching a conviction stage?
-
22. Based on your experience, does the prosecution of electricity theft cases require a prosecution approach that is different from other criminal cases within your work precinct?
- | | |
|-----|----|
| YES | NO |
|-----|----|
23. If your answer to question number 22 is yes, explain the distinction between prosecution approaches to electricity theft cases and other criminal cases.
-
24. Based on your experience, what are the prosecution practices you have implemented in the past during the prosecution of electricity theft cases?
-
25. What were the outcomes of the investigation practices mentioned in the previous question 24?
-
26. What are the challenges of prosecuting electricity theft?
-

27. What do you think might be helpful in overcoming the challenges of prosecuting electricity theft?

28. What are the most important lessons you have drawn from the prosecution of electricity theft?

29. Based on your experience, how effective is the working partnership between your department, SAPS detectives and the state prosecutors in terms of securing evidence required for successful prosecution of electricity theft cases reported for criminal investigation purposes? Please choose by ticking the most relevant option below

A – Not effective	B – Less effective	C – Effective	D – More effective	E – Most effective

30. If your answer to question number 29 is option A or B, please elaborate on reason/s of your answer choice.

SECTION C: CURRENT PRACTICES BY UTILITIES IN CURBING ELECTRICITY THEFT

31. What practical guidelines, procedures and recommendations can be offered to curb electricity theft in Limpopo province?

32. If you have any additional comments or views about how electricity theft can be curbed in a successful manner using the laws governing crime in South Africa, please write them below

Thank you for participating in this interview.

9.7 ANNEXURE E: SAMPLE E INTERVIEW SCHEDULE (COMMUNITY LEADERS/ REPRESENTATIVES)

INTERVIEW SCHEDULE: SAMPLE E

PARTICIPANT NUMBER: _____

TOPIC: AN EXPLORATIVE STUDY OF ELECTRICITY THEFT IN LIMPOPO

I am Kate Iketsi Masango a post graduate student that is currently busy conducting research for the degree - "Doctor of Philosophy in Criminal Justice: Police Science, Forensic Science and Technology (PFS)" at the University of South Africa. My supervisor is Dr Juanida Home who can be contacted at the university on 012 433 9415 with regards to any matters pertaining to my research.

The aim of the research is to establish if the adequate application of laws governing crime in South Africa, as compared to relying on engineering technology, can assist in curbing electricity theft in Limpopo. The following research questions will be answered in this study:

Research question 1: What is the nature and extent of electricity theft?

Research question 2: How is electricity theft interpreted in relation to laws governing crime in South Africa?

Research question 3: What are the dynamics associated with reporting, investigating, prosecuting and convicting the perpetrators of electricity theft?

Research question 4: What could be practically done to curb electricity theft in a successful manner utilising laws governing crime in South Africa?

Research question 5: What practical suggestions, guidelines, procedures and recommendations can be offered to police investigators and utility employees to curb electricity theft in Limpopo through the application of laws governing crime in South Africa?

My research seeks to determine the nature and extent of electricity theft; determine and evaluate how electricity theft relates to the context of criminal justice; determine and evaluate utilities' current practices for curbing electricity theft; explore the dynamics of reporting, investigating, prosecuting and convicting electricity theft perpetrators; determine what could be done to curb electricity theft successfully utilising the criminal justice system and develop practical guidelines to curb electricity

theft in Limpopo using the criminal justice system. Your participation in this research is of major importance for the successful answering of the research questions.

The researcher is bound to his assurances and guarantees by the research ethics code of the University of South Africa. The information you provide will be used in a research project for a Doctor of Philosophy in Criminal Justice: Police Science, Forensic Science and Technology (PFS) at the University of South Africa. The analysed and processed data will be published in a research report.

The interviewer will personally note your answers on paper and record the interview. Should any question be unclear, please ask the researcher for clarification. Only one answer per question is required. When answering the questions, it is very important to give your own opinion.

All interviews will be treated as strictly confidential

Your participation in this study is voluntary and can be terminated at any time. All responses will be treated with the utmost confidentiality by the researcher and all participants will remain anonymous. The names of the organisations participating in this will not be included. All participants will be allocated a number and completed interview schedules will be captured in an electronic database. All computerised notes will be stored on a secure, password-protected computer. Transcribed interviews will be kept in a secure place for a period of three years as required by the university rules. The transcribed interviews will thereafter be destroyed.

Research agreement between researcher and participant:

I undertake not to disclose your name.

All information will be treated confidentially.

When reporting on the findings, no names of individuals or companies will be mentioned.

You are free to terminate the questioning at any stage of the interview.

The above information has been explained to me and I understand it. My name will not be disclosed, and I will allow my information or responses to be used in a

confidential manner that will not harm me or my employer in any way and I am also aware that the thesis might be published in future.

If you have any queries about this interview schedule, please contact Kate Iketsi Masango on 082 456 1860 and via email at iketsi76@gmail.com

Thank you for your cooperation.

KI Masango
Doctor of Philosophy in Criminal Justice student
UNISA

Signature of participant

Place

Date

PARTICIPANT

I hereby give permission to be interviewed and that information supplied by me can be used in this research.

YES	NO
-----	----

SECTION A: BACKGROUND INFORMATION

1. What is your position in the community?

2. What are your primary roles in the position you occupy in the community?

3. What are your qualifications relevant to your current position in the community?

4. Did you undergo training to perform your duties within your current position in the community?

YES	NO
-----	----

5. If the answer to question 4 was yes, please specify the training you underwent.

6. How long have you served in your current position? Please choose by ticking the most relevant option below.

A – (0 to 3 years)	B – (4 to 6 years)	C – (7 to 9 years)	D – (10 and more years)

SECTION B: EXPERIENCE AND VIEWS OF COMMUNITY LEADERS IN RELATION TO 'ELECTRICITY THEFT'

7. What do you understand by the concept 'electricity theft'?
-
8. In your experience, what are the methods of stealing electricity?
-
9. What is the impact of electricity theft in your community area?
-
8. Do you have any knowledge of electricity theft within your community?
- | | |
|-----|----|
| YES | NO |
|-----|----|
9. If your answer is 'yes', what are the causes of electricity theft in your community area?
-
10. In your experience, is electricity theft reported within your community area?
- | | |
|-----|----|
| YES | NO |
|-----|----|
11. If the answer to question number 10 is yes, to whom is electricity theft reported within your community area?
-
12. Based on your experience, what are the challenges relating to curbing electricity theft in your community?
-
13. In your opinion, what contributes to the challenges mentioned above in question number 12?
-

14. In your experience, how can the challenges mentioned above in question number 12 be overcome?

15. In your own experience, what are the practices implemented by utilities to curb electricity theft within your community area?

16. How effective are the practices to curb electricity theft mentioned in question number 15?

A - Not effective	B - Less effective	C - Effective	D - More effective	E - Most effective

17. If your answer to question number 16 is A or B, what do you think contributes to the level of effectiveness chosen in question number 16 above?

18. Are there any measures put in place in your community area to prevent electricity theft?

YES	NO
-----	----

19. If your answer is yes to the above question number 18, mention the measures put in place in your community area to prevent electricity theft

19. What would you suggest be done to improve the measures to curb electricity theft within your community area?

20. In your opinion, do you think that the police and courts have a role to play in curbing electricity theft incidents?

YES	NO
-----	----

21. Please give reason/s for your response in question number 20.

22. In your experience, how often is your intervention required for matters related to electricity theft within your community area?

A – Never	B – Less often	C – Regularly	D – More often	E – Always

23. If your answer to above question is B, C, D or E, which organisations or individuals require your intervention in electricity theft matters within your community?

24. Describe the nature of your intervention in electricity theft matters within your community?

25. What practical guidelines, procedures and recommendations can be offered to curb electricity theft in Limpopo province?

26. If you have any additional comments or views about how electricity theft can be curbed in a successful manner using the laws governing crime in South Africa, please write them below

Thank you for participating in this interview.

9.8 ANNEXURE F: UNISA ETHICAL CLEARANCE



UNISA CLAW ETHICS REVIEW COMMITTEE

Date 20191118

Reference: ST 142 of 2019

Applicant: KI Masango

Dear KI Masango

Decision: ETHICS APPROVAL

FROM 01 November 2019

TO 01 November 2022

Researcher: KATE IKETSI MASANGO

Supervisor: Prof J Horne

An Explorative Study of Electricity Theft in Limpopo

Qualification: PhD Criminal Justice

Thank you for the application for research ethics clearance by the Unisa CLAW Ethics Review Committee for the above mentioned research. Ethics approval is granted for 3 years.

*The CLAW Ethics Review Committee reviewed the **Low risk application** on 1 November 2019 in compliance with the Unisa Policy on Research Ethics and the Standard Operating Procedure on Research Ethics Risk Assessment. The decision was ratified by the committee.*

The proposed research may now commence with the provisions that:

1. The researcher(s) will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.



University of South Africa
Pretorius 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

2. Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study should be communicated in writing to the CLAW Committee.
3. The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.
4. Any changes that can affect the study-related risks for the research participants, particularly in terms of assurances made with regards to the protection of participants' privacy and the confidentiality of the data, should be reported to the Committee in writing, accompanied by a progress report.
5. The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study. Adherence to the following South African legislation is important, if applicable: Protection of Personal Information Act, no 4 of 2013; Children's act no 38 of 2005 and the National Health Act, no 61 of 2003.
6. Only de-identified research data may be used for secondary research purposes in future on condition that the research objectives are similar to those of the original research. Secondary use of identifiable human research data require additional ethics clearance.
7. No research activities may continue after the expiry date **1 November 2022**. Submission of a completed research ethics progress report will constitute an application for renewal of Ethics Research Committee approval.

Note:

The reference number ST 142 of 2019 should be clearly indicated on all forms of communication with the intended research participants, as well as with the Committee.

Yours sincerely,



PROF T BUDHRAM
Chair of CLAW ERC
E-mail: budhrt@unisa.ac.za
Tel: (012) 433-9462



PROF M BASDEO
Executive Dean : CLAW
E-mail: MBasdeo@unisa.ac.za
Tel: (012) 429-8603

9.9 ANNEXURE G (1): REQUEST TO CONDUCT RESEARCH: SAPS RESEARCH HEAD OFFICE

KIRL-01

Date: 2019-01-30

To: South African Police Service
Research Department

Head Office

Pretoria

0001

Attention: Lt Col. GJ Joubert

From: KI Masango

M264 Masakaneng

Groblersdal

0470

SUBJECT: REQUEST TO CONDUCT RESEARCH ENQUIRY FOR ACADEMIC PURPOSE

1. I hereby request a permission to conduct a research for my studies with your municipality. My research is entitled "An explorative study of electricity theft in Limpopo". The aim of the research is to explore the offence of electricity theft with focus to develop practical guidelines for curbing the conduct using the Criminal Justice System.
2. The researcher is intended to conduct the study at 10 SAPS police stations in Limpopo namely: Sekhukhune, Tubatse, Mankweng, Lebowakgomo, Tzaneen, Giyani, Mutale, Malamulele, Mokopane and Modimolle. The interviewer intended to interview a total of 10 members from both visible and detective components in each police station. The members to be interviewed should include constables, sergeants, warrant officers and officers with not less than 3 years of service in visible or detective component.

3. The researcher will observe and adhere to ethical and operational requirements of SAPS, SAPS individual employees, UNISA and any other party that may be affected by the study.
4. Kindly find attached the bona fide letter from UNISA and the copy of research proposal.
5. Your consideration of this application is appreciated in advance.

Kind regards

Kate Iketsi Masango

Date

Cell number: 082 456 1860 / 071 928 1973

Work tel number: 013 262 7102

E-mail: iketsi76@gmail.com

9.10 ANNEXURE G (2): PERMISSION TO CONDUCT RESEARCH: SAPS RESEARCH HEAD OFFICE

Your reference/My verwysing:

My reference/My verwysing: 3/34/2

THE HEAD, RESEARCH
SOUTH AFRICAN POLICE SERVICE
PRETORIA
0051

Enquiries/Navors: Lt Col Joubert
Tel: ΔC. Thenga
(012) 393 3118
Email: JoubertG@saps.gov.za

Ms KI Masango
UNIVERSITY OF SOUTH AFRICA

RE: PERMISSION TO CONDUCT RESEARCH IN SAPS: AN EXPLORATIVE STUDY OF ELECTRICITY THEFT IN LIMPOPO: UNIVERSITY OF SOUTH AFRICA: DOCTORATE DEGREE: RESEARCHER: KI MASANGO

The above subject matter refers.

You are hereby granted approval for your research study on the above mentioned topic in terms of National Instruction 1 of 2006.

Further arrangements regarding the research study may be made with the following office:

The Provincial Commissioner: Limpopo:

- **Contact Person:** Brig M Ngoveni
- **Contact Details:** (015) 290 6206/6090

Kindly adhere to paragraph 6 of our attached letter signed on the 2019-02-07 with the same above reference number.



THE HEAD, RESEARCH
DR PR VUMA

MAJOR GENERAL

DATE: 2019-04-04

9.11 ANNEXURE G (3): SAPS PERMISSION TO CONDUCT RESEARCH:
LIMPOPO PROVINCE RESEARCH OFFICE



Privaatsak/Private Bag X 94

Verwysing/Reference:	3/34/2
Navrae/Enquiries:	Lt Col Joubert AC Thenga
Telefoon/Telephone:	(012) 393 3118

THE HEAD: RESEARCH
SOUTH AFRICAN POLICE SERVICE
PRETORIA
0001

- A. The Provincial Commissioner
LIMPOPO
- B. The Divisional Commissioner
DETECTIVE SERVICES
- C. The Divisional Commissioner
VISIBLE POLICING

**PERMISSION TO CONDUCT RESEARCH IN SAPS: AN EXPLORATIVE STUDY OF
ELECTRICITY THEFT IN LIMPOPO: UNIVERSITY OF SOUTH AFRICA:
DOCTORATE DEGREE: RESEARCHER: KI MASANGO**

- A.
 - 1. The above subject matter refers.
 - 2. The researcher, Ms KI Masango, is conducting a study with the aim to *explore the offence of electricity theft in order to develop practical guidelines to curb the offence focusing on the Criminal Justice System.*
 - 3. The researcher is requesting permission to conduct the study at ten (10) Police Stations in Limpopo namely: Sekhukhune, Tubatse, Mankweng, Lebowakgomo, Tzaneen, Glyani, Mutale, Malamulele, Mokopane and Modimolle. The researcher intends to interview a total number of ten (10) members from both Visible Policing (5 members) and Detective Services (5 members) at each Police Station. The members to be interviewed should include Constables, Sergeants, Warrant Officers and Commissioned Officers with at least three (3) years of service in their respective environments.

**PERMISSION TO CONDUCT RESEARCH IN SAPS: AN EXPLORATIVE STUDY OF
ELECTRICITY THEFT IN LIMPOPO: UNIVERSITY OF SOUTH AFRICA:
DOCTORATE DEGREE: RESEARCHER: KI MASANGO**

4. The proposal was perused according to National Instruction 1 of 2006. This office recommends that permission be granted for the research study, subject to the final approval and further arrangements by the offices of the Provincial Commissioner: Limpopo.
5. We hereby request the final approval by your office if you concur with our recommendation. Your office is also at liberty to set terms and conditions to the researcher to ensure that compliance standards are adhered to during the research process and that research has impact to the organisation.
6. If approval granted by your office, this office will obtain a signed undertaking from researcher prior to the commencement of the research which will include your terms and conditions if there are any and the following:
 - 6.1. The research will be conducted at his/her exclusive cost.
 - 6.2. The researcher will conduct the research without the disruption of the duties of members of the Service and where it is necessary for the research goals, research procedures or research instruments to disrupt the duties of a member, prior arrangements must be made with the commander of such member.
 - 6.3. The researcher should bear in mind that participation in the interviews must be on a voluntary basis.
 - 6.4. The information will at all times be treated as strictly confidential.
 - 6.5. The researcher will provide an annotated copy of the research work to the Service.
 - 6.6. The researcher will ensure that research report / publication complies with all conditions for the approval of research.
7. If approval granted by your office, for smooth coordination of research process between your office and the researcher, the following information is kindly requested to be forwarded to our office:

**PERMISSION TO CONDUCT RESEARCH IN SAPS: AN EXPLORATIVE STUDY OF
ELECTRICITY THEFT IN LIMPOPO: UNIVERSITY OF SOUTH AFRICA:
DOCTORATE DEGREE: RESEARCHER: KI MASANGO**

- **Contact person:** Rank, Initials and Surname.
 - **Contact details:** Office telephone number and email address.
8. A copy of the approval (if granted) and signed undertaking as per paragraph 6 supra to be provided to this office within 21 days after receipt of this letter.
9. Your cooperation will be highly appreciated.

B-C. 1 Copy for your information.



MAJOR GENERAL

**THE HEAD: RESEARCH
DR PR VUMA**

DATE: 2018-02-07

9.12 ANNEXURE G (4): RESEARCHER' S INDEMNITY UNDERTAKING IN RESPECT OF SAPS APPROVAL TO CONDUCT RESEARCH IN LIMPOPO PROVINCE

UNDERTAKING

I, KATE IKETSI MASANGO (Name and surname), hereby indemnify the South African Police Service (SAPS) against any claims for any loss or damage caused by or to any equipment used during the research and against any claims for any loss or damage or any other moneys for which the Service may be held liable as a consequence of its involvement in the project.

I further undertake to conduct the research without any unreasonable disruption to the duties of the members of the Service, where it is necessary for the research goals, *research procedure or research instruments* to disrupt the duties of a members, prior arrangements must be made in good time with the commander of such employee;

I undertake—

- not to divulge information received from any employee of the SAPS or any person with whom I conducted an interview, and that the information will at all times be treated as strictly confidential;
- that the research will be performed at my exclusive cost, that I will provide all equipment of whatsoever nature used to conduct the research;
- will pay fees or comply with further procedures in the SAPS, such as fees or procedures applicable to obtain access to a record of the SAPS; and
- to donate an annotated copy of the research work to the SAPS.

Signed:



Date: 19-03-2019

Place: Groblersdal

**9.13 ANNEXURE G (5): SAPS APPROVAL TO CONDUCT RESEARCH:
LIMPOPO PROVINCIAL COMMISSIONER**

SUID-AFRIKAANSE POLISIEDIENS



SOUTH AFRICAN POLICE SERVICE

SAP 21

Private Bag x 9428

Verreksing Reference	2/1/2/1 (04/2019)
Navrae Enquiries	Brigadier Mphahlele Ngweni Lt Col Montjane
Telefoon Telephone	015 290 6090/6300
Faksnommer Fax number	015 230 1023

**PROVINCIAL COMMISSIONER
SOUTH AFRICAN POLICE
SERVICE
POLOKWANE
LIMPOPO**

- A. MASANGO KI
M264 Masakaneng
Groblersdal
0470
- B. Cluster Commander: Brig Mkhabela
BURGERSFORT CLUSTER
South African Police Service
Limpopo Province
- C. Cluster Commander: Brig Tsebe
MANKWENG CLUSTER
South African Police Service
Limpopo Province
- D. Cluster Commander: Major Gen Mashilo
POLOKWANE CLUSTER
South African Police Service
Limpopo Province
- IE. Cluster Commander: Major Gen Mathebula
TZANEEN CLUSTER
South African Police Service
Limpopo Province
- F. Cluster Commander: Maj General Ngobeni
GIYANI CLUSTER
South African Police Service
Limpopo Province
- G. Cluster Commander: Maj General Mulaudzi
THOHOYANDOU CLUSTER
South African Police Service
Limpopo Province
- H. Cluster Commander: Brig Malahlela
MAHWELERENG CLUSTER
South African Police Service
Limpopo Province

- AUTHORITY TO CONDUCT RESEARCH IN SAPS: AN EXPLORATIVE STUDY OF ELECTRICITY THEFT IN LIMPOPO: UNIVERSITY OF SOUTH AFRICA: RESEARCHER: KI MASANGO.

I. Cluster Commander: Brig Steyn
MODIMOLLE CLUSTER
South African Police Service
Limpopo Province

A.1. Your authority to conduct the above research is hereby granted.

2. Things to be considered by the researcher:-

- The research will be done at your own cost;
- The research will be conducted without any disruption of official duties;
- The information provided to the researcher by the SAPS to be treated strictly confidential as possible;
- Participation in the interviews to be done voluntary so;
- SAPS expect you to donate an annotated copy of the research done for service improvement.

B. Copy for your information.

C. The researcher has been granted the authority to conduct research on the abovementioned topic at your cluster stations, It will be appreciated if you can assist the researcher were it is possible.

3. Hoping you will find everything in order



LIEUTENANT GENERAL
PROVINCIAL COMMISSIONER
LIMPOPO PROVINCE
NJ LEDWABA

Date:

2019-03-01

9.14 ANNEXURE G (6): SAPS EMAIL CONFIRMATION TO CONDUCT RESEARCH: SAPS NATIONAL HEAD OFFICE

From: Joubert Giep - Lieutenant Colonel <JoubertG@saps.gov.za>
Sent: Wednesday, 27 November 2019 11:16
To: Kate Masango <MasangKI@eskom.co.za>
Cc: LIM:Prov-Strategic Projects <MontjaneSophy@saps.gov.za>; LIM:Prov-Strategic Admin <limstratman@saps.gov.za>
Subject: RE: REQUEST TO REVIEW THE PERMISSION TO CONDUCT RESEARCH

Ms Masango

This office has no objection to your request to add the additional stations to your study, on the condition that the Provincial Office: Limpopo agrees.

You may confirm the arrangements via the Limpopo Provincial Office.

You may contact:

COL MS MONTJANE
STRATEGIC MANAGEMENT
Internal email address: LIM:Prov-Strategic Projects External email address:
montjanesophy@saps.org.za Telephone no: 015 290 6300 Cell phone no: 0740643784

Regards

Lt Col Joubert
RESEARCH: SAPS HEAD OFFICE

From: Kate Masango [<mailto:MasangKI@eskom.co.za>]
Sent: 25 November 2019 12:33 PM
To: Joubert Giep - Lieutenant Colonel <JoubertG@saps.gov.za>
Cc: LIM:Prov-Strategic Projects <MontjaneSophy@saps.gov.za>
Subject: FW: REQUEST TO REVIEW THE PERMISSION TO CONDUCT RESEARCH

Dear Lt Col Joubert

I kindly request to include the following SAPS stations in my research as per letter attached. Phalaborwa, Giyani, Tzaneen, Maake, Namakgale, Lulekani, Malamulele, Hlanganani, Hoedspruit and Sekgosese-all based in Mopani district/region.

Kind regards



9.15 ANNEXURE H (1): REQUEST TO CONDUCT RESEARCH: GREATER TZANEEN MUNICIPALITY

Date: 2019-03-13

To: The Office of the Municipal Manager
Greater Tzaneen Municipality
Limpopo

Attention: Ms TG Hlangwane

From: KI Masango
Masakaneng
Groblersdal
0470

SUBJECT: REQUEST TO CONDUCT RESEARCH FOR ACADEMIC PURPOSE

1. I hereby request a permission to conduct research for my studies with your municipality. My research is entitled "An explorative study of electricity theft in Limpopo". The aim of the research is to explore the offence of electricity theft with focus to develop practical guidelines for curbing the conduct using the Criminal Justice System.
2. The intend of the research is to gather information that will address the main research questions that are as follows:
 - What is the nature and extent of electricity theft in South Africa?
 - How is electricity theft interpreted in relation to laws governing crime in South Africa?

- What are the current practices of curbing electricity theft by utilities in South Africa?
 - What are the dynamics associated with reporting, investigating and prosecuting the perpetrators of electricity theft?
 - Which practical measures could be applied to curb electricity theft successfully within the framework of laws governing crime in South Africa?
3. I need to conduct interviews with the municipal employees who their duties involve them with electricity supply matters. I will use an interview schedule to interview a maximum of 10 sampled participants.
 4. I commit to be ethical in my approach when conducting the study, and I will abide with the rules and conditions that may be brought to my attention by the Municipality authority.

Kind regards

Kate Iketsi Masango

Date

Cell number: 082 456 1860 / 071 928 1973

Work tel number: 013 262 7102

E-mail: iketsi76@gmail.com

9.16 ANNEXURE H (2): PERMISSION TO CONDUCT RESEARCH: GREATER TZANEEN MUNICIPALITY



**GREATER TZANEEN MUNICIPALITY
GROTER TZANEEN MUNISIPALITEIT
MASIPALA WA TZANEEN
MASEPALA WA TZANEEN**



P.O. BOX 24
TZANEEN
0950

TEL: 015 307 8000
FAX: 015 307 8049

www.tzaneen.gov.za

19 March 2019

Ref.: 4/4/R
TG Hlangwane

School of Law
Department of Police Practice
University of South Africa
Po Box 392
UNISA
0003

Sir/Madam

PERMISSION TO CONDUCT RESEARCH: KI MASANGO -32706405

Your letter dated 10/01/2019 has reference.

Kindly note that permission has been granted to conduct research at the Greater Tzaneen Municipality on the topic "An explorative study of electricity theft in Limpopo".

The student is welcome to conduct a research according to a structured questionnaire/ and or conduct face to face interview. However the student must undertake the responsibility to provide this Municipality with a copy of the final report.

The student is welcome to liaise for further assistance with the Skills Development Practitioner, Mr. Brian Mashala on tel.no. (015) 307 8283 or by e-mail: sdf@tzaneen.gov.za.

It is trusted that you will find this matter in order

Yours faithfully

BS Matlala
Municipal Manager

9.17 ANNEXURE I (1): REQUEST TO CONDUCT RESEARCH: ESKOM

KIRL- 01

Date: 2019-05-24

To: Eskom
Limpopo Province
Polokwane
0699

Attention: Mr ML Mamashela

From: KI Masango
M264 Masakaneng
Groblersdal
0470

SUBJECT: REQUEST TO CONDUCT RESEARCH ENQUIRY FOR ACADEMIC PURPOSE

1. I hereby request a permission to conduct research for my studies with your municipality. My research is entitled "An explorative study of electricity theft in Limpopo". The aim of the research is to explore the offence of electricity theft with focus to develop practical guidelines for curbing the conduct using the Criminal Justice System.
2. The researcher is intended to conduct the study in the precinct of Mopani region with eskom employees who have not less than three (3) years experience in Eskom and have been exposed to electricity theft incidents. The targeted components include technical and customer services employees resorting Operation and Maintenance (O&M), technical employees in Energy

protection (EP) and Energy trading (ET) and employees in security department (Protective services).

3. The researcher will observe and adhere to ethical and operational requirements of Eskom, individual employees, UNISA and any other party that may be affected by the study.
4. Kindly find attached the bona fide letter from UNISA and the copy of research proposal.
5. Your consideration of this application is appreciated in advance.

Kind regards

Kate Iketsi Masango

Date

Cell number: 082 456 1860 / 071 928 1973

Work tel number: 013 262 7102

E-mail: iketsi76@gmail.com

9.18 ANNEXURE I (2): PERMISSION TO CONDUCT RESEARCH: ESKOM



MEMORANDUM

To : Security Manager
Limpopo Operating Unit

From : Kate Iketsi Masango
Groblersdal zone
Limpopo Operating Unit

Date : 02 July 2019

SUBJECT : REQUEST TO CONDUCT A RESEARCH ENQUIRY

1. PURPOSE

The intention of this memorandum is to request a permission to conduct research interviews with Eskom employees who have experience and knowledge in matters related to illegal acquisition of electrical energy (electricity theft).

2. BACKGROUND

I am an Eskom employee with unique number 4255802, resorting to security component, Groblersdal in Limpopo Operating Unit. I am undertaking an academic study with University of South Africa (UNISA) under the Criminal Justice department: forensic and criminal investigation science.

The title of my research is "An explorative study of electricity theft in Limpopo". The aim of this research is to explore the offence of electricity theft in order to develop practical guidelines with focus on curbing offence using criminal justice system in Limpopo, South Africa. Part of my research requires me to interview Eskom employees because their role which is directly linked to the core function of supplying electricity to customers, places them in a position to have experienced matters related to electricity theft.

ESKOM
Megawatt Park Haarwell Drive Sunninghill, Sandton, PO Box 1991 Johannesburg 2009 SA, Tel +27 11 711 2020
Fax +27 85 667 8951, www.eskom.co.za
Eskom Holdings SOC Ltd Reg No 2002016827/09

KI

3. ESKOM TARGET POPULATION

The following employees within Eskom are targeted:

3.1 Security personnel

They are selected because of their scope of work that requires them to deal with crime related matters within Eskom. Number of personnel needed to answer the interview questions is 10 selected randomly from Limpopo OU.

3.2 Customer Services personnel

They are selected because of their expertise in customer relations matters, and they are at the front of receiving information or witnessing incidents of illegal acquisition of electricity by consumers or / and customers during their normal duties.

Number of personnel needed to answer the interview questions is 10 selected randomly from all the zones in the Limpopo OU.

3.3 Energy trading

Their duties place them in a position to can identify up deficiencies in energy sales matters.

Number of personnel needed to answer the interview questions is 5 selected randomly for Limpopo OU.

27

3.4 Energy protection or / and metering

They are in a position to identify the illegal trends of acquiring electricity during audits or through informers. Number of personnel needed to answer the interview questions is 10 selected randomly from all zones in Limpopo OU.

Number of personnel needed to answer interview questions is 4 selected purposely

3.5 CNC Technical personnel

They are providing technical services to customers informed by work orders and they are able to identify up the deficiencies during the line inspections or any of their normal activities.

Number of personnel needed to answer the interview questions is 10 selected randomly from all CNC's in Limpopo OU.

4. ETHICAL CONDUCT



I commit to conduct myself in the highest ethical manner that cannot subject Eskom, its assets, its employees and information to any harm while conducting the interviews and administering the survey questionnaires. I will abide with the rules and conditions that may be brought to my attention by Eskom authorities.

5. ATTACHMENT

Kindly find attached together with this memorandum a 'bona fide' letter from UNISA.


Applicant signature
KI Masango
UIN 4255802
Security Division
Groblersdal, LOU
Tel no: 013 262 7102
Cell no: 082 456 1860
E-mail: MasangKI@ashom.co.za


Date

Recommended	<u>Lucas Mamashela</u>	(Full names)
		(Signature)
	<u>Security Manager (Acting)</u>	(Capacity)
	<u>SECURITY SERVICES</u>	(Department)
	<u>SHEAS Limpopo</u>	(Business unit)
	<u>12 July 2019</u>	(Date)
Approved by	<u>Donald Kotze</u>	(Full names)
		(Signature)
	<u>SHEA Manager</u>	(Capacity)
	<u>SHEA</u>	(Department)
	<u>Distribution Limpopo</u>	(Business unit)
	<u>14.07.2019</u>	(Date)

9.19 ANNEXURE J (1): REQUEST TO CONDUCT RESEARCH: BA-PHALABORWA MUNICIPALITY

Date: 2019-09-19

To: The Office of the Municipal Manager
Ba-Phalaborwa Municipality
Limpopo

Attention: Ms Nogilana-Raphala

From: KI Masango
Masakaneng
Groblersdal
0470

SUBJECT: REQUEST TO CONDUCT RESEARCH FOR ACADEMIC PURPOSE

1. I hereby request a permission to conduct research for my studies with your municipality. My research is entitled "An explorative study of electricity theft in Limpopo". The aim of the research is to explore the offence of electricity theft with focus to develop practical guidelines for curbing the conduct using the Criminal Justice System.
2. The intend of the research is to gather information that will address the main research questions that are as follows:
 - What is the nature and extent of electricity theft in South Africa?
 - How is electricity theft interpreted in relation to laws governing crime in South Africa?

- What are the current practices of curbing electricity theft by utilities in South Africa?
 - What are the dynamics associated with reporting, investigating and prosecuting the perpetrators of electricity theft?
 - Which practical measures could be applied to curb electricity theft successfully within the framework of laws governing crime in South Africa?
3. I need to conduct interviews with the municipal employees who their duties involve them with electricity supply matters. I will use an interview schedule to interview a maximum of 10 sampled participants.
4. I commit to be ethical in my approach when conducting the study, and I will abide with the rules and conditions that may be brought to my attention by the Municipality authority.

Kind regards

Kate Iketsi Masango


Date

Cell number: 082 456 1860 / 071 928 1973

Work tel number: 013 262 7102

E-mail: iketsi76@gmail.com

9.20 ANNEXURE J (2): PERMISSION TO CONDUCT RESEARCH: BA-PHALABORWA MUNICIPALITY

	BA-PHALABORWA MUNICIPALITY	PRIVATE BAG X01020 PHALABORWA 1390 TELEPHONE (015) 780 6300 FAXIMILE (015) 781 0726 E-mail: phalamun@lantic.net
Date: <u>5/4/1</u> Enquirer: <u>Nogilana-Raphela PF</u> Your ref: _____	ALL CORRESPONDENCE TO BE ADDRESSED TO THE MUNICIPAL MANAGER	

21 October 2019

Ms KI Masango
Groblersdal
Limpopo

Sir/Madam

**RE: PERMISSION TO COLLECT DATA FOR RESEARCH STUDY IN BA-PHALABORWA
MUNICIPALITY**

Kindly take note that a permission to collect data within Ba-Phalaborwa municipality has been granted. Furthermore, all ethical conduct as prescribed during the collection of data must be adhered to without compromises.

Wishing you well during your study.



**MOAKAMELA MI
MUNICIPAL MANAGER**

9.21 ANNEXURE K (1): REQUEST TO CONDUCT RESEARCH: GREATER LETABA MUNICIPALITY

Date: 2019-10-01

To: The Office of the Municipal Manager
Greater Letaba Municipality
Limpopo

Attention: Dr KI Sirovha

From: KI Masango
Masakaneng
Groblersdal
0470

SUBJECT: REQUEST TO CONDUCT RESEARCH FOR ACADEMIC PURPOSE

1. I hereby request a permission to conduct research for my studies with your municipality. My research is entitled "An explorative study of electricity theft in Limpopo". The aim of the research is to explore the offence of electricity theft with focus to develop practical guidelines for curbing the conduct using the Criminal Justice System.
2. The intend of the research is to gather information that will address the main research questions that are as follows:
 - What is the nature and extent of electricity theft in South Africa?
 - How is electricity theft interpreted in relation to laws governing crime in South Africa?

- What are the current practices of curbing electricity theft by utilities in South Africa?
 - What are the dynamics associated with reporting, investigating and prosecuting the perpetrators of electricity theft?
 - Which practical measures could be applied to curb electricity theft successfully within the framework of laws governing crime in South Africa?
3. I need to conduct interviews with the municipal employees who their duties involve them with electricity supply matters. I will use an interview schedule to interview a maximum of 10 sampled participants.
 4. I commit to be ethical in my approach when conducting the study, and I will abide with the rules and conditions that may be brought to my attention by the Municipality authority.

Kind regards

Kate Iketsi Masango

Date

Cell number: 082 456 1860 / 071 928 1973

Work tel number: 013 262 7102

E-mail: iketsi76@gmail.com

9.22 ANNEXURE K (2): PERMISSION TO CONDUCT RESEARCH: GREATER LETABA MUNICIPALITY

From: Ki Sirovha <sirovhainnocent@gmail.com>
Sent: Monday, 18 November 2019 12:37
To: Kate Masango <MasangKI@eskom.co.za>
Subject: Re: FW: REQUEST TO CONDUCT RESEARCH

Good day Ms Masango

Your request to conduct research is granted on condition you observe the research ethics.

Regards
Dr KI Sirovha

On Mon, 18 Nov 2019, 11:09 Kate Masango, <MasangKI@eskom.co.za> wrote:

Dear Dr Sirovha

Herewith the follow up on the request made as per below mail.

Warm regards

KI Masango



From: Kate Masango
Sent: 01 October 2019 04:16 PM
To: 'innocents@glm.gov.za'
Cc: 'ketsi76@gmail.com'
Subject: REQUEST TO CONDUCT RESEARCH

Dear Dr Sirovha

Kindly find attached the letter requesting permission to conduct study with your municipality.

Also attached is the letter from UNISA.

Warm regards

KI Masango

NB: This Email and its contents are subject to the Eskom Holdings SOC Ltd EMAIL LEGAL NOTICE which can be viewed at http://www.eskom.co.za/Pages/Email_Legal_Spam_Disclaimer.aspx

9.23 ANNEXURE L (1): REQUEST TO CONDUCT RESEARCH: NATIONAL PROSECUTING AUTHORITY

Date: 2019-10-16

To: National Prosecuting Authority
NPA Research Management
Head Office
Pretoria
0001

Attention: The Director-Marthi Alberts

From: KI Masango
M264 Masakaneng
Groblersdal
0470

SUBJECT: REQUEST TO CONDUCT RESEARCH FOR ACADEMIC PURPOSE

1. I hereby request a permission to conduct research for my studies with your municipality. My research is entitled "An explorative study of electricity theft in Limpopo". The aim of the research is to explore the offence of electricity theft with focus to develop practical guidelines for curbing the conduct using the Criminal Justice System.
2. The researcher intended to gather information that will address the following research questions as follows:
 - What is the nature and extent of electricity theft in South Africa?
 - How is electricity theft interpreted in relation to laws governing crime in South Africa?
 - What are the current practices of curbing electricity theft by utilities in South Africa?
 - What are the dynamics associated with reporting, investigating and prosecuting the perpetrators of electricity theft?

- Which practical measures could be applied to curb electricity theft successfully within the framework of laws governing crime in South Africa?
3. The research requires the researcher to conduct interviews with NPA prosecutors that are working in any courts within Mopani region in Limpopo and who have experience of dealing with electricity theft.
 4. The researcher commits to ethicalness in conducting the study and will abide with the rules and conditions that may be brought to the researchers' attention by the NPA office.
 5. Attached together with this request letter is the following:
 - A letter from UNISA confirming the researchers' registration with the institution.
 - NPA application form to conduct research.
 - Copy of researchers' identity card.
 - Researchers' curriculum vitae.
 6. Your consideration of this application is appreciated in advance.

Kind regards

Kate Iketsi Masango

Date

Cell number: 082 456 1860 / 071 928 1973

Work Tel number: 013 262 7102

E-mail: iketsi78@gmail.com

9.24 ANNEXURE L (2): PERMISSION TO CONDUCT RESEARCH: NATIONAL PROSECUTING AUTHORITY

Administration



Tel: +27 12 845 8000

Victoria & Griffiths
Mxenge Building
23 Westlake Avenue
Waavind Park
Pretoria

P/Bag X752
Pretoria
0001

Enquiry: Mr. Chris Griffiths
Email: cgriffiths@npa.gov.za
Phone: 0128455897
Date: 20/12/2019

Ms. Kate Masango
P.O. Box 1317
Siyabuswa
0472

RE: APPROVAL OF REQUEST TO CONDUCT RESEARCH IN THE
NATIONAL PROSECUTING AUTHORITY (DIVISION: LIMPOPO)

Dear Ms. Masango

Thank you for showing interest in conducting research in the National Prosecuting Authority (NPA). The purpose of this letter is to inform you that your request to conduct research within the NPA (Division: Limpopo) has been approved.

The NPA appreciates that your research has been approved by the University of South Africa College of Law Research Ethics Committee. Please consider and/or adhere to (whichever is applicable) the below-mentioned in support of your research:

1. Permission to conduct the research is granted by the Director of Public Prosecutions (DPP): Limpopo and it should be noted and understood that information about the work can only be utilised with the NPA's explicit written approval and permission.
2. The research request focuses on "**An Explorative Study of Electricity Theft in Limpopo**", and therefore should be in line with all relevant NPA policies and acts.

Corporate Service Centres:

- Finance & Procurement
- Human Resources
- Development & Management
- Information Management
- Research & Policy Information
- Risk & Security

3. Permission to conduct research is only limited to interviewing Prosecutors who have experience in prosecuting electricity theft cases in the Mopani Region of the Division: Limpopo as per indication in your approved research proposal.
4. This research intends to address the research problem of:
 - 4.1. Establishing if the adequate application of laws governing crime in South Africa, as compared to relying on engineering technology, can assist in curbing electricity theft in Limpopo.
5. Upon completion of the research project, it is suggested that a copy of the report be sent to the NPA for perusal and approval. This is specifically to prevent the inappropriate interpretation and publication of the latter mentioned information.
6. It is also suggested that in the event of the author publishing an article on research which contains NPA information, it be approved by the NPA.
7. Please inform the DPP: Limpopo of your intent to interview the Prosecutors before approaching them.
8. This research approval letter is valid for 2 years from the date of approval by the Acting Head of Administration. You will need to re-apply for approval in case your research exceeds the above-mentioned timeframe.

In your case, there will be no need to complete FORM A, which is the request for access to records of a Public Body, Section 18(1) of the Promotion of Access to Information Act, 2000, since you indicated that your research study only involves interviews with participants.

RE: APPROVAL OF REQUEST TO CONDUCT RESEARCH STUDY: MS. K. MASANGO 20/12/2019

Kindly keep the NPA informed about further developments on this research and please send your response to the NPA Acting Director: Research Management on the following details:

Name: Mr. Thomas Tshilowa
Telephone number: 012 845 6273
E-mail address: TTshilowa@npa.gov.za



Adv. Karen van Rensburg
Acting Head of Administration

Date: 22/12/2019

RE: APPROVAL OF REQUEST TO CONDUCT RESEARCH STUDY: MS. K. MASANGO 20/12/2019



Digital Receipt

This receipt acknowledges that Turnitin received your paper. Below you will find the receipt information regarding your submission.

The first page of your submissions is displayed below.

Submission author: Ki Masango
Assignment title: Complete dissertation/thesis DRAFT
Submission title: Dissertation draft 1
File name: KI_Masango_Research_report_draft_1_19122023-for_Turnitin...
File size: 1.94M
Page count: 385
Word count: 122,946
Character count: 711,180
Submission date: 19-Dec-2023 04:25PM (UTC+0200)
Submission ID: 2262567638



9.26 ANNEXURE N: EDITOR'S LETTER

TO WHOM IT MAY CONCERN

I, the undersigned, hereby confirm my involvement in the language editing and research methodology compatibility check for the thesis manuscript of Ms Kate Iketsi Masango (Student Number: 32706405) submitted to me as part of her fulfilment of the requirement for the Doctor of Philosophy (PhD) in Criminal Justice degree registered with the University of South Africa (UNISA), and entitled:

An explorative study of electricity theft in Limpopo Province

As an independent academic editor, I attest that all possible means have been expended to ensure the final draft of Ms K.I. Masango's thesis manuscript reflects both acceptable research methodology practices and language competency standards expected of postgraduate research studies at her academic level.

In compliance with expected ethical requirements in research, I have further undertaken to keep all aspects of Ms K.I. Masango's study confidential, and as her own individual initiative.

Sincerely,

T.J. Mkhonto

BA Ed: North-West University, Mahikeng (1985)

MEd: School Administration; University of Massachusetts-at-Boston, USA, Harbor Campus (1987)

DTech: Higher Education Curriculum Policy Reform, Design & Management; University of Johannesburg (2007)

All enquiries:

E-mail: mkhonto9039@gmail.com

Cell: +27(0)60 401 8279

Signed: 

Dr T.J. Mkhonto
Independent Academic Editor

Date: 17 February 2024
dd/mm/yyyy



Themba J Mkhonto

Associate Member

Membership number: MKH001

Membership year: February 2023 to March 2024

060 401 8279

mkhonto9039@gmail.com

www.editors.org.za