

**A GEOGRAPHIC PERSPECTIVE OF LABOUR-INTENSIVE
METHODS IN THE DEVELOPMENT AND MAINTENANCE
OF TRANSPORT INFRASTRUCTURE**

by

ERIC NNDAVHELESENI MUSEKENE

Submitted in accordance with the requirements
for the degree of

DOCTOR OF PHILOSOPHY

In the subject

GEOGRAPHY

At the

UNIVERSITY OF SOUTH AFRICA

PROMOTER: DR ALET HARMSE

APRIL 2010

DECLARATION

'I declare that: *A Geographic Perspective of Labour-Intensive Methods in the Development and Maintenance of Transport Infrastructure* is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete reference. This work has not been submitted before for any degree or examination at any other university.

Signature

Date

Dedicated to:

My Wife: Emma Musekene

Children: Hulisani and O' Ri-Tshidza Musekene

Father: Mr Makondelele Musekene (May his soul rest in peace)

Mother: Mrs Mavhungu Esther Musekene

ACKNOWLEDGEMENTS

It has been a privilege to be given the opportunity by the Department of Transport and Road Agency Limpopo (RAL) to become directly involved in the retrospective evaluation of the Gundo Lashu programme. The Department of Transport contributed to the initial cost of the study and RAL provided the most useful information and data related to the study.

My greatest indebtedness is to my promoter, Dr. Alet Harmse who not only assisted me during all the stages of the study, but who also provided me with the necessary support and guidance to obtain greater insight into this complex field.

Special thanks go to Professor Zeleke Worku and Mr Stanley Malange (Manager for Statistics in SASSA) for advice and assistance on statistical analysis, Mr Neil Swart (Gundo Lashu Project Manager) for constructive engagements and provision of access to secondary data, and Mr Kobus Van Doorn for the assistance with GIS Maps. Mr Mac Mashiri from CSIR assisted with the review of the questionnaire. Mulalo Dominique Musekene, Musekene Brian Musekene, Hulisani Ramudzwagi and Tshisafheli Silima assisted in data collection. I would also like to acknowledge with deep appreciation Ms Charlotte Stevens from Stevens Editing Services for the tremendous efforts she put into the final editing of the whole thesis.

I also owe a debt of gratitude to my wife Emma Musekene, for being a perfect companion, a fountain of strength and encouragement, and also our children, Hulisani and O' Ri Tshidza. My Mother Esther Mavhungu Musekene, brother Richard Mmbulungeni Musekene and his wife Margaret Musekene for the sacrifice they made in providing me with an education. To my sisters and their families, Mrs Julia Rerani, Mrs Shonisani Mavis Muvhango and Mrs Livhuwani Mugwabane, I salute you, you have been a pillar of strength to me. Ultimately, thanks must go to GOD Almighty, for only through Him was this study possible.

TABLE OF CONTENT

	PAGE
DECLARATION	ii
DEDICATIONS	iii
ACKNOWLEDGEMENTS	iv
ABSTRACT	xiii
1 Background, Problem Statement and Research Design	1
1.1 Introduction	1
1.2 Background to the Study	2
1.3 Research Problem	4
1.4 Transport and development	8
1.4.1 Transport studies in geography	8
1.4.2 Transport in developing countries	13
1.4.3 Transport for Development in South Africa	16
1.4.4 The Extended Public Works Programme	19
1.4.5 Clarification of concepts	22
1.5 Rationale of the Study	28
1.6 Research Aim and Objectives	31
1.7 Research Design and Methodology	32
1.7.1 Overview of Data Collection and Analysis Methods	33
1.7.2 Justification for the choice of the projects	35
1.8 Organisation of the Study	36
2 Review of theories of development	38
2.1 Introduction	38
2.2 Theories of Development	39
2.2.1 Modernisation theory	41
2.2.2 Dependency theory	46
2.2.3 Neo-liberalism and beyond	48
2.2.3.1 Growth with equity theory	50
2.2.3.2 Human development theory	51
2.3 Transport and development	53
2.4 Approaches to transport provision	56

2.4.1	Government led development approach	56
2.4.2	Deregulation and privatisation	59
2.4.3	Public and private enterprise-led development approach	59
2.4.4	Endogenous development	62
2.5	Conclusion	65
3	Transport development and labour-intensive methods	66
3.1	Introduction	66
3.2	The impact of transport infrastructure	66
3.2.1	Economic Impacts	67
3.2.2	Improved mobility and access	71
3.2.3	Contribution towards poverty alleviation	74
3.2.4	Creation of employment opportunities	75
3.2.5	Increase in gross domestic product	76
3.2.6	Environmental impact	77
3.3	Labour-intensive road infrastructure	80
3.4	Targeting for labour-intensive programmes	82
3.4.1	Indicator targeting	83
3.4.2	Geographical targeting	84
3.4.3	Community-based targeting	86
3.4.4	Self-targeting	88
3.4.5	Outcomes of targeting	88
3.5	The South African context	91
3.5.1	Road infrastructure in South Africa	91
3.5.2	Policy and legislation	92
3.5.2.1	The Constitution of South Africa Act 108 of 1996	93
3.5.2.2	The Reconstruction and Development Programme	93
3.5.2.3	The Growth, Employment and Redistribution Strategy	95
3.5.2.4	Intergovernmental Relations Framework	95
3.5.2.5	National White Paper on Transport Policy	96
3.5.2.6	The Labour Market Commission and Public Works	97
3.6	Conclusion	98

4	Research Methodology and Study Setting	99
4.1	Introduction	99
4.2	Institutional arrangement	99
4.3	Programme overview	102
4.3.1	Overview of the Gundo Lashu Programme	102
4.3.2	Infrastructure delivery model	103
4.3.2.1	The SAACE labour-intensive construction model	104
4.3.2.2	Conventional contracts with labour-intensive pre-requisite	105
4.3.2.3	Description of the Study Area	110
4.3	Research methodology	115
4.3.1	Sampled projects	119
4.3.2	The selection of the study group	120
4.3.3	Data collection methods	124
4.3.3.1	The questionnaire	125
4.3.3.2	Interviews	127
4.3.3.3	Field observations	128
4.3.3.4	Secondary data sources	129
4.3.4	Data organisation and analysis	131
4.3.4.1	Statistical analysis	131
4.3.4.2	Poverty impact analysis	133
4.3.4.3	Qualitative analysis	134
4.4	Ethical considerations	135
4.5	Limitations of the Study	136
4.6	Conclusion	138
5	Analysis of Findings	139
5.1	Introduction	139
5.2	Analysis of programme outputs, outcomes and impact	139
5.2.1	Provision of training	140
5.2.2	Infrastructure provision	143
5.2.3	Improved travel patterns	144
5.2.4	Access to services	146
5.2.4.1	Access to educational facilities	148
5.2.4.2	Access to health facilities	150

5.2.5	Employment opportunities	151
5.2.5.1	Involvement in work activities	154
5.2.5.2	Period spent looking for a job	155
5.2.5.3	Opportunity for future employment	156
5.2.6	The impact on personal and household income	159
5.2.6.1	Personal income analysis (wage level)	159
5.2.6.2	Household income analysis	162
5.2.6.3	Household expenditure pattern	165
5.2.7	Promotion of household's livelihoods	168
5.3	Overall impact of road infrastructure development	171
5.3.1	Empirical evidence from other projects	171
5.3.2	Impacts of the Gundo Lashu programme	172
5.4	Assessment of the planning and implementation of the Gundo Lashu programme	175
5.4.1	Management and planning barrier	176
5.4.2	Human resource barrier	181
5.4.3	Financial resource barrier	183
5.4.4	Functional and structural barriers	185
5.4.5	Communication and coordination barrier	188
5.5	Conclusion	189
6	Findings, Conclusion and Recommendations	191
6.1	Introduction	191
6.2	Summary of Findings	191
6.2.1	Impact on skills and training	191
6.2.2	Improved access to services	192
6.2.3	Impact on poverty and sustainable livelihoods	193
6.2.4	Impact on jobs opportunities	194
6.2.5	Impact on household income	195
6.2.6	Planning for road development and maintenance	196
6.2.6.1	Project targeting and design	196
6.2.6.2	Barriers to planning, implementation and reporting	197
6.3	Key recommendations	199
6.3.1	Comprehensive road planning	199

6.3.2	Project targeting mechanisms	200
6.3.3	Development of guidelines for future maintenance	201
6.3.4	Skills training and capacity development	201
6.3.5	Shift towards results-based monitoring and evaluation	202
6.4	Research contribution and gaps identified	202
6.5	Conclusion	205
7	References	210
8	Annexures	
Annexure A:	Letter of Permission	232
Annexure B:	Response Letter from Limpopo Road Agency	233
Annexure C:	Research Ethics Statement	234
Annexure D:	Respondents Consent Form	236
Annexure E:	Questionnaire	237

LIST OF TABLES

Table 4.1: EPWP Road Infrastructure Delivery Targets	102
Table 4.2: Road network in Vhembe District 2005	113
Table 4.3: List of sampled projects	114
Table 4.4: List of sampled communes and respondents	122
Table 4.5: Information requirements for poverty impact analysis	134
Table 5.1: Training within the sampled projects	141
Table 5.2 (a): Variance ratio test on access to education facilities	148
Table 5.2 (b): Comparison of means on access to education facilities	149
Table 5.3 (a): Variance ratio test on access to health facilities	150
Table 5.3 (b): Comparison of means on access to health facilities	151
Table 5.4: Summary of the Gundo Lashu programme outputs (04-09)	152
Table 5.5: Employment disaggregation by participant groups (04-09)	152
Table 5.6: Various work activities undertaken by respondents	155
Table 5.7: Period of time trying to find work	156
Table 5.8: Possibilities of finding work	158
Table 5.9: Total project wages paid in Thulamela Local Municipality	160
Table 5.10: Total project wages paid in Makhado Local Municipality	160
Table 5.11 (a): Variance ratio test on Household Income	163
Table 5.11 (b): Comparison of means on household's Income	163
Table 5.12: Target of expenditure among the treatment group	167

LIST OF FIGURES

Figure 4.1 (a): Labour-intensive road construction activities	107
Figure 4.1 (b): Labour-intensive road construction activities	108
Figure 4.2: Labour-intensive road maintenance activities	109
Figure 4.3: Map of South Africa showing Limpopo province and 5 districts	111
Figure 4.5: Route Network in Thulamela Local Municipality	113
Figure 4.6: Route Network in Makhado Local Municipality	114
Figure 5.1: Impact of road on travel patterns	145
Figure 5.2: Respondents' household income sources	164
Figure 5.3: Household expenditure classification	166

ABBREVIATIONS

ASGISA	Accelerated Shared Growth Initiative of South Africa
CBPWP	Community Based Public Works Programme
DFID	Department For International Development
DPW	Department of Public Works
EPWP	Extended Public Works Programme
GDP	Gross Domestic Products
GDS	Growth and Development Summit
GEAR	Growth, Employment and Redistribution
GIS	Geographic Information System
IDP	Integrated Development Plan
ILO	International Labour Organisation
ISRDP	Integrated Sustainable Rural Development Programme
JIPSA	Joint Initiative on Priority Skills Acquisition
LFS	Labour Force Survey
LIC	Labour Intensive Construction
M&E	Monitoring and Evaluation
MDG	Millennium Development Goals
MIG	Municipal Infrastructure Grant
NHTS	National Household Travel Survey
PWP	Public Works Programme
RAL	Limpopo Road Agency
RDP	Reconstruction and Development Programme
SAACE	South African Association of Constructing Engineers
SADC	Southern African Developing Countries
SMME	Small Medium and Micro Enterprises
UNDP	United Nation Development Programme

ABSTRACT

The study investigates the extent of distributional impacts of labour-intensive road projects using a geographical approach. The aim is to evaluate infrastructural effectiveness. The central premise is that the interface between road investment and economic development has broad implications that are beyond transportation's basic purpose of providing access and mobility. Communities are motivated by the outcomes and impacts of road infrastructure development in improving the productiveness of the economy, in line with socio-economic development and other multiplying effects.

The objective was to describe the nature and delivery mechanisms of labour-intensive road projects, evaluate the impact thereof on the project participants and their communities and explore the constraints and challenges experienced by these initiatives. The impact of the Gundo Lashu programme was measured, based on an assessment of programme outputs, outcomes and impacts, to determine whether the project had the desired effects on individual participants and their households. A matched control case study design, using a combination of qualitative and quantitative approaches was adopted.

The study found that the Gundo Lashu programme had achieved the expected outputs in terms of the total number of jobs created, total road length constructed and maintained. However, the communities' socio-economic outcomes and the impacts of the programme on poverty and sustainable livelihoods were mixed. These conclusions re-affirm the notion that the development of rural road infrastructure alone by labour-intensive construction methods, is not sufficient in tackling poverty. While government is focusing on addressing unemployment and skills development through labour-intensive road construction programmes, there is a need to ensure proper integration of government services to make a significant impact. Huge deficiencies exist in the inter-linkages between the programme planning process and the municipal planning system and that there are a number of management and planning, structural and functional, human resources and

funding barriers to proper planning, implementation and monitoring of projects within the Gundo Lashu programme. Various challenges and barriers emanates from lack of coordination, political interferences and lack of strategic direction. Key recommendations include comprehensive road planning, better project targeting mechanisms, development of guidelines for future maintenance, skills training and capacity development, and results-based monitoring.

CHAPTER 1

Background, Problem Statement and Research Design

1.1 Introduction

The South African economy is characterised by mass unemployment within its working age population, with a large proportion of population lacking skills to enable them to participate actively in the economy. After several years of decline, official Labour Force Survey (LFS) estimates of the first quarter of 2006 reported the unemployment rate to be 25.6 percent of the working age population, which amounts to nearly 4.3 million people. While this is lower than some past statistics, unemployment was estimated at 29.7 percent in the previous year, and peaked at 31.2 percent in 2003; the rate is still of great concern (Statistics South Africa 2007).

The Expanded Public Works Programmes (EPWP) was initiated to draw significant numbers of the unemployed into productive work (Philips 2004c; Department of Public Works 2007). The key rationale for the establishment of EPWP was not to create a separate entity to address the unemployment problem; its framework was built on existing job creation programmes focusing on introducing labour-intensive methods. Based on the fact that most unemployed people are relatively unskilled, as well as the principle that the causes of unemployment in South Africa are structural rather than cyclical, the EPWP aims to provide additional and mostly temporary work opportunities which are combined with training, in all spheres of government and state owned enterprises (Philips 2004b; Department of Public Works 2007). The training element has been considered to be crucial where the large majority (70 percent) of the unemployed youth has never been employed, and 69 percent of all unemployed have never had a job (Statistics South Africa 2007).

The use of EPWP as a measure to address unemployment and poverty reduction in South Africa was, however, not a new concept, since its origin

can be traced from various public works programmes implemented prior to 1994. These programmes evolved until 2004 when the government introduced EPWP. During 2003 the Government of South Africa convened a Growth and Development Summit (GDS), which brought together different social partners to address the problems which lead to unemployment. Government, business, labour and the community constituency agreed to a range of steps to ensure that the economic problems facing our country are addressed. The social partners agreed that a priority issue is to address the problem of unemployment. A government-led EPWP was one of the measures agreed upon at the GDS, to address the problem of unemployment (Philips 2004c).

In considering ways to provide transport infrastructure that benefits the local communities through job creation and skills transfer, current government policies and strategies, specifically within the transport and construction industry, focus more on the application of labour-based methods as opposed to the traditional capital-based or capital-intensive methods. The application of capital-based methods has been criticized due to the fact that while delivering the same quality and with the same specifications, the use of labour-based methods proved to be a cost saving alternative compared to capital-based methods. In his explanation McCutcheon (2008:9) reflects that labour-intensive methods are technically feasible for a wide range of construction activities and can generally produce the same quality of product as equipment-intensive methods. The South Africa Human Development Report (2003:162) also concluded that the sharp decline in labour intensity over the past 20 years, could be attributed to an increase in the use of capital-intensive methods, specifically within the transport sector. Labour-intensive infrastructure development is consistent with the goals of the current government.

1.2 Background to the Study

Human settlements in most of the developing countries have poor infrastructure and suffer from inadequate investment. This poses a serious

impediment to socio-economic development for local communities. It is generally accepted within economic and transport geography that the development of road infrastructure plays a vital role in economic development through the empowerment of both rural and urban communities, as it is a major prerequisite for improving conditions in human and community development. The development and maintenance of road infrastructure, both as a measure to extend networks and to improve access and transportation of goods and services, has been central to various debates within economic geography for almost four decades (Devres 1980; Creightney 1993; Van de Walle 2002; Gibson and Scott 2003; Edmonds 2004; Wei-Bin 2007).

The development and maintenance of road infrastructure also improves the conditions of the rural poor. The situation of poor people in rural areas prior to the construction or improvement of roads, is frequently characterised by various factors which act as constraints to improving monetary and non-monetary dimensions of well-being, resulting in poverty reduction. A recent study (Wei-Bin 2007) highlighted that rural transport interventions are meant to alleviate the following constraints:

- Poor communities are isolated due to lack of reliable road access.
- The majority of journeys are short, numerous and time consuming. They typically occur for production or subsistence needs, such as collecting water and fuel, crop production, harvesting and processing.
- Longer journeys are infrequent, even though they may well be essential to livelihood strategies. Such journeys include visits to hospitals and clinics, marketing of produce, or searching for jobs.
- Poor people do not own motorised vehicles and can rarely secure access to them. Non-motorised transport predominates in the rural areas.
- The transport burden for many domestic tasks tends to fall disproportionately on women, and social rules and customs often limit their access to available means of transport.

In developing countries, infrastructure development, including road maintenance which is done to preserve this asset and comprises activities to

keep pavement, shoulders, slopes, drainage facilities and all other structures and property within the road margins, as near as possible to their as-constructed or renewed condition, represents, "if not the engine, then the 'wheels' of economic activity" (World Bank 1994:14). Decreased transportation cost increases the use of agricultural inputs and can increase rural household incomes from access to agricultural markets (Jacoby 2000; Edmonds 2004). Additionally, given the presence of agricultural productivity shocks, well-functioning roads reduce volatility in rural household consumption patterns where it is possible to send household members either to distant rural areas for marriage, or to urban centres for employment (Giles 2006).

1.3 Research Problem

South Africa has an extensive and good quality road network, and the general belief is that the construction of new roads and the continuous maintenance of the existing roads are critical for economic development. South Africa, like many other developing countries, has therefore formulated policy and implemented programmes for labour-intensive methods in infrastructure development in order to ensure economic development. The impact of these programmes on various aspects of socio-economic development at local level, however, needs further investigation.

Various research studies within the field of geography, transport, economics and other related fields (Adato et al. 1999; Thwala 2001; Adato and Haddad 2002; Philips 2004; Agingu 2004; McCord and Van Seventer 2004a) provide evidence of employment capacity for labour-intensive programmes, both within the road and other infrastructure programmes. However, none of these provides an analyses of the changes taking place over the project life cycle, as the project comes to conclusion. Furthermore, methodological and data limitations on the quantification of both social and economic benefits of a transport development programme, specifically as it relates to the capturing of the true distributional benefits of roads for the targeted population, has always been a challenge (Binswanger et al. 1993; Van de Walle, 2002).

This study revisits some long-standing issues in transport geography and transportation research. It is generally recognised among social scientists and development planners that transport has and will continue to play a critical role in development (Hirschman 1961; Wilson 1973; Leinbach 1995:337). There is a popular notion in the transportation and transport geography literature that investment in transportation infrastructure will lead to economic development (Black 2001:2).

A view is held among the policy makers in South Africa that transport infrastructure programmes, especially where the methods of implementation are labour-intensive, will bring both socio-economic benefits to the people and economic benefits to the country. Road construction and maintenance in areas where physical access is difficult, and in rural areas served by low-volume roads, is therefore seen as a development strategy. In these rural areas the more basic needs such as secure food supplies, and health and education services are arguably most threatened, since they are often associated with low population densities that make the provision of services difficult. The social and economic benefits of rural transport infrastructure can affect certain segments of the population, such as women and children, more than others. The social exclusion of these segments of the population is likely to be more severe where access is restricted.

Despite a general consensus of the relationship between infrastructure and development and the benefits of labour-intensive infrastructure development, a major unresolved issue in transport is whether transport infrastructure development promotes economic growth at the regional and local level (Banister and Berechman 2001:209). Much research on labour-intensive road construction in South Africa has been on the technical aspects of introducing employment-intensive forms of road construction (Phillips et al. 1992; Milne 1994; Atkins and Milne 1996; McCutcheon and Marshall 1998).

Although research has been done on the link between labour-intensive programmes and poverty alleviation (McCord and Van Seventer 2004; Mashiri et al. 2005; McCutcheon 2008) and employment creation (Taylor and

Bekabye 1999; Seruman 2007, Thwala 2007), not much research has been done on the extent of the distributional impacts of labour-intensive road projects. The literature does not address issues such as the sustainability of labour-intensive projects, the benefits local communities derive from projects or the extent to which these projects address unemployment and poverty alleviation within specific segments of the population.

A study conducted by Thwala (2007) on the experiences of public works programmes in South Africa, revealed that labour-intensive projects specifically within the transportation field, were not sustainable. While various projects commenced specifically over the past 15 years with the purpose of both creating employment and providing physical infrastructure, no significant impact has been attained. According to Thwala (2007:6), the sustainability of labour-intensive projects, especially Upgrading projects within the Greater Soweto, was also questionable as it represents a lost opportunity to use labour-based technology, since the project did not achieve any of the initial stated objectives such as employment creation and entrepreneur and skills development.

For sustainability to take place Thwala (2007) recommended that the policy environment for public works programmes should change from relief, emergency and “special” public works programmes to a long-term structured employment-generation programme. Furthermore, the approach should link economic growth, employment and investment policies and that public works infrastructure should be planned around local needs.

Another aspect that needs to be researched is the models of programme design and implementation of labour-intensive programmes, especially ownership by communities, decision-making and integration into other development programmes. According to Mashiri et al. (2005) a substantial impact of labour-intensive programmes is engendered by the involvement of the community during the lifespan of the programme, and ensuring that a substantial amount of funds remained to feed the local economic circuits in order to enhance the programme multiplier effects.

The work of McCutcheon (2002) reflect that employment-intensive methods of construction and maintenance may be used for high-volume, high-standard urban and rural roads and not just low-volume, low-standard rural roads. However, there is also a necessity of a greater understanding of the spectrum of matters that requires attention for the successful implementation of employment generated programmes. McCutcheon (1995) further identified a gap related to the incorporation of policy research findings into the policies and strategies of the nation which has not been properly implemented.

In light of the research problem and gaps in research as identified above, an attempt will be made to evaluate, from a geographic perspective, the impact of labour-intensive methods in infrastructure development projects at a local level. The study will endeavour to critically evaluate and assess project effectiveness by addressing aspects such as:

- The design features and implementation of projects.
- The effect of the project on participants in terms of access improvement, employment creation, skills development and income generation.
- How impacts vary across different community groups and regions.
- The possible unintended effects of the project.
- How the project planning and design could be modified to improve impact.

The intertwining of social, economic and political issues, the diversity of interest groups and institutional contexts, the diversity of perceptions and value judgments, and the potential for change over time are issues that rule out the production of simple measures with generic application. The concept of rural communities setting is always characterised by unemployment, limited access to employment opportunities and low income. This local setting and the framework of the EPW provides a context in which to revisit old established transport theories and to test some of the hypothesis related to labour-intensive methods. The research thus requires a combination of a critical review of the literature and an investigation of the development context of a specific labour-intensive programme to address the research problem.

1.4 Transport and development

Economic development in this study refers to a process of improving the quality of life and level of well-being or prosperity of a local community. Increased employment opportunities (both temporary and permanent) and a wider range of job and economic opportunities, a broader economic and fiscal base, increased household income and economic “empowerment”, promoting access to services and emerging economic activities, improved local infrastructures such as roads and housing, are all facets of economic development.

1.4.1 Transport studies in geography

According to Harmse (2004:20) “economic geography has been in existence for more than a century as an identifiable sub-discipline within the broad field of human geography”. Knowles and Wareing (2000:1) emphasised that economic geography is concerned with how man makes a living, how he utilises the resources of the earth, applies his technology to agriculture and industry, and how he develops transport methods to rearrange space to his advantage by bringing sources of supply and demand together. According to Hodder (1968) “the principle is now generally accepted that the development of transport possibly forms the most valuable single contribution towards economic, social and political development.” Research within the field of transportation geography has, over the past few decades, focused on the explanation and analysis of movement of people and goods across space and time. Research has shown that there is a critical relationship between infrastructure, accessibility, mobility, policy and social change. Regions with better infrastructure fare better in terms of macro-economic measures than regions with poor infrastructure (Keeling 2007: 217).

Black (2003) provides a historical overview of the evolution of transport geography and he highlights the fact that a paradigm shift occurred in transport geography from the use of basic spatial interactions models to the use of more sophisticated network approaches, and the venturing into the

realm of social-behavioural research. According to Keeling (2007:218) “such insight into the spatiality of human interaction might help to influence public policy and shed light on new ways of understanding the role of transport at local, national, and global scale”.

Within both economic and transport geography there is a belief that a relationship exists between transport development and economic development (Banister and Berechman 2001; Black 2001). The relationship between transport and development is an issue that has been researched in transport geography since the 1960s (Hirschmann 1961; Wilson 1973). There is, however, a debate on what the exact contribution of transport infrastructure is towards development. Some researchers recognise that transport has and will continue to play a critical role in development (Leinbach 1995). Other researchers see the relationship between transport and development largely as a permissive and supporting one. Transport infrastructure is seen as a necessary but not a sufficient condition for development, and transport is viewed as just a catalyst agent for development (Wilson 1966). Most of these interpretations, however, do not yield great insight nor allow for the broader examination of the role of transport within a variety of development contexts.

According to Black (2001:2) investment in transport infrastructure has been critical to the economic growth of most of the world’s developed nations. This has led most Americans to believe that investments in transport infrastructure will always result in growth, specifically as it relates to the economic development of manufacturing industries. As a result, large-scale transportation infrastructure such as highways and airports were constructed. Wilson (1966), however, noted that transport investment could result in either negative economic impacts, neutral economic impacts, or positive economic impacts. Black (2001:2) argues that, in the case of negative economic development, transport investment may take capital away from other sectors such as education. It may also lead to external industries capturing local markets, before the area has an opportunity to develop local industries to serve these markets and it may prevent the latter from ever developing.

In the case of neutral economic development, it is simply a situation where the project's net sum of the positives and negatives cancel each other out. Positive economic development has one over-riding precondition and that is, there must be economic activity that is being deterred because of lack of transport. According to Black (2001: 2) there are situations in the developing world where there is a positive relation between transport and development, but this is no longer the case in the developed world. In America, transport investment and economic development have different forms. Sometimes the focus is on employment that will result from investment, or unemployment that will be the result without it.

The relationship between transport investment and economic development is a complex area to explore since there is nothing simple about economic theory, and the theory is not very general. Black (2001: 11) is of the opinion that some confusion exists regarding the economic benefits of transport developments because so many researchers proclaim that there are positive benefits from transport investment. The confusion is exacerbated by those agencies and individuals who must justify transport development projects.

Research has also been done on the impact of roads construction on agricultural productivity, access to agricultural markets and sustainable livelihoods. Agingu (2004) highlighted that a road construction project is an essential element to benefit local communities in the following areas:

- employment generation
- improved local development, including technical staff, are better able to identify, design, contract and supervise labour-based public works and local development projects
- greater ownership by the community which results in better maintenance and improved community organisation
- new skills and abilities acquired by local contractors and workers (most of the projects have been executed in rural areas where people only have working experience in agriculture, hence the new skills gained give them a better chance of finding a job outside the agricultural sector).

Within economic and transport geography, research, and specifically evaluation reports of the transport sector, has a long tradition of justifying its significance on the basis of efficiency considerations, evaluating alternative investments on the basis of cost-benefit data (Williams 1977). For road transport investments, the main economic benefits consist of savings in vehicle operating costs, time savings, and a reduced risk of accidents. These benefits accrue to road users, in particular operators of vehicles, and apply to motorised as well as non-motorised transport. Operators of commercial vehicles may or may not pass on these cost reductions to passengers and shippers. Vehicle operators, as well as consumers, may or may not be local residents, so that the benefits could be spread out over a large geographic area (Knaap 2004). Recently, in part fuelled by the world's focus on poverty reduction as outlined in the World Development Report entitled "Attacking Poverty", interest has emerged in the distributional impact of transport projects and especially the impact on the poor (World Development Report 2001).

In addition to geographic evaluations, attempts have been made to measure the social and economic impacts of rural roads using various approaches. Most efforts have been ad hoc and few have been sufficiently well-designed to be able to isolate the social and economic impacts attributable to roads (Oosterhaven and Knaap 2000). The World Development Report (2001) reflects that only a small percentage of the World Bank infrastructure projects include formal impact evaluation studies. In 2000 the evaluation performance of the infrastructure sector declined and the fraction of projects fell from 34 percent to 24 percent (World Bank 2004).

The evaluation of transport infrastructure has also been linked to the development of the New Economic Geography. This shift offers an integrated theory of location, capable of explaining convergence as and divergence of economic performance (Venables 2006). Roads infrastructure impacts are central to geography debates as these changes takes place at the spatial scale, not just within the aggregate regions but also within regions of countries (Krugerman 1995; Fujita and Krugman 2004; Fujita and Tomoya 2005).

Various evaluation designs within economic geography have always been part of a larger effort to gauge the most important effects of the infrastructural projects. Oosterhaven and Knaap (2000), however, reflects that designs of these efforts are such that sub-problems are analysed in a way that deliberately excludes the effects from other sub-studies. This poses a risk that all effects are added up in the end with the risk of double-counting. This relates to matters such as migration by workers, international repercussions and the environmental impact of the projects. Most sub-studies are limited to the economic redistribution that is to be expected after each of the projects (Oosterhaven and Ward 2000).

In other instances, estimation of parameters in an economic geography model are applied to explain the significant impacts of agglomeration of economic activities (Overman et al. 2001). The explanation involves increasing returns to scale, at the firm and industrial level. While such concentrations of economic activity surely exist in practice, as many real-world examples will testify, there is a need to distinguish causes for agglomeration from other possible explanations, such as natural geographical circumstances (Brakman et al. 2000; 2001; Overman et al. 2001).

Another area of research focuses on the fact that the distribution of economic activity is usually uneven across regions. This can be shown directly, for instance with the use of Gini-coefficients. Though it is in accordance with economic geography theory, the fact that activity is distributed unevenly can be explained by other factors as well. As such, it cannot be the only evidence for the theory. However, the uneven structure of production can be used to test for the home market effect, which does point to an economic explanation (Davis and Weinstein 1998; 1999; Knaap 2004). The development of transport infrastructure, on the other hand, is also viewed within the context of geography and in various transport development theories as a “development catalyst” (Wilson 1973; Creightney 1993). Within this context, transport development occupies a central role in two theories of development, namely the “big push” theory and Rostow’s stage of growth theory.

Despite the caution instilled by Wilson (1973) and subsequent transport infrastructure project experience, Ahmed and Donovan (1992) indicate that the development of road infrastructure does lead to a reduction in poverty, since economic development and underdevelopment is one aspect of the uneven spatial distribution of economic activity (Vernon and Zmarak 2000).

The opposite is also possible; Devres (1980) emphasises that the development of road infrastructure could contribute towards the disabling of other infrastructure and the draining of investment. Similar views were also expressed; not in formal theories of development, but as generalizations by various writers in the early years of development economics. A good example is Hawkins (1960) who states, "The one sure generalisation that can be made about the underdeveloped countries is that investment in transport and communication is a vital factor". Since then, as empirical evidence has accumulated, most researchers have become more cautious about the effect of transport development but they nevertheless continue to regard transport as an important factor in development as such.

A study by Keeble (1967) indicates that although transport is only one of the many ingredients necessary to accelerate the pace of economic progress, it plays a key role in many instances, and in all cases it sets the limits. Keeble (1967) also emphasises that the bettering (improvement of) the standard of living in a developing country very often begins with improved transport. The link between transport and economic development will be further investigated in Chapter 2 of this thesis.

1.4.2 Transport in developing countries

Within the context of the developing countries, the development of transport infrastructure is based on the principles of labour-intensive or labour-based construction and maintenance methods, since various programmes have deliberately adopted the uses of unskilled labour. Labour-intensive refers to the economically efficient employment of as great a proportion of labour as is technically feasible throughout the construction process, to achieve the

standard demanded by the specification; the result being a significant increase in employment generated per unit of expenditure by comparison with conventional equipment-intensive methods (EPWP 2007). Within this context, labour-intensive refers to methods of construction involving a mix of machines and labour, where labour, utilising hand tools and light plant and equipment, is preferred to the use of heavy machines, where technically and economically feasible. According to McCutcheon (2008: 4) a corollary to this definition is what it is not: It is not the use of large numbers of people on relatively unplanned emergency or relief projects to construct something of ill-defined quality and value; that would be labour-extensive.

A government labour-based public works project appraisal report (African Development Fund 2007), found that such programmes are generally placed into four major categories, namely:

- Relief programmes: which respond to emergencies created by natural - or man-made catastrophes whose objective is to provide income to the workforce; any asset created is of secondary importance.
- Self-help programmes: in which the government appeals to communities to help themselves rather than pay community labourers.
- Employment generation programs: which attempt to create both temporary and permanent jobs for the unemployed.
- Asset generation programmes: which supplement beneficiaries' usual incomes by employing them in projects that improve infrastructure facilities at the lowest possible cost.

Investigative work on labour-intensive construction and maintenance programmes was conducted in a number of countries, including Bangladesh, Peru, Cambodia and Brazil (World Bank 1994). According to McCutcheon (1989) the cutting edge labour-intensive road construction projects are those projects constructed over the past decade by labour-intensive methods. The projects focus on the rehabilitation and upgrading of roads within the classified road network and as such the construction and maintenance of

roads for which labour-intensive methods were previously considered inappropriate.

Key among these projects were the Kenyan Rural Access Roads Programme, District Road improvement and maintenance in Malawi, and the labour-intensive Road Construction programme in Botswana and Lesotho (McCutcheon 1989). Although the work in each country differs according to the local situation, the main principles and themes remain the same, and thus according to the World Bank (1994:76), include:

- Improved understanding of the means of addressing transport needs of the poor in urban and rural areas.
- More effective plans and policies addressing transport needs, arising from improved understanding and enhanced community participation.
- Enhanced community-centred transport interventions.
- Affordability and appropriateness of transport technologies for poor women and men increased.
- Improved understanding and implementation of effective means of addressing transport needs of the poor.
- Increased practical action involvement in transport interventions that benefit the poor.

In various African countries, including Kenya and Uganda, labour-intensive projects have helped to develop transport infrastructure through the use of local or surrounding communities, stakeholders participation and utilisation of labour-based technologies. An example of this is the construction and maintenance of earth and gravel rural access roads in Kenya (McCutcheon 1989; World Bank 1994). This approach has resulted in two main benefits; communities involved develop a sense of ownership towards the roads constructed with their contribution of labour and management, while local authorities use these interventions to solve their problem of lack of financial resources for rural road construction (Guade and Watzlawick 1992). While it is deemed necessary to mobilise more resources for rural infrastructure provision, it is also increasingly recognised by governments in developing

countries that the need for rationalising and optimising road development works through labour-intensive approaches, has become important to achieve the Millennium Development Goals (Human Development Report 2003).

1.4.3 Transport for Development in South Africa

Within the broader global unemployment pattern, construction output has risen in the transport sector and employment growth has stagnated due to a rise in import competition and low employment elasticity's of new production. Within this scenario, it was essential for South Africa to develop new policies, which are capable of raising the average rate of output growth and increasing the labour ratio of the overall level of output. Policy design is also crucial in influencing and strengthening the potential impact of transport infrastructure investment on local economic development (Banister 2001). In South Africa, more attention has been focused on labour-intensive approaches and EPWP programmes as a solution to unemployment, skills transfer and economic growth (Ghosh 2003).

The pillars of apartheid policy, which sought the exclusion of the majority from full participation in all aspects of South African society, had begun to crumble by the late 1980s. From 1994 the South African government set out systematically and deliberately to dismantle apartheid social relations and create a democratic society, based on the principles of equity, non-racialism and non-sexism (South Africa 1996a). Since 1994, the South African Government has undertaken significant institutional transformation and has sought to redefine most of the policies that determine the activities of the state in the management of social relations.

In line with the prescripts of the new constitution, new policies and programmes have been put in place to improve the quality of life of all the people of South Africa. Key to this programme of action has been the extension of universal franchise and the creation of a democratic state (South Africa 2005b:9). This has created the requisite environment to address poverty and inequality, and to restore the dignity, safety and security of

citizens. A comprehensive constitutional policy and regulatory framework underpin this programme. This programme, defined by the RDP, has been incorporated in all post-1994 policies cross-cutting all spheres of societal development. A solid foundation and supportive environment have been put in place to deal with obstacles that might affect South Africa's ability to accomplish all Millennium Development Goals (South Africa 2005b).

The Growth and Development Summit emphasised "more jobs, better jobs, and decent work for all", as one of four key economic challenges of the country (Growth and Development Summit 2003). The government's economic policy framework, as set out in the Accelerated and Shared Growth Initiative for South Africa (ASGISA), affirms the commitment of government towards cutting the unemployment rate in half by 2014 (Hirsch 2005).

The South African Reconstruction and Development Programme (South Africa 1994) is the embodiment of the commitment of government to the eradication of poverty in a rapidly growing economy and in the context of an open, peaceful and democratic society. For this vision to materialise, policies such as the Rural Development Framework are orientated towards the provision of basic needs, the development of human resources and the growing of the economy so that it is capable of generating sustainable livelihoods in rural as well as urban areas (South Africa 1994). The development of transport infrastructure has been singled out as one of the accelerated programmes for the creation of employment opportunities for local communities.

In 1996 the government of South Africa developed a macro-economic strategy, i.e. the Growth, Employment and Redistribution strategy (GEAR). This strategy highlighted investment in social and economic infrastructure as key towards increasing the productivity of labour and business which will then lead towards the achievement of higher growth rates in the country. This strategy envisages a substantial acceleration in government investment spending, together with improved maintenance and operation of public assets, including public transport infrastructure needs in various areas namely; storm

water drainage, roads, railways, airports, harbours and pipelines (South Africa 1996a).

Another development strategy implemented in South Africa is the Joint Initiative on Priority Skills Acquisition (JIPSA). JIPSA is a focused, short-term initiative which will identify problems and bottlenecks and seek resolutions by coordination and facilitation of a number of strategies. This initiative focuses on skills requirements for various projects, including infrastructure development projects, key of which includes the high level planning, engineering and project management skills for the network industries, including transport (South Africa 2006a:9).

JIPSA has its origins in ASGISA, which aims to put South Africa on a sustainable growth path of 6 per cent per annum, as a necessary condition for the achievement of the goal of government and the Millennium Development Goals of halving poverty and unemployment by 2014. The Millennium Development Goal Country Report (South Africa 2005b:56), however, reflects that while the Millennium Development Goals do not identify infrastructure specifically as being of significance for their achievement, various objectives of the MDGs are, however, significantly dependent on transport infrastructure.

The achievement of universal primary education, reduction in child mortality, and the improvement of maternal health for example, are all dependent on people having access to basic services. In addition, the eradication of poverty is dependent to a greater or lesser extent on the creation of employment, and thereby income. Labour-based road construction and maintenance programmes in this regard provide a major potential for employment creation. JIPSA was launched with the aim of speeding up development of skills most needed in South Africa by considering skills shortages and ways to develop those skills (South Africa 2005b). Within South Africa these initiatives and approaches form an essential part of the work already done according to the recommendations of various strategies. The ASGISA strategy aims to create 1 million “cumulative work opportunities” over five years and promote a 10

percent average annual increase in investment with an intention to raise the investment/GDP ratio to 25 percent by 2014 (Hirsch 2005).

1.4.4 The Extended Public Works Programme

In his opening address at the launch of EPWP in Limpopo Province on 18 May 2004, the then president of South Africa, Mr Thabo Mbeki, emphasised government's support for the programme by indicating that: "The Expanded Public Works Programme is a nation-wide programme that aims to draw significant numbers of the unemployed into productive employment. Through this programme, we want workers to gain skills while they are employed, and increase their capacity to continue working elsewhere once they leave the programme" (The Presidency 2004).

The EPWP seek to provide essential services and infrastructure to disadvantaged communities, develop skills of the unemployed and create much needed employment by making appropriate technology choices. This programme is currently a nationwide government-led initiative and has the potential to draw a significant number of unemployed South Africans into productive work, in a manner that will enable them to gain skills and increase their capacity to earn income (Department of Public Works 2007).

The EPWP programme has been implemented in various sectors which led to the categorization of this programme to focus on four key sectors of the economy, with a wide range of departments and areas of activity being pulled together to contribute to the common goals.

- Infrastructure – aimed at increasing the labour intensity of the government funded infrastructure projects and driven by the Department of Public Works. A number of other entities are also very involved here, including the Departments of Transport, Housing, Provincial and Local Government, Water Affairs and Forestry, Public Enterprises, Education, Minerals and Energy and Agriculture.

- Environment – aimed at creating work opportunities in the public environmental programmes and driven by the Department of Environmental Affairs and Tourism. The Departments of Water Affairs and Forestry, Arts and Culture and Agriculture also play a role.
- Social – aimed at creating work opportunities in public social programmes, primarily within community and home-based care and early childhood development. This area is headed by the Department of Social Development, and supported by the Departments of Health and Education.
- Economic – focused on developing small businesses and co-operatives, using current Government expenditure to provide the work experience component of small enterprise learnership and incubation programmes. This is led by the Department of Trade and Industry, the Department of Labour and the Development Bank. Many SETAs are also involved.

Within the infrastructure sector, specifically as it relates to road infrastructure, Philips (2004b) reflects that the objective of EPWP is to promote labour-intensive production methods in many of the government's public works projects with a specific focus on three considerations:

- Firstly, public works programmes which are being extended beyond the traditional focus on infrastructure into social, environmental and economic work activities.
- Secondly, consolidation and expansion of existing best practices across government.
- Lastly, the intention to stimulate an increase in budgets for components of the programme that prove to be successful. Generally, the government's initiative to pursue an expanded public works programme as a means of increasing employment is a major positive development (Philips, 2004b).

Various EPWP programmes within the transport sector were initiated in line with the considerations listed above. The most notable of them was Zibambele projects, which were initiated in KwaZulu Natal and the Gundo Lashu programme in Limpopo province. These programmes have generated the desired employment and are capacitating the local communities with

relevant skills to increase their prospects for future employment. McCutcheon (1993), however, argues that these projects are also associated with negative impacts emanating from, among others, the duration of project implementation. This argument further points that in projects with short-term objectives, no permanent employment opportunities or physical and social infrastructural assets are created; projects are not integrated into development programmes; inadequately planned, designed, coordinated and implemented; institutional capacities are inadequate to deal with short-term programmes in addition to normal activities; and in some instances permanent workers are replaced by temporary workers (McCutcheon 1993).

Dawson and Barwell (1993), on the other hand, argues that although the provision of roads is acknowledged by national policy-makers to be a positive catalyst for progress, these policy-makers often lack understanding of the particular transport problems faced by poorer rural and urban communities. This emanates from the fact that there are benefits of labour-intensive programmes which contribute to livelihood, and which are difficult to measure.

It is also evidence that while transport development has improved the condition of the poor, the very poor are unlikely to be affected, as they often do not have a standard of living which would enable them to take advantage of transport infrastructure development and improvements. In various cases, the benefits of transport infrastructure development and maintenance is usually derived from developing large-scale contractors; such developments do not meet the transport needs of the poor, especially those in rural areas where most of the villages lack financial resources to establish themselves as emerging contractors (Dawson and Barwell 1993).

The South African Human Development Report (2003:157) points out that even under an aggressive program of employment targeting over the next decade, unemployment is likely to be as high as 15 to 16 percent in 2014. This means that a very high proportion of South Africans will not benefit from an employment targeted program over the next decade, even assuming the

program is highly successful in meeting its targets for economic growth and labour intensity.

1.4.5 Clarification of concepts

Some of the terms and concepts used in this study are frequently used in a range of circumstances and may have different meanings for different people, depending on the context or their perspective. The definition of key terms is also intended to facilitate a common understanding of the terminology used in the study.

Labour-intensive methods refers to an activity that requires a comparatively large workforce, while usually not needing a large capital investment. The term "labour-intensive" indicates that optimal use is made of labour and it is the predominant resource in infrastructure projects while ensuring cost-effectiveness and safeguarding quality (Department of Public Works 2007). The term "labour-intensive methods" also refers to the economically efficient employment of as great a proportion of labour as is technically feasible throughout the construction process to achieve the standard demanded by the specification; the result being a significant increase in employment being generated per unit of expenditure by comparison with conventional equipment-intensive methods (Department of Public Works 2007; McCutcheon 2002).

Within this context labour-intensive refers to methods of construction involving a mix of machines and labour, where labour - utilising hand tools and light plant and equipment - is preferred to the use of heavy machines, where technically and economically feasible. According to McCutcheon (2008: 4) a corollary to this definition is what it is not: It is not the use of large numbers of people on relatively unplanned emergency or relief projects to construct something of ill-defined quality and value; that would be labour-extensive.

Development refers to a comprehensive economic, social, cultural and political process which aims at the constant improvement of the wellbeing of

the entire population and of all individuals on the basis of their active, free and meaningful participation in development and in the fair distribution of the resulting benefits (AusAID 1997:14).

Development is sometimes thought of as a process, but there are differing opinions on what the outcomes of development should be. For decades, it was assumed that for poor countries to be 'developed' meant that it was necessary for them to follow the path of wealthy countries through modernisation, industrialisation and the attainment of high material standards of living. While all definitions of development imply that the change process should be beneficial for countries or people engaged in development, opinion is divided about what the outcomes of change should be. Development is thus the process by which the political, social and, especially, economic structures of a country are improved for the purpose of ensuring the well-being of its populace (Fisher 1995:17).

The term 'development' is often used to suggest a condition that is seen to be desirable for countries where large numbers of the population live in comparative poverty. These people do not have access to basic necessities; quite apart from the consumer luxuries enjoyed by people living in developed countries.

According to Goulet (1995:51), any adequate definition of development should include various dimensions, such as:

- an *economic component* dealing with the creation of wealth and improved conditions of material life, equitably distributed
- a *social ingredient* measured as well-being in health, education, housing and employment
- a *political dimension* embracing such values as human rights, political freedom, legal enfranchisement of persons, and some form of democracy
- a *cultural element* in recognition of the fact that cultures confer identity and self-worth to people
- *ecological soundness*

- a final dimension one may call the *full-life paradigm*, which refers to meaning systems, symbols and beliefs concerning the ultimate meaning of life and history.

This implies that if people are living in poverty, or are unable to attain the basic necessities of life, then their community or society can be regarded as 'underdeveloped'. So it is logical to say that any discussion of the meaning of development should focus on the elimination of absolute poverty. Although difficult to define, 'development' has several essential elements: First, it is a *process* that involves *change* resulting in improvements (as perceived by the people experiencing change). Secondly, the focus of any change or advancement should involve the *reduction of absolute poverty*. Lastly, the nature of the change will vary, depending on the *context* of the development process. Specifically, the values and priorities of the community, region or country undergoing change should determine the nature of change (UNDP 1997: 15).

Economic development refers to an increase in the amount of people in a nation's population with sustained growth from a simple, low-income economy to a modern, high-income economy. Its scope includes the process and policies by which a nation improves the economic, political, and social well-being of its people. In its simplest form economic development is the creation of economic wealth for all citizens within the diverse layers of society, so that all people have access to potential increased quality of life. Job creation, economic output and increase in taxable basis are the most common measurement tools (Goulet (1995).

Generally speaking, economic development is a process of change that is focused on the betterment of the community, state, and/or nation. Defining economic development can be difficult. The first term in this phrase "economic" refers to an accepted paradigm for organising the business and financials, and even to some extent, the governmental sectors of a nation. Economics is viewed as the foundation for building a prosperous society. However, it is the second term "development" over which there is

considerable debate. People's perceptions of development vary. For some, development has the appearance of successful commercial enterprise; for others, the face of development is one of economic equality. Nevertheless, the concept of "economic development" has the attention of government, the business sector, and the citizenry. We pursue economic development as one of the goals of a successful country, state, or city. It captures the attention of the news media and impacts, as well as is impacted by, political objectives (http://en.wikipedia.org/wiki/economic_development).

Transport infrastructure may be defined as that which is fixed, which enables the operation to take place. In the White Paper on National Transport Policy (Department of Transport 1996), transport infrastructure comprises all physical elements upon which transport operations take place. It includes roads, railways, airports, harbours, pipelines, interchange facilities and associated dedicated power and communication systems (Department of Transport 1996:12).

Transport infrastructure is vital to development within a country because it is necessary for the provision of a level of basic access. This means that transport infrastructure must be provided so that the population of the country has a certain level of access to basic amenities, which are fundamental to development and provide an essential foundation for further economic growth. Thus transport infrastructure is required for access to health facilities, places of work and for shopping or recreational purposes. Transport infrastructure is extremely important in facilitating economic activity. In this regard, transport infrastructure is necessary for production processes to occur in any modern economy. This shows that transport acts as a catalyst for the development in its role as a facilitator of economic activity (Department of Transport 1996).

Rural development is multi-dimensional and much broader than poverty alleviation through social programmes and transfers. It emphasises changing environments to enable the poor to earn more, invest in themselves and their communities and contribute toward maintenance of key infrastructure; a

successful strategy will make people less poor, rather than more comfortable in their poverty (South Africa 2000b).

Integrated transport planning refers to a process or framework that serves as a guide to gathering information about transport and analysing it (IIEC 1996). Integrated transport planning is based on the concept of sustainability. In this case sustainable transport is achieved when the needs for access to people, services and goods are met without doing permanent harm to global environments, damaging local environments, and reducing social equity (OECD 1997).

Transport systems are complex and multi-dimensional with many parts that comprise the whole. The objective of integrated transport planning is to find balance among these dimensions so that planning and investment decisions contribute optimally to the economic, social, cultural and physical potential of the transport system and society in general. Integration is a concern with the whole, with common objectives and agreed desired outcomes. The different options, goals and points of view must be integrated to identify realistic solutions to community problems.

Transport planning has evolved from its traffic functional origins to a more systematic approach. In the past, transport plans typically predicted future transport demand based on past growth. Agencies often planned in isolation with limited coordination and consultation with stakeholders and the community. Integrated transport planning is more than coordinated transport planning. It integrates multiple and sometimes conflicting objectives to reach more sustainable transport outcomes that contribute to community, industry and government priorities.

Economic Impact Analysis focuses specifically on measurable changes in the flow of money (income) going to households and businesses, including both spending and productivity effects. In the context of transportation planning and policy, economic impact analysis analyses how a programme affects the economy of a given area. The economic impact area may be as small as a

neighbourhood or as large as the nation, depending on the scale of the programme. Different measures of economic impact work at different spatial areas. At a neighbourhood or corridor level, economic impacts may be measured in terms of the change in demand for locations as reflected by increased property values, increased investment in new construction activity or increased density of development. At a regional or national level of analysis, the measures of economic impacts are in terms of changes in business output or gross domestic product, and the associated changes in jobs and in wage income (Weisbrod 2009: 63).

The Extended Public Works Programme (EPWP) refers to a nation-wide National Government programme to draw significant numbers of unemployed into productive work, accompanied by training, so that they increase their capacity to earn an income. The objective of the EPWP is to utilise public sector budgets to alleviate unemployment by creating temporary productive employment opportunities coupled with training.

Integrated Development Planning (IDP) refers to a participatory approach to integrate economic, sectoral, spatial, social, institutional, environmental and fiscal strategies in order to support the optimal allocation of scarce resources between sectors and geographical areas and across the population in a manner that provides sustainable growth, equity and the empowerment of the poor and the marginalised

Treatment Group refers to a group of subjects which have been exposed to an intervention (programme participants). The programme group can be compared with the Control Group in order to determine whether systematic differences between the two groups may be attributed to the effects of the intervention. Control group refers to a group of subjects which have not been exposed to an intervention. The control group should resemble the programme group, so that systematic differences between the two groups may be attributed to the effects of the intervention, once other plausible alternative hypotheses have been eliminated.

Evaluation refers to an independent quantitative and qualitative assessment of the processes of implementing a programme/project and its impacts. Evaluations can also be defined as a retrospective analysis of a project, programme, or policy to assess how successful or otherwise it has been, and/or what lessons can be learnt for the future.

Impact evaluation refers to a systematic identification of the effects, positive or negative, intended or not, on individual households, institutions, and the environment caused by a given development activity such as a programme or project.

Access road refers to rural roads which do not qualify as District or Main Roads, but provide access from a Proclaimed Road to public infrastructure such as schools, clinics and community facilities, or provide access to a settlement. The terms 'Community Access Road' and 'Local Road' have similar meaning and interpretation.

1.5 Rationale of the Study

The role of road infrastructure development and maintenance in development is a major theme in the research literature of transport geography. However, according to Banister (2001:1) one of the main unresolved research issues in transport is the question as to whether transport infrastructure investment promotes economic growth at regional and local levels. The question is not whether transport infrastructure investment has the ability to produce benefits such as travel time reduction, but whether there are additional economic development benefits from these investments and how to measure them (Banister 2001).

This study focuses on the transport sector and its capacity to implement labour-intensive methods in the area of construction and maintenance of road infrastructure, bridges, storm water drainage, and pavement design. The transport sector is also important due to its potential contribution towards economic growth. Transport is central to all development, including

community access to public infrastructure and the enhancement of the country's economy.

The development of transport infrastructure, including road construction and maintenance hold a contradictory role in the process of development. On one hand, as emphasised by economists, transport infrastructures are not productive by themselves, but they are responsive to forces generated in the production and consumption sectors. The need for transport infrastructure is always a derived need and the study of transport is perceived as a study of different sectoral activities in the economy.

In this research, transport is approached from a geographic perspective which emphasises that transport is an infrastructural element with profound implications for overall development, most importantly for the spatial distribution of power and control. The transportation needs of rural and urban areas of a country and the relation of transport to the spatial distribution of power and control with regard to targeting, planning and implementation of transport infrastructure become critical elements of interest. One argument that supports this view is that a major underlying cause for failure to sustain investment, is when facilities lie with the incentives which face participants in the design, finance, construction and use of facilities (Leinbach 1995).

The motivation for this study is linked to some of the research gaps identified by Dawson and Barwell (1993) and McCutcheon (2008), who emphasised that road infrastructure development, specifically within developing countries, has in the past depended mostly on capital-intensive methods. With the recent increase in fostering and supporting development to address current challenges of poverty alleviation and job creation, in terms of the overall objectives of the Millennium Development Goals, more attention should be focused towards promoting labour-intensive methods in the development and maintenance of road infrastructure. There is, however, not much detailed research into the tangible positive spin-offs of these initiatives towards economic development, poverty alleviation and community development. This

has had a negative influence on the development of new policies (Banister and Berechman 2001).

This study is based on the premise that the provision of infrastructure, specifically road construction and maintenance programmes, should make a contribution to the solution of pressing social and economic problems. According to Banister and Berechman (2001:210) there are two basic premises which must be understood when the contribution of transport infrastructure to development is examined. Firstly, in developing countries, where there is already a well- connected transport infrastructure network of a high quality, further investment in that infrastructure will, on its own, not result in economic growth. Secondly, transport infrastructure investment acts as a complement to other more important underlying conditions, which must also be met if further economic development is to take place.

Additional transport investment is not an essential condition, but plays a supporting role when other factors are at work. Preconditions include the presence of underlying positive economic externalities, such as agglomeration and labour market economies and the availability of good quality and highly skilled labour force. There should be investment factors which relate to the availability of funds for the investment, the scale of the investment and its location, the network effects and the actual timing of the investment. The link between economic development and transport infrastructure is also dependant on political factors which are related to the broader policy environment within which transport decision must be taken (Banister and Berechman 2001).

Studies on the impact of various community development programmes focus more on the ability of a programme to generate employment as a means of improving welfare of the communities. In this study, other measures in the areas of social transfer programmes are also important, as they are crucial for rural communities. The provision of transport infrastructure remains an activity on which large numbers of low-income families rely as an important access to various economic and social activities. Other localised benefits of these

programmes, specifically when adopting the use of labour-based methods, extend beyond the savings in the cost of roadwork and the creation of jobs. These benefits include savings on foreign exchange, injection of cash into local economy, and transfer of knowledge of roadworks to local communities (Dawson and Barwell 1993).

1.6 Research Aim and Objectives

The aim of this study is to explore and evaluate the impact of labour-intensive construction and maintenance programmes in road infrastructure in South Africa. The impact of these methods will be explored within the context of the government's policies and macro-economic strategies targeted towards infrastructure development, poverty alleviation and job creation specifically in relation to the Expanded Public Works Programmes in the road sector, as a measure to encourage accelerated economic activities to address employment needs of the local communities.

The main objectives of this research are to:

1. Describe the nature and delivery mechanisms of labour-intensive programmes in the study area in Limpopo Province.
2. Assess or evaluate the impact of labour-intensive road projects on the project participants and their communities by:
 - 2.1. Assessing the economic benefits and economic impacts of the projects at individual, household and community levels.
 - 2.2. Assessing the outcomes to determine whether the project had the desired effects on individual participants, their households, and the community.
 - 2.3. Determining whether the effects are attributable to the project's intervention or to other causes.
3. Explore the constraints and challenges experienced in the execution of labour-intensive road-based initiatives.

1.7 Research Design and Methodology

An appropriate methodology to respond to the nature of this study is complex since the study is generally an empirical exploratory research which focuses on people's sense of, and relationship with places. Therefore, the study relied on a number of different theoretical and methodological approaches. The key guiding methodology for the study was driven from the Critical Geography theory which is regarded as one of the four major turning points in the history of geography. The study was therefore subjected to the methodological guidance of critical realism based on the work of Sayer (1992).

The study adopted a Matched Case Control study design (Hansson 2001). This design will be discussed in more detail in Chapter 4. The primary goal of the study is to determine the casual programme impacts as differences in outcomes between the Gundo Lashu programme participants and their counter-factual, that is a proxy of what outcomes would have been for this group had they not received the programme. All evaluation strategies are designed to identify a method for constructing a proxy for these counter-factual outcomes using information on non-participants. This requires controlling, for the effects of confounding economic and contextual factors that make the programme participants systematically different from an average non-participant. These confounding variables can include the relative poverty of participants in targeted programmes, exposure to economic shocks or differences in household characteristics that affect the impacts of the programme.

In theory the control group, selected through matched-comparison techniques, is identical to the project group according to both observed and unobserved characteristics, so that resulting outcomes in programme communities can be attributed to the project intervention (Sarah 2006). In this case the control group was comprised of respondents who did not participate in the labour-based road projects. This group was constructed to resemble the treatment group, at least on the following observed characteristics;

unemployed, gender and age. The only difference between groups was the track record on participation and non-participation.

1.7.1 Overview of Data Collection and Analysis Methods

Multiple methodological approaches were utilised in the study. The purpose of using both quantitative and qualitative methods in data collection and analysis was to triangulate data and enhance the validity of the research outcomes (Burns 2000; Rao and Woolcock 2003; Tashakkori and Teddlie 2003). The use of both qualitative and quantitative data allows the study to complement the strengths and weaknesses of each method. Combining both methods provides more comprehensive and insightful information regarding perceived impact of the programme (Sarah 2006). Triangulation is used to confirm, cross-validate, and corroborate data and findings for the study. The study uses a combination of these methods as a means to offset the weaknesses inherent within one method with the strengths of the other method (Creswell 2003).

Qualitative methods focused on understanding processes, behaviours and conditions as perceived by the individuals or groups studied. This method provided critical insight into participants' perspectives and the processes and context that may have affected outcomes. Quantitative methods on the other hand are more empirically rigorous, impartial and objective and were used to permit generalisations to be made about larger populations on the basis of much smaller, representative samples, and the assessment of causality of the impacts of given variables on project outcomes.

A questionnaire was designed to collect data from the respondents (Johnson and Onwuegbuzie 2004). The questionnaire contained both closed and open-ended questions to provide for both quantitative and qualitative responses (Cohen et al. 2000). The questionnaire was administered to both project participants and non-participants drawn from the sampled project and non-project communes. The main objective of the questionnaire survey was to capture information on the respondents' characteristics and their socio

economic activities to determine the impact areas which are directly attributed to the project intervention.

In order to capture the nature and diversity of the existing labour-intensive programmes, field observations were undertaken in both project and non-project communes. The data collection process for this observational method comprised of two basic steps. The first was the determination of the choice of situations for observation. The settings for observation were defined in advance in relation to the spatial differences and distribution of labour-intensive projects. Access to the sites of observation was obtained from the relevant parties including the Chief Executive Officer of Limpopo Road Agency.

The other key step involved direct observation of project activities. In this case, site visits were conducted to sampled areas where road construction and maintenance programmes were taking place. In this case, the study ensured that project activities and the working schedules of the participants were not interrupted. This consisted of note-taking and audiovisual recordings.

Other secondary data sources used include project administrative records, project status reports, results of Labour Force Surveys for various quarters of 2007 and 2008, data on travel patterns and analysis of travel behaviour from the National Household Travel Survey conducted in 2005, Municipal Integrated Development Plans (IDPs), Municipal Annual reports, and various policies and legislations on EPWP accessed online and through the Department of Public Works.

Key respondents of this study include the Gundo Lashu programme participants who were selected from project communes. Baseline information on sampled projects was drawn from the existing data sets from Limpopo Road Agency; in this case the focus was on the existing secondary data sources such as project administrative data on selected labour intensive road construction, and maintenance projects within the Gundo Lashu programme

Some of the data obtained from the questionnaires were analysed using the statistical programme, STATA version 10. The assistance of a statistician (Prof. Zeleke Worku) was used to assist with the analysis of the data and to ensure data integrity and quality. The procedures used to gather and analyse the data statistically are explained in detail in Chapter 4 of the thesis.

Thematic analysis was also used to analyse qualitative data collected through open-ended questions in the questionnaire and personal interviews. In this case, various opinions expressed by the respondents were grouped in order to determine the priority structures, to analyse both conflict and complementary responses which were expressed differently by the respondents.

1.7.2 Justification for the choice of the projects

The Gundo Lashu programme in Limpopo province was chosen as the focus of the study ("Gundo Lashu" is a Venda word meaning "Our Victory" or "Victory is ours"). This programme was selected due to its high profile in terms of the potential to reduce the challenge of rising unemployment in South Africa.

The programme operates within the broader scope of EPWP and is being used as a model for the labour-intensive construction component of the national EPWP. Key projects are being implemented in various districts including Vhembe District Municipality, which is among the poorest district municipalities and characterised by high unemployment and poverty rates and a large number of unskilled and youthful population. The two key local municipalities where projects are rolled out at a greater scale and which are the project study areas, are Makhado and Thulamela Local Municipalities. A detailed description of the project study areas is provided in Chapter 3. At the end of chapter 3 some limitations and problems experienced are highlighted regarding the choice of the project and programme for the study.

The goal of the Gundo Lashu programme is the improvement of livelihoods in rural communities in the province, through employment creation within the rural communities, skill transfer from private contractors to community members, and enhancement of the livelihoods of those community members providing labour to the programme. This may be characterised as sustainable poverty reduction and improved labour market performance for workers. In addition, the programme includes the training and development of labour-intensive contractors. The programme is implemented by the Roads Agency Limpopo, with support from DFID and the ILO, and is focused on both employment creation, and the training of contractors and consultants in labour-intensive road rehabilitation. It was initiated in 2000, and employed a total of 1 700 labourers in 2003 (Limpopo Road Agency 2003).

1.8 Organisation of the Study

This thesis is divided into 6 chapters. Chapter 1 provides a description of the study and the problem statement within the context of economic and transport geography. Research aims and objectives are also outlined and justification for the study provided. A snapshot of the research design and methodology and justification for the choice of the projects within the Gundo Lashu programme is outlined.

Chapter 2 provides a broad theoretical framework on transport-development relationship. This chapter sets the stage for evaluating the significance of road infrastructure development, specifically targeting those initiatives targeted towards economic development. In chapter 2 an overview is provided of the evolution of development theories, the role of transport infrastructure in development and the changing nature of the relationship between transport and economic development. This chapter, therefore, reviews the role of transport infrastructure development within the context of the existing theories and approaches.

In Chapter 3 the literature on the impacts of transport infrastructure and the theories and models of labour-intensive transport development and

maintenance approaches are reviewed. The impact of labour-intensive road infrastructure is reviewed within the context of existing theories and approaches and substantiated with relevant evidence selected from various case studies.

Chapter 4 provides an account of the research methodology and the study setting. The chapter begins with a description of the study area and provides an explanation regarding the choice of project areas. The research methodology is outlined within the framework of the available methods and theories. Specific focus is placed on the explanation on how the data collection instruments were developed, including the description of the respondents, outline of the process followed to obtain permission to gather different types of data and how the data was collected and analysed.

In Chapter 5 a description and analysis of the results obtained in this study is provided. Conclusions and recommendations for the implementation of intervention strategies are discussed and suggestions for future research will be made in Chapter 6.

CHAPTER 2

Review of theories of development

2.1 Introduction

The relationship between geography and transport rest on spatial analysis which positions transport geography as an integrative science. The geographical dimensions can contribute significantly towards an understanding of transport problems and towards their eventual solution (Hoyle and Knowles 1992). Transport is regarded as a key indicator of social and economic development. While the physical presence of transport infrastructure is not a sufficient condition for development, the lack of transport infrastructures can be a constraining factor on development. Investment in transport infrastructures is often seen as a strategy for regional development. The relationship between transportation and economic development is difficult to formalise and has been debated for many years.

In Chapter 1 (section 1.4.1) the role of transport within development was briefly discussed and in the following two chapters the relationship between transport and development will be investigated as it unfolds in the theoretical literature. The evaluation of the impact of a labour-intensive road infrastructure programme is structured around three theoretical frameworks of existing literature. The first is a broad theoretical framework on transport-development relationship. The second framework provides a narrow focus on the impacts of transport infrastructure, while the third framework narrows the focus even more with a review of theories and models on labour-intensive transport development and maintenance approaches. The latter two frameworks receive attention in Chapter 3.

In this chapter, the broad theoretical relationship between transport and development as discussed in the literature is reviewed. Before the role of transport infrastructure in development is investigated, an overview is

provided of the evolution of development theories and approaches with the aim of later exploring how these theories have helped to shape the approach to transport investment for development. An overview is given of the role of transport infrastructure in development and the changing nature of the relationship between transport and economic development. In the second section of this broad theoretical framework the evolution of various approaches to transport infrastructure provision is investigated.

2.2 Theories of Development

Development theories are mainly based on the Western concept of development (Swanepoel and De Beer 2000). A range of different authors (Cypher and Diethz 1997; Pieterse 2001; Coetzee 2002 and Potter et al. 2004) notes that the term development is a multi-dimensional concept and that numerous meanings and definitions have been ascribed to it. In general, development encompasses values such as sustainability, empowerment, capacity building, and expanded roles of women, participation, transparency, accountability and equity. Coetzee et al. (2001:120) notes that development infers “a form of social change that will lead to progress, the process of enlarging people’s choices, acquiring knowledge and having access to resources for a decent standard of living, and a condition of moving from worse to better”. Cypher and Diethz (1997) define the concept of development as an improvement of socio-economic and political dimensions of society that leads to increased income and improved standard of living conditions.

In the historical development of the world economy, various theories have evolved over time. Potter et al. (2004:82) reflects on different ways to categorise development thinking over time and they suggested that four major approaches to the examination of development theory can be recognised. These four approaches are:

- the classical-traditional approach,
- the historical-empirical approach,
- the radical-political economic-dependency approach and

- alternative and bottom-up approach.

According to Potter et al. (2004) each approach may be regarded as expressing a particular ideological standpoint, and can also be identified by virtue of having occupied the centre stages of the development debate at particular points in time.

Melkote (1991:13-14) divide the history of world development into three categories. The first is the period of great development which focused on ancient civilisation such as Mesopotamia and Songhai. This was followed by the period of colonisation and then the period which led to the emergence of the concept of the Third World (16th - 20th century). This last period is characterised by the following:

- A shift in some states to underdevelopment and a sprawl of development assistance from bilateral and multilateral agreements (1949).
- The period of great optimism (1960s) which is characterised by the dominance of the modernisation paradigm focusing of industrialisation, urbanisation, and the use of capital-intensive technology and centralised economic planning.
- The period of pessimism (1970s) which led to the emergence of top-down decision-making structures, development of authority driven models, and widening of socio-economic gaps were scrutinised as features of the dominant paradigm which ultimately led to its downfall.
- Alternative conceptions of development (1970s) emerged emphasising growth with equity models, self-determination and self-reliance of local communities and integrated rural development.

Perret et al. (2005) divides world development into three major development periods comprised of the 1950s and 1960s that was characterised by the belief in trickle-down development and technology transfer; the seventies and the eighties characterised by equity considerations and the latter eighties and nineties characterised by participatory people-driven development.

Agunga (1997:138) also classified the history of development interventions and furthermore characterised each development stage into various major development theories, namely:

- the modernisation theory of the late 1940s to mid 60s,
- the dependency theory of the late 60s. Growth with equity of the 1970s,
- the human development theory referred to as an emergent theory since the mid 1980s.

The various categories and explanations of the evolution of development strategies and theories are somewhat consistent with each other. The earliest development policies have their roots in the days of European colonialism, when growth and modernisation were implicitly seen as the prevailing answer to development challenges. To a large extent, administrations simply applied the essence of the 19th century's European Poor Laws, namely that social needs were to be taken care of within the free market while governments busied themselves with maintaining law and order (Moser 1993). In practice this meant that charities tended to pick up where limited government assistance failed.

In many cases this policy continued even after colonial independence. In the view of the above argument, the traditional classical development theories (i.e. modernisation and dependency) will be discussed and thereafter, against this backdrop, an alternative development approach based on neo-liberal theories will be explored to serve as the basis for the present objective of reviewing key factors for development, with changes in the provision of road infrastructure over time.

2.2.1 Modernisation theory

The first decade after the Second World War was a period of transition and the dominant economic rationale in this period was Keynesian economics, a system of managing and mitigating systemic recessions and depressions in the economy through government intervention. The Keynesian economics

influenced the burgeoning development discourse and during the 1950s and 1960s, as increasing levels of aid were supplied to developing nations, modernisation theory emerged and was understood as the common behavioural system historically associated with the urban, industrial, and literate participant societies of Western Europe and North America. This system was characterised by a rational and scientific world view, growth and the ever increasing application of science and technology, together with the continuous adoption of the institutions of society to the imperative of the new world and the emerging technological ethos (Melkote 1991).

During the 1960s the modernisation perspective of development dominated the theory and practice of development. The main thrust of these development theories, which were reflected in the strategies and plans of many developing countries, was centred on economic growth (Wei-Bin 2007). During this period there was a perception that growth would eventually have a 'trickle-down' effect and benefit all sectors of the population.

In terms of how transport development in developing countries can contribute to economic growth, modernisation theory proposed the development of huge transport infrastructure, which was considered as the engine of growth and development (Wei-Bin 2007). It was during this time that the transport master plans were prepared, which also targeted other peripheral roads that could contribute to economic growth.

This theory held that profits in roads infrastructure could be used to improve industrialisation and that raising investment in industrialisation would bring development and alleviate poverty. Since then, several growth-oriented strategies have been proposed (growth poles and green revolution) to bring about development and alleviate poverty (Preston 2007). Modernisation theory was profoundly influenced by the work of Rostow (1960) by impacting on the way development practitioners envisioned and implemented the project of development.

Rostow's model assumed that progress was both linear and uni-directional. In this case, Rostow (1960:4) argued that there are five identifiable stages of growth:

- traditional societies, where productive potential is capped
- pre-conditions for take-off, where the desire for economic progress emerges, along with the necessary apparatuses, i.e. banking system, centralised state
- take-off, when the fetters of traditional society are finally overcome, resulting in new technologies that revolutionise production
- drive toward maturity, achieved by substantial, persistent levels of growth which allow the economy to move beyond the original industries that powered its growth toward secondary industries
- high mass consumption, where sectoral shifts toward consumer durables and service-oriented industry occur due to high income levels in the society.

Rostow forged a consensus behind a developmental strategy known as the Big Push, "a development effort on all fronts," to bring increases in productivity that would outrun population growth and promote structural change." Instead of targeting the industrial sector as import substitution did, large amounts of aid should go into "social overhead capital", such as transport (Rostow 1960). Properly timed, aid could generate a system-wide disruption that would shake a society from its traditional "torpor" and lift it into the modern age. The Big Push, sometimes called "balanced" development, emphasises that development had to be an unconditional, massive and sustained effort (Rostow 1960).

Effectively, modernisation theory insisted that the 'backward' and 'traditional' economies of Africa can grow, if and only if they adopt western-style systems on a large scale. The variety of possible ways relating to the countries of the developing world is reflected in the succession of different names such as backward, underdeveloped or less developed. All these terms have their flaws for they reflect Western views of the way a country should grow and change.

They suggest that the rich industrialised countries are the most developed and that their way of development is unquestionably the right way, and that it therefore provides the best model of development for all to follow (Melkote 1991).

In the modernisation paradigm the meaning of development was equated with growth, and political and social modernisation. As development was associated with growth and political and social modernisation, accompanying strategies to bring development and alleviate poverty were also focused on growth and modernisation (Keeble 1967; Wei-Bin 2007 and Oosterhaven 2000). During this time poverty was defined as lack of economic welfare, i.e. income (Ravallion and Wodon 1999) and the main concentration was on economic well-being. The key elements of this approach include the definition of income and the determination of a poverty line.

The central idea of this theory is that the development logic of economic growth in general and industrialisation, in particular, will impel societies towards a particular direction of change (Swanepoel and De Beer 2000; Coetzee et al. 2002). Within this paradigm shift, structural change processes which were fashioned by the Western societies, were introduced to the Third World countries with the assumption that the developing world would develop according to the western model. Development strategies designed and based on theories of modernisation paradigm, however, according to Melkote (1991:125), failed due to various reasons, which among others include the following:

- Failure to replicate western style of development over the so-called Third World when the expected trickle-down effect of the diffusion of innovations did not occur.
- Despite substantial transfer of capital and technology, disparities between the developed and the developing, the rich and poor, began to widen.
- The social problems of developed nations were spreading concerns about environmental costs of economic development.
- Income inequality was increasing all over the Third World countries.

- Unemployment rates could not decrease despite the impressive growth rates.

The best known critic of the modernisation theory is Frank (1966). His criticism is fundamental and threefold: the progress paradigm is empirically untenable, has an inadequate theoretical foundation, and is, in practice, incapable of generating a development process in the Third World. Moreover, critics of the modernisation paradigm charge that the complexity of the processes of change are too often ignored, that little attention is paid to the consequences of economic, political, and cultural macro-processes on the local level, and that the resistance against change and modernisation cannot be explained only on the basis of traditional value orientations and norms, as many seem to imply. The critique concerned not only modernisation theory as such, but the whole tradition of evolutionism and functionalism of which it forms part (Pieterse 2001).

Referring to the offered uni-linear and evaluative perspectives, and the endogenous character of the suggested development solutions, critics argue that the modernisation concept is a veiled synonym for Westernisation, namely the copying or implantation of Western mechanisms and institutions in a Third World context. Nowhere is this as clear as in the field of political science. Many western scholars start from the assumption that the West European political systems are the touchstones for the rest of the world. The rationale for President J.F. Kennedy's Peace Corps Act, for instance, was totally ingrained in this belief (Martinussen 1997).

The failure of the modernisation theories to bring development, was attributed to several factors. The dissatisfaction with the development outcomes delivered by the growth-centred strategies adopted in post-war decades, gained momentum in the early 1970s (Martinussen 1997; Pieterse 2001). Further, conventional development theories did not pay much attention to the spread of benefits to the poor. As a result, poverty, inequality and unemployment became big issues in developing countries during the early 1970s.

This gave rise to the need for a theory that placed the cause of underdevelopment on the institutional and structural barriers rather than on poor individuals. Modernisation theory was, rhetorically speaking, countered by dependency theory, a school of thought whose guiding principles were informed by varying forms of Marxist philosophy (Pieterse 2001).

2.2.2 Dependency theory

In direct contrast to modernisation theory, which proposes capitalism as the panacea for underdevelopment, dependency theory maintained that capitalism caused underdevelopment. While modernisation theory is rooted in neo-classical economics, dependency theory was introduced in 1969 by a group known as the 'dependistas', and hold to the basic principles that the world is one unit rather than a set of separate countries (Wallerstein 1999:193), and that capitalism causes underdevelopment through the exploitation of the Third World by the First World.

According to Graaff and Venter (2001), dependency theory is often referred to as Marxist development theory. Drawing on Marxism, the key guiding principle for the dependency theory was the viewpoint that the wealthy nations of the world needed a peripheral group of poorer states in order to remain wealthy. There are numerous strands of thought within the dependency school with particular relevance to the contributions by Karl Polanyi, Andre Gunder Frank, Immanuel Wallerstein, and Samir Amin. Various dependency theorists attempted to address the insufficiencies of modernisation theory's approach to development by noting the persistence and rise of poverty in the face of hundreds of development initiatives all over the globe. Frank (1966:17) further expanded this idea in a direct refutation of modernisation theory's central claim: *"...underdevelopment is not original or traditional ...neither the past nor the present of the underdeveloped countries resembles in any important respect the past of the now developed countries. The now developed countries were never underdeveloped, though they may have been undeveloped."*

Dependency theorists contended that similar to development being a deliberate process, so too was underdevelopment; they further argued that it was the very same process that enriched one region that impoverished another. In this view, the wealth of the industrialised western nations was achieved not through the naturalised process of 'modernisation.' Rather, wealth in the North was accrued by imperialist endeavours that pillaged the South; therefore, wealth in the North depends on poverty in the South. In this case, the theory argues that underdevelopment is occurring through the exploitation of Third World countries by the developed world (Potter et al. 2004). Dependency theorists argue that it is the reliance on the international market that led to the domination of transitional capital because of the unusual exchange between core and periphery, benefiting only the core (Coetzee et al. 2001).

Coetzee et al. (2001) notes that modernisation theory failed to narrow the gap of inequalities between the developed and developing countries. According to Burkey (1993), modernisation theory has brought socio-economic dependency and this resulted in underdevelopment in the periphery because the centre controlled the balance of economic and political power. The development project, hence, was counterfeit and unachievable; that is to say that 'development' of the poor countries would disrupt the economies of the wealthy countries, and could therefore never occur within the capitalist framework. The introduction of socialism to some of the African countries such as Ethiopia, Tanzania and Mozambique was to ensure economic progress by applying the principles of the Marxist dependency theory.

The dependency theory garnered only limited support due to fundamental flaws (Burkey 1993; Sachs 2005) and it lasted only into the seventies. Yet, it brought focus to the prevailing power relations and their negative externalities in the developing world. For example, the so-called 'dependency thinking' mindset of many in developing countries, whereby governments or aid agencies are expected to develop society, is considered one of the social causes of poverty, even decades after the end of colonialism and the attainment of independence (Burkey 1993).

By the end of the 1970s, results of various development projects demonstrated that targets were not met and goals were not achieved. In essence, development had fallen from grace; its 'Golden Age' deteriorating into a 'Dark Age'. The contributing factors to the development debacle went beyond the debate between the generally pro-capitalist modernisation theory and socialist-rooted dependency theory. This was evident when the world economy suffered a recession in the early 1970s. This dissatisfaction fuelled a new theoretical and empirical paradigm within the development discourse.

2.2.3 Neo-liberalism and beyond

While the development debates continued, the period between 1950 and 1980 saw a drop in living standards for most of Africa, Asia and South America with the result that this period came to be known as a 'development tragedy' (Davids et al. 2005). The eighties nevertheless provided fertile soil for development thought. The scope of development widened and became increasingly multidisciplinary and integrated, the latter due in part to projects focusing on infrastructure building. Perspectives on what development entails were thus expanded (Morse 2004).

Two major strands of development thought stemmed from this time. The first group, admittedly with a rather limited audience, was the so-called neo-populist approach (Morse 2004) which included, among others, the actor-oriented theory and the anti-development, or post-development school. These essentially criticised the hitherto top-down approaches and moved to promote local participation in all levels of development. The anti-development school views development as being a 'North based' product, forged on what is considered to be a correct form of development imposed on local communities without regard for local context. The result of this is destruction of both local cultures and the local environment (Willis 2005). It argues for grass-roots involvement and assigning priority to views of local communities in development programmes, so as to ensure local thinking as opposed to global thinking. Although this paradigm has never gained much foothold and has been criticised on many levels, its value lies in its highlighting of the manner in

which prevailing power relations have influenced development approaches over time (Willis 2005: 207).

The other neo-liberal line of thought was the paradigm of sustainable development that highlighted the need for a symbiotic relationship between the economy, society and the environment (Martinussen 1997). The forerunner of this approach was the 1987 Brundtland Report of the World Commission on Environment and Development (Willis 2005). According to this approach, development is presented as taking care of human needs within the context of a global-village responsibility to future generations, to replace the paradigm of development being a desired achievement, attained by some and aspired to by others. It argues for a standard of consumption that lies within the reach of all people, while also lying within the limits of ecological sustainability (Martinussen 1997). This approach championed the importance of the individual in the development process, while reflecting development as a multi-dimensional and multi-disciplinary process which merges poverty alleviation with environmental protection. This school of thought has resulted in the hosting of two international Earth Summits, where action plans were formulated to engage all nations in sustainable development (Martinussen 1997; Sachs 2005:219).

The eighties also brought Sen's introduction of his concept of 'development as freedom' and his capability approach, which marked a true watershed in the thinking on development. His paradigm, which can be categorised as part of the alternative development perspective mentioned earlier, takes a broad view on development as being the process of expanding human freedoms. In order to attain development, the 'unfreedoms' from which people suffer must be removed from society (Sen 1999).

The freedoms to which he refers include both processes and opportunities, and these include political freedom, economic freedom, social opportunity, transparency guarantees and protective security (Sen 1999). These freedoms enhance the basic capabilities that people have to lead the life they value, and have reason to value (Sen 1999:18). Apart from the intrinsic value of

freedoms, such freedoms also have an instrumental role as a means to development. The value of this approach lies in the central role it assigns to people in the development process; people are given the opportunity (capabilities) to shape their own future instead of being mere recipients of development programmes. Growth and income are therefore neither rejected nor dismissed, but rather supplemented with the concept of freedom (Martinussen 1997).

Neo-liberalism, based on a public choice perspective, has established itself as the dominant paradigm in development theory during the past two decades of the 20th century and encompasses alternative conceptions of development of the 1970s, comprised of growth with equity models, self-determination and reliance of local communities, freedom from external dependency, integrated rural development and the fourth wage theory on human development theory. In terms of a general philosophy, neo-liberalism theory was referred to as a political-economic philosophy that has had major implications for government policies beginning in the 1970s and increasingly prominent since 1980. The key thrust of this theory was based on de-emphasising or rejections of government intervention in the economy. Specific neo-liberal theories include the growth with equity theory and the human development theory.

2.2.3.1 Growth with equity theory

Various criticisms of both modernisation and dependency theories highlighted the persistent problems with development and showed that there were no solutions to resolve the problem. The ideology of classic economic development based on a pre-occupation with growth failed in many African countries. It brought many economic and ecological crises and has been unable to solve the problem of abject poverty. Alternative strategies should therefore enhance the quality of life for the largest number of people and abandon pre-occupation with the material standard of living of the elitist few. The shortcoming in economic and social performance in Africa over the last decade, is the result of not only misguided approaches to development but also due to institutional crises.

According to Agunga (1997:151) the growth with equity theory emerged with the recognition that the traditional reliance on growth of Gross National Products will not benefit the poor in today's less developed countries, at least not over the short term. This was based on the assumption that people in developing countries are not lazy, they simply lack economic opportunities and incentives. This paradigm shift, which Melkote (1991) calls the alternative pluralistic concept of development, comprised the following elements:

- Equity in distribution of information and other benefits of development.
- Active participation of people at grass root levels.
- Independence of local communities to tailor development projects to their own objectives.
- Integration of the old and new ideas, the traditional and modern systems, and the endogenous and exogenous elements constitute a unique blend suited to the needs of a particular community.

Due to its pluralistic nature (blend of old and new concepts), this model of development used, combined strategies in the transport and road sector. This included the provision of modern road infrastructure using labour-intensive methods for the promotion of popular participation in decision making and planning and the promotion of social, economic, political and human development aspects in an integrated manner.

2.2.3.2 Human development theory

The concept of human development was introduced in the 1990s. The original concept of human development proposed enhancement in the areas of longevity, attainment of knowledge and standard of living by merging older ideas from ecological economics, sustainable development, welfare economics, and feminist economics. However, this has since been expanded to an increased realisation that development is about people and that the beneficiaries are the principal actors.

According to Melkote (1991), human development theory implies that any development programme aimed at human development must be based on the perceived needs and problems of the people themselves. Perret et al. (2005:38), however, reflects that human development theory should be based on two fundamental principles of participatory development which includes the fact that communities are knowledgeable, possessing indigenous technical knowledge. Interventions should therefore not be planned on the basis of exogenous analysis which may be unrelated to the local situation, and secondly participants in rural development are the local people themselves and the communities to which they belong.

According to Agunga (1997:167) the dimensions and intervention strategies of human development theory include sustainability, capacity building in the form of training, emancipation such as literacy and education, organisation and communication which are well provided for in the former growth with equity theory.

A further extension to the human development theory is the new agenda for a new millennium. The Millennium Declaration of the United Nations was adopted by 189 nations in 2000. This declaration intended to set a development agenda that binds its member states to halve global poverty by 2015 (United Nations Development Programme 2006). It aims to do so through the achievement of eight development goals, known as the Millennium Development Goals (MDGs). The agenda calls for the eradication of extreme poverty and hunger, the achievement of universal primary education, attainment of gender equality and empowerment of women, a reduction in child mortality, improved maternal health, combating HIV/AIDS, malaria and other diseases, ensuring environmental sustainability, and the development of a global partnership for development. Judging from this proposed international cooperation, it is clear that development thinking has made fundamental progress over time. The eradication of human poverty now stands on a par with the acknowledgement of human rights as part of a development strategy (South Africa 2005b).

This concludes the overview of leading thoughts on development from a western- inspired perspective. There is also a significant body of Third World-based writings on this topic (Martinussen 1997) but it was not included in this review since the review concentrated on development from a western inspired perspective. It is nevertheless clear that until the countries of the world are on a relatively equal footing in terms of prosperity, new theories on development will continue to proliferate.

2.3 Transport and development

The relationship between transport and development has been researched within transport and economic geography since the 1960s (Hirschmann 1961; Wilson 1973) and there is still an ongoing debate on what this relationship entails and how transport infrastructure and investment influences social and economic development in regions and countries. According to Hoyle and Knowles (1992:5) the study of transport within transport geography rest on two essential ideas. The first is that transport is itself a major complex industry in terms of land use, employment and function. The second idea is that transport facilities and services, taken as a whole or in terms of their component parts, are major factors affecting the environment and the spatial distribution and development of all other forms of economic and social activity.

Hoyle and Knowles (1992) acknowledge that “transport is a subject of universal interest and importance. The investigation and analysis of transport is, therefore, of concern to a wider variety of students, researchers and planners as well as those directly involved in the operation of transport system”. From the demand side, most people wish to travel, access a variety of places, encourage economic activities and trade, thus promoting economic development. Geographers have much to contribute to the study of transport, and transport geography is increasingly recognised as an important field within the broader field of transport analysis (Hoyle and Knowles 1992).

A historical dimension, which focuses on how the theoretical ideas and concepts related to transport and development relationship has changed over time, can provide useful insights into the links between transport and development. Current thinking on this relationship is also informed by an appreciation of the evolution of ideas in the past (Hoyle and Knowles 1998).

According to Edmonds (1998) the development of road infrastructure is centred on the growth centre concept. The concept of growth centres evolved from an earlier approach of growth pole theory which was based on the assumption that the establishment of activities that stimulates growth and development has benefits in terms of growth flowing outward from the centre and gradually benefiting the entire hinterland. These benefits would then “trickle-down” or spread to surrounding areas (Malecki 1991:94). Although these concepts were originally economic in nature, they were adapted and applied by geographers within a spatial context (Roos 2005).

The work of Hirschman (1961) and Wilson (1973), on the critical role of nodes in the context of regional and international transport systems, provides the first real objective studies within geography on the role of transport towards development. Hirschman's (1961) argument was based on the idea that economic growth is not created but is a process of change and that transport is a facilitator to economic development. As a result, changes in one productive sector lead to changes in another and transport is often the means whereby such changes take place. Wilson (1973) on the other hand, analysed the economic and social impact of the massive investments in transport in the context of developing countries. His conclusion was that the role of transport investment in economic growth is not unique. The influence of transport on development was no stronger than other factors and indeed may not have played the catalytic role that had previously been assumed (Wilson 1973).

According to Mabogunje (1980:203), transport holds a contradictory position in the process of development. On one hand, as is emphasised by economists, it is not productive in itself, but it is responsive to forces generated in the production and consumption sectors. The need for transport

is always a derived need, and to study it is essentially to study sectoral activities. On the other hand, transport is an infrastructural element with profound implications for overall development, most importantly for the spatial distribution of rural and urban areas of a country, and the relation of transport to the spatial distribution of power and control thus become the critical element of interest. The relationship between transport and development are also expressed in Wilson (1966) who added a third aspect, that of capacity building.

Wilson (1966) outlined three major scenarios in terms of the role of transport in development. In a positive scenario, transportation comes before development and promotes development. In the second scenario, transport investment has high opportunity costs and is therefore less productive. In the negative scenario there is a fall in per capita output and transport does not contribute to development.

Wilson (1965) produced a series of case studies demonstrating that investment in transport is a necessary but not a sufficient condition to induce economic growth. Transport is viewed as an enabler in the transfer of goods between two or more geographic points, with a beneficial affect on mobility, and that it becomes a private and public consumption benefit (Joseph 1962). Over the years, most economists rejected the widespread belief “that there is some magic in transportation” (Keeling 2007). Thus, Keeling (2007) acknowledged that transport infrastructure affects the course of economic development but doubts its ability to generate new employment opportunities. The key argument is that there is no evidence that the mere provision of a transportation system will result in new commercial activities nor is there evidence that an inadequacy of transportation, specifically in the developing countries, constitutes a bottleneck. Keeling (2007) argued that transport is a dependent factor which largely depends on the existence of other activities such as agriculture and education facilities. According to him, “where these qualities are deficient, no amount of transport investment will be likely to create an economy-wide dynamism” (Keeling 2007).

It is evident from the literature that transport can play three different roles in development. In its first role transport is seen as a derived demand service since transport comes before any development and transport infrastructure is constructed, because of a need for interaction and not a need for development. The second role of transport is as an initiator of development. Transport infrastructure is constructed with the purpose of initiating development. The last role of transport is a rather negative role since the construction of transport infrastructure is seen as a diverter of resources. The building of transport infrastructure does not lead to additional development and it actually uses resources that could have been used more productively for other types of development.

2.4 Approaches to transport provision

The development of transport infrastructure is underpinned by two basic approaches. The first is the government-led development approaches and the second the move towards deregulation and privatisation of transport infrastructure provision. The latter led to the focus on public and private enterprise-led development and endogenous development. These approaches led to the development of relevant theories to shape the current thinking of road infrastructure development.

2.4.1 Government led development approach

The government-led development approach towards road planning evolved from the work of engineers and road planners involved in the early road development within the geography of urban planning. According to Preston (2007), roads were seen as a system which ensures the interconnectedness of various parts of the geographic landscape and land uses. Major transport plans were produced based on the view that if the land-use pattern of a town or a city could be defined for some future date, then the associated traffic pattern could also be determined and a sustainable transport system designed to fit it (Keeling 2007).

The main purpose was to integrate backward regions into the remainder of the economy. The approach was based on the assumption that regions should make itself attractive to outside investment by providing infrastructure and incentives to influence external decision makers. Regions were therefore targeted as it was assumed sub-regions are too small to attract development. This was also aggravated by the lack of sufficient information concerning effectiveness of local economic development. More emphasis was placed on the indirect contribution of industries in the provision of road buildings such as highways and other infrastructure (Stohr 1990; Malecki 1991).

These programmes evolved since 1980 and were used to respond to crises such as drought, famine, food security and employment affecting a specific segment of the population. In 1974, the United Nations Administrative Committee on Coordination, in its Special Report on the Employment Policies of the Second Development Decade, acknowledge these initiatives by stating that "one of the better ways of finding a partial but rapid solution to the problem of poverty and unemployment is to institute what might be called 'a major programme of minor works' in rural areas" (Garnier and Majeres 1992:2).

The government-led development approach was highly criticised based on the fact that they were effective during times of general economic growth but were no longer appropriate when economic growth rates slowed down and industrial employment began falling, due to international economic restructuring. "What had worked in the late 1950s while the economy was on the growing trajectory did not appear to work in the 1970s and 1980s when the economy was constant or shrinking" (Malecki 1991:2).

Arguments against the government-led development approach to planning were mainly generated from liberal economists who argue that government intervention actually thwarts development since they decide (or influences through subsidies and tariffs) what, how and for whom to produce and this according to (Malecki 1991) involves the following:

- Creating a group of planners who may make key economic decisions but often have incomplete information or lack of experience resulting in wrong choice of investment projects, inefficient implementation and management of these projects, inappropriate pricing and costing of output thereby distorting markets and institutional weaknesses, and insufficient and unreliable data.
- Planning may be manipulated by privileged and powerful groups that act in their own sectional interests.
- Extensive regulations create opportunities for bribes and corruption.
- State intervention which resulted in large bureaucracies staffed by friends and relatives of the ruling elite, distortion of prices resulting in a misallocation of resources and state funding of inappropriate capital projects.

The key planning framework of this approach was the accessibility planning technique which was developed in the late 1970s and early 1980s in the industrialized countries. At that time, it was felt that the technique was appropriate at local level planning as the process had the capacity to encourage local authorities and other agencies to assess more systematically, the infrastructure development and travel needs of rural people. Mashiri et al. (1998) reflects that accessibility planning was mainly used to target and promote social inclusion by helping people from disadvantaged groups or areas to access jobs and essential services.

The government-led development approach was criticised, based on the argument that developmental planning should be seen as a system that evolves, where various components are interdependent. More specifically, the transport system was seen as a set of facilities and institutions organised to distribute a quality of access selectively in a particular area. The locational behaviour of businesses and individuals is affected by the implementation of a road system, and the induced locational changes effects the performance of the road system in the long run (Preston 2007).

2.4.2 Deregulation and privatisation

In the past two decades, there has been a major worldwide move away from transport services that are heavily regulated by government (by controlling services patterns and charges, and operated by nationalised or municipally owned companies) towards deregulated or liberalised transport services operated by privately owned companies. According to Hoyle and Knowles (1992), this change in approach reflects the neo-liberal or “new right” view that state should confine its role to the adoption of minimal regulations, designed to ensure fair competition and the safe operation of transport services.

Deregulation and privatisation is underpinned by the theory of contestable markets. This thinking has affected various modes of transport including road infrastructure provision. Motives for deregulation and privatisation were to promote the entry of new operators into a transport market as a mechanism for improving efficiency and for providing cheaper and more innovative transport services. Other motives include the reduction of the cost of transport subsidies and promoting competition within the market. According to Hoyle and Knowles (1992) privatisation continued unabated, as most privately run transport companies proved to be lower cost and more market orientated than their publicly owned predecessor, resulting in fewer calls for re-nationalisation.

2.4.3 Public and private enterprise-led development approach

One of the key elements of deregulation and privatisation was public enterprise and private enterprise-led development approach. The private enterprise-led development approach was spearheaded by global restructuring and the rise of conservative governments who stressed the active role of the private sector with minimal state intervention. This phase was characterised by the dominant role given to public partnerships (Nel 1995). One of the key assumptions of this approach was that the free market system could resolve many problems and that it was essential to remove any restrictions on the system. The role of the state was to facilitate development and not to supplant the free market.

A key element of a public-private partnership is a transfer of risk from the public partner to the private sector partner. Public-private partnerships has become one of the commonly employed strategies for many reasons, practical and ideological, such as the promotion of private sector intervention with neo-classical thought. These agreements, which are aimed at improving the quality of life and the local economy, have also included development corporations, business support centres, major property developments and cluster promotion organisations. Public-private partnerships thus shared the characteristic that each side needs to organize itself and bring to a newly created forum, particular ideas different from a single thought due to added power resources and contacts of the other key partners (Harding 1998).

The general feeling in many parts of the world was that public-private partnerships is a way of eradicating poverty. However, Mitchell and Manning (1992:6) reflect that this was more applicable in countries facing depression. In the United Kingdom, the success of public-private partnership arrangement was highly dependent on strong government support and commitment. From such support the momentum to deregulate and liberalise the economy, was both gained and sustained (Harding 1998).

Effective public-private partnerships were available to the public sector to enhance the delivery of public infrastructure and services, hence it has been viewed by Browne et al. (2003) as a panacea for all government delivery functions to achieve the following:

- Efficiency - making better use of resources through operational efficiency, market related incentives and competition.
- Integration - effective partnerships with the private sector are a way of integrating the public and private sector and often bring the benefit of private sector experience to areas under traditional public sector management.
- Accountability - the ability to explicitly design public-private partnerships to be accountable for the delivery they attain. This is generally achieved through a process of regulatory oversight, a pre-identified monitoring and

review process and the use of incentives and disincentives to promote particular goals in delivery provide a strong mechanism of public accountability.

Most public-private partnerships were initiated by local government, often seeking private sector funding or expertise for projects. Some were produced by private sectors looking for public sector support. The key challenge of this approach was that local governments were plunged into the business of deal making with private enterprises and ultimately resulted in a situation where outside investors dictate the course of action (Harding 1998).

Criticisms to this approach were expressed from different directions and approaches. The perception of various stakeholders of this approach was that stakeholders within private enterprises, seek to maximise profit from all the activities of the private enterprise. The concept of private-led development was thus overshadowed by the engagement of both the private sector and public institution under the concept of public-private partnership. Public-private partnerships are arrangements for procuring goods and services by government through a joint venture with a private sector provider. This approach is an arrangement between government (or other public sector body) and a private sector party, resulting in the private sector party providing infrastructure and/or services that are traditionally delivered by the public sector (Harding 1998).

The major criticism of this approach challenges the focus on public-private sector partnerships, with the exclusion of the broader community and limited benefits for the broader community, as well as limited benefits of the development to the lower income groups. With the minimal involvement of all sectors of the community, limited attention was paid to social goals and the more equitable distribution of benefits (Browne et al. 2003). Furthermore, the lack of commitment, accountability and institutional integration was criticized. In his study about the risk profile analysis in public-private partnership projects (Browne et al. 2003) discovered that when there is a vacuum between political statements and administrative actions, projects often run into difficulties. It is

often primarily due to lack of institutional integration, so that in cases where more than one sector is involved, failures of this nature occur (Browne et al. 2003).

2.4.4 Endogenous development

In reaction to criticisms of the public-private partnership development approach, transport development theory shifted to focus on the local arena - by the community for the community. Within this approach, much of the literature stressed the unique feature of the local milieu in which social and economic activities occur, while simultaneously recognising dependencies of places in large structures (Harding 1998).

The emergence of the free market philosophy in the 1980s, coupled with a general disaffection with government implementation, led many agencies to concentrate on the involvement of communities themselves. This ensured that local projects involved local people. It also meant, however, that the emphasis was placed at village level and even on individuals. This tended to ignore the issue of how these development initiatives fitted into the more general economic and social development of rural areas as a whole. Another result was that the processes used tended to be location or group-specific, making them more difficult to replicate elsewhere (Edmonds 1998).

Various programmes and projects began to focus and concentrate partially on the local communities due to the inability of the state to generate employment, or address unemployment challenges as a result of volatility of world markets (Storh 1990:45). Broad ranges of policies which acknowledge the uniqueness of places were implemented. Many of these focused on strengthening the development of the indigenous economic base. This approach is also called 'development from below' and 'development from within' (Stohr 1990:39). Assumptions underlying this approach are that:

- A community can find a niche for themselves through mobilising local resources, thus coping with the effects of global economic restructuring.

- A small business has the capacity to generate employment and development.
- The prerequisite of development, such as initiative and entrepreneurship, were broadly latent in all populations.

The endogenous development approach has been crystallised within the African Charter for popular participation in development and transformation which affirms that nations cannot be built without the popular support and full participation of the people, nor can the economic crisis be resolved and the human and economic conditions improved without the full and effective contribution, creativity and popular enthusiasm of the vast majority of the people. After all, it is to the people that the very benefits of development should and must accrue. According to the African Charter (African Union 1990), Africa's perpetual economic crisis cannot be overcome, nor can a bright future for Africa and its people see the light of day unless the structures, pattern and political context of the process of socio-economic development are appropriately altered (African Union 1990).

In implementing the endogenous development strategies, the charter prioritised the creation of an enabling environment for broad-based participation, on a decentralised-basis, in the development process. According to the African Charter (African Union 1990:11) such policies and strategies are as varied as the theories upon which they are based. Typical policies could include actions such as:

- extending more economic power to the people through the equitable distribution of income, support for their productive capacity through enhanced access to productive inputs
- promoting mass literacy and skills training in particular and development of human resources in general
- greater participation and consensus-building in the formulation and implementation of economic and social policies at all levels, including the identification and elimination of laws and bureaucratic procedures that pose obstacles to people's participation

- increasing employment opportunities for the rural and urban poor, expanding opportunities for them to contribute to the generation of output and enhanced productivity levels and creating better marketing conditions for the benefit of the producers
- Strengthening communication capacities for rural development.

Various authors, including Stohr (1990) and Browne et al. (2003), acknowledged that this approach is most appropriate to respond to the needs of local people and that the planning approach tends to be strategic and holistic with community goals, values and aspirations recognised as intrinsic to the process, and that the social component is recognised as essential to development.

It is, however, important to note that for local economic development to take place, there are certain prerequisites within a local community that will facilitate economic development. Stohr (1990:17) identified the will to proceed, which is born from dissatisfaction with the current state, or driven by an impending crisis as one of the prerequisites. Impending crises have the capacity to initiate a sense of urgency and motivate the community to take action. In contrast, a complacent or pathetic community that has no desire to develop cannot participate in the process.

The second major prerequisite is that of a leadership coupled with active citizen participation in the development process. Community participation at the planning stage of the project is essential to obtain such a commitment. The more active and committed the community, the greater the development potential. Furthermore, Stohr (1990:17) cites a number of other critical success factors from a study of communities in Europe, including a high promotion of locally owned enterprises, physical proximity training as well as local technical culture compatible with new technologies.

2.5 Conclusion

This chapter provided a theoretical framework of the relationship between transport and development in order to understand how various theories have helped to shape the development approach for labour-intensive programmes. Broad development theories have evolved over time, key among these are the modernisation theory, dependency theory, and the theories classified within the neo-liberal approach. The evolution of transport theories and theories on the role of transport in development shaped the discourse of road infrastructure development. According to the literature, the relationship between transport and development may be positive, neutral or negative.

Over time, approaches to the provision of transport for development have undergone changes. Within modernisation theory the benefits of development were viewed as a spread effect, and government-led transport approaches were used to plan and construct transport infrastructure in order to bring development to an area. Subsequently this approach made way for a public-private partnership approach. This approach was also criticised and in its place, a more endogenous community-based approach to the planning and construction of infrastructure for development evolved.

In the next chapter, the focus will be on the impacts of transport infrastructure and on the theories and models of labour-intensive transport development and maintenance approaches. The significant impact of labour-intensive road infrastructure will be reviewed within the context of the theories and approaches discussed in this chapter and these impacts will be substantiated with relevant evidence selected from various case studies.

CHAPTER 3

Transport development and labour-intensive methods

3.1 Introduction

The focus of this study is the transport sector and its capacity to implement labour-intensive methods in the area of construction and maintenance of road infrastructure, such as access roads, bridges, storm-water drainage, and pavement design. One of the aims of the study is to explore the relationship between the development of transport infrastructure and labour-based methods. In the previous chapter a broad theoretical framework on the relationship between transport and development was envisaged. In this chapter, the focus has been narrowed and the literature on the impacts of transport infrastructure and the theories and models of labour-intensive transport development and maintenance approaches are reviewed.

The economic impacts, improved mobility and access, the contribution to poverty alleviation, the creation of employment, the increase in GDP and the environmental impact of transport infrastructure receives attention. The theories and models of labour-intensive road construction and the targeting mechanisms used within labour-intensive road transport are reviewed. Since the objective of this research is related to the nature and the impacts of a labour-intensive programme in South Africa, the road situation in South Africa and government policies, strategies and legislation related to labour-intensive road construction are also explored.

3.2 The impact of transport infrastructure

The relationship between infrastructure development and economic development is one of the least debated areas within economic and transport geography studies. As outlined in Chapter 1 (section 1.4) the key debates on

transport and development emanates from two major contradicting theoretical approaches. Black (2001:2) emphasises that transport investments were essential for the past economic growth of most of the world's developed countries but he cautions that this is no longer the case. Transport investment can result in negative, neutral, or positive economic impacts (Wilson 1966; Black 2001). Devres (1980) is of the opinion that the development of road infrastructure could contribute towards the disabling of other infrastructure and the draining of investment. While there are differing views regarding this matter, most debates agree that there are exceptions. In many developing countries, positive economic development still results from transport investment (Hawkins 1960; Wilson 1966; Wilson 1973; Ahmed and Donovan 1992; Creightney 1993; Oosterhaven and Knaap 2000; Black 2001).

Hilling (1996) reflects on the importance of decision making in transport development. He argued that decision makers should be appropriate and that decisions regarding transport should be made for the right reasons. Hilling (1996:29) further noted that there have certainly been cases in many developing countries where decisions have been made by politicians for wholly personal gain or the perceived advantage of their home region, irrespective of the real merits or likely development impact of the transport facility concern.

3.2.1 Economic Impacts

Hoyle and Knowles (1998:9) reflect that transport investment can positively influence economic development, and often does so. Improving the speed, capacity and reliability of transport or reducing its price provides opportunities for widening market areas and increasing market share. However, Hoyle and Knowles (1998) reiterated that this will only occur if finance, productive capacity, entrepreneurial skills and training conditions permit. At the outset, infrastructure development lowers the cost of production and consumption and makes it easier for participants in the economy to enter into transactions.

Increasing the efficiency of infrastructure improves growth performance, service provision and development outcomes (Development Bank of Southern Africa 1998:8). The notion of economic growth cannot, however, be defined as readily in relation to road infrastructure. In essence, economic growth occurs when the average income per capita increases. The situation becomes more complex when there is consideration of other factors such as the effect of the increase in population. A typical example is when population increase exceeds the growth in the aggregate output of the society, which would result in the decline in average income. It therefore becomes quite clear that in such circumstances the real growth in GDP cannot be regarded as economic growth, however, any improvement in road infrastructure can be regarded as contributing to economic growth.

Classification of economic impact with regard to their type and measurement has therefore emerged as a useful approach to measure the impact of road infrastructure towards economic growth and development. The following three types of economic impacts can be distinguished:

Direct Impacts are the immediate economic impacts of capital and operational expenditure required to build, operate and maintain any scheme. The direct economic effects are thus the changes in local business activity occurring as a direct consequence of a public project which takes into account the direct purchases made within the region by the project, the number of people employed, and the effect of the household incomes of those people (Weisbrod and Weisbrod 1997:5).

Indirect Impacts are felt within the supply industries, which are regarded as those industries that supply building material and other resources to the construction company. These indirect impacts are in the form of increased inputs, employment of more labour and the payment of better wages. As a result, indirect economic impacts range from all other economic impacts stemming from a project, as a result of changes in demand for the supplier's products by the businesses directly involved in the road investment. In this

case, a chain reaction of indirect and induced effects which are also regarded as multiplier effects is therefore expected (Weisbrod and Weisbrod 1997:5).

Induced Impacts stems from the fact that the increased household income leads to an increase in household expenditure and regional production. This has the potential to shift spending on food, clothing, shelter and other consumer goods and services. These effects are also known as forward linkages and in essence have little or no relation to the actual road project (Weisbrod and Weisbrod 1997:5).

The general advantages of transport labour-based initiatives have been debated and a number of distinct issues have arisen. Within the context of economic development, economic impacts of road projects are measured in terms of changes that the road project has brought to the economy of the area. Economic impacts are changes on the level of activity in an area in terms of personal income (including wages); job and wealth creation; business output (or sales volume); and value added or gross regional products (Weisbrod and Weisbrod 1997:1). Transport infrastructure investment leads to impacts on the overall economy as a consequence of three processes:

- *Spending* creates jobs and income through expenditures on wages for workers, and spending on orders for materials and services that are needed to construct and develop transportation facilities and to provide their ongoing operation.
- *Traveler Impacts* associated with an improvement in transport services or the increased availability of service can include savings in travel time, savings in travel costs, and savings in accident costs. The travel cost savings for public transportation passengers may include savings on tolls or fares, and for those formerly traveling by automobile - savings on vehicle costs, fuel and parking costs, and less peak period congestion delay.

The opportunity may also exist to reduce the number of personal vehicles owned by a household. The cost savings for those who remain as automobile travelers may include less traffic delay due to the shift of some of the former automobile travelers to public transportation. Access improvements are clearly travel-related, though in practice they are generally estimated as broader economic development impacts.

- *Broader Economic Development Impacts* include increase of jobs and income resulting from the growth of activity at suppliers of goods and services, to serve the expanding construction of public transportation facilities, vehicles, and other equipment, and the expanding operations of public transportation services. They can also include induced economic growth associated with additional workers spending their income throughout the economy. In addition, though, there can be household and business cost savings enabled by public transportation availability, reduced road congestion, and increased access to employment, education, health care and shopping opportunities. Particular attention is given to the effect on business productivity enabled by factors such as a larger scale of customer markets, improved access to a greater diversity of labour market skills, and the business agglomeration (cluster) economies associated with enhanced access to transport infrastructure (Weisbrod 2009: 69).

The 1994 World Development Report (World Bank 1994), which has infrastructure for development as its theme, states that road infrastructure investment is not sufficient on its own to generate sustained increases in economic growth. They argue that investment in infrastructure can contribute to economic growth by way of different actions. The creation of employment in transport and other infrastructure and the opening up of new opportunities for entrepreneurs in transport and other infrastructure services, and making existing businesses more profitable can contribute to economic growth. Public works that provide employment as a counter-cyclical measure to stimulate the economy (or particular regions of it) in recession also results in economic

growth. The lowering of the costs of inputs used in the production of almost all goods and services can also contribute to economic growth (World Bank 1994).

According to Weisbrod and Weisbrod (1997:1) the economic impacts of transport investment are generally measurable in line with the requirement for evaluating the relationship between road infrastructure investment and economic development. Road infrastructure development and the development of road networks is an important mechanism to attract investments that are indirect in nature. This element is frequently ignored in measuring the impacts of road infrastructure investments.

Hilling (1996) provides further insight into the impact of transport infrastructure especially within the developing countries. He argues that if transport is to have any impact on development it must be appropriate, in the fullest sense of that term, to the desired development goal. It must be the most suitable mode and level of technology and in the right place at the right time.

3.2.2 Improved mobility and access

Basic to the relationship between transport and development are the associated concepts of connectivity, mobility and accessibility. According to Hilling (1996:34) connectivity within the networks can be compared on the basis of, among others, the number of links per transport node and the ratio between the actual and maximum possible number of links. Accessibility may be interpreted in two ways. At the one level, it is related to connectivity and may be defined as the number of links that have to be transverse, or sub-journeys made, from a particular node. At another level, accessibility may refer to joins in a network (Hilling 1996:36).

In the early 1970s the Mexican government embarked on a scheme using labour-based construction methods to provide road access for the mass of the rural populations (Edmonds 1980). The actual routes were chosen on the

basis of maximising the route utility in terms of the number of settlements served, the existing socio-economic infrastructure, the potential for agricultural development and employment generation and the zone of influence of the completed road. The accessibility of many of the communities with respect to schooling, medical services, markets and the time needed to reach the nearest town was greatly improved (Hilling 1996).

The Rigo road in Papua New Guinea provides similar evidence of rapid access, mobility and traffic generation through infrastructure development. The 61 km road from Port Moresby to Rigo was upgraded to an all-weather road in the mid-1960s and it brought an almost immediate five-fold increase in vehicle movement. New vehicle ownership was evident in settlements that previously had no access to the road. Furthermore, greatly increased quantities of surplus production found their way into Port Moresby markets. It was estimated that over a three-year period, the net sales value was in excess of the cost of the road improvement; freight transport costs were reduced, and there was time saving and certainty (Ward 1970). This confirms Hofmeier's (1972) general conclusion that new construction or the improvement of roads in an area where all the other prerequisites already exist, can significantly encourage and accelerate economic development (Hofmeier 1972). Howver (1984) cautions that it would be wise not to read too much into such claims and he cites a study of road development in the Okapa region of Papua New Guinea, where there was little evidence of change in marketable production.

In South Africa, the reconstruction of the Amadiba road has significantly improved access and provided other benefits to the local community. Key among them are the effects of significantly reducing travel time and increasing journey comfort, and a decrease in the costs of motor-vehicle hire charges for ferrying goods. These developments have ultimately resulted in the mushrooming of small enterprises and the expansion of tourist attractions (Mashiri et al. 2005).

Rural transport conditions in most of the sub-Saharan countries are generally poor in comparison to Asia and Latin America (Porter 2002). In Africa, getting to market to sell produce, getting to school, obtaining medical attention, finding employment, or buying farm and consumer items not available locally, can all be difficult tasks for the rural poor generally.

Road infrastructure with poor access results in higher transportation costs and vehicle operating costs. According to Porter (2002:282) rural transportation charges are higher in the sub-Saharan countries than in any other region in the world. Ellis and Hine (1998) compared villages in Zimbabwe, which have an average of one motorized vehicle per 300 people, with villages in Sri Lanka, where the level is five times as great. They report transport charges for journeys of up to 30 km as up to two and a half times more expensive in Zimbabwe than in Sri Lanka (Porter 2002: 286).

There is, therefore, evidence that mobility improves access to a region and creates benefits for people, goods and services. Improved mobility is often essential for further developmental effects, such as the inclusion of isolated districts in education, health and other social programmes. Both result in better living conditions and employment opportunities for people in the catchments area of the roads (Wei-Bin 2007). It is not surprising that many poor people in rural areas see lack of access and mobility as the main obstacles to overcoming poverty.

The World Bank survey on mobility discovered that mobility problems were frequently regarded as the major cause of poverty. Individual statements like “A community without roads does not have a way out,” or “Where there is no road there is virtually no development, there is no immunization outreach and pregnant mothers are dying”, illustrate very clearly that poor people regard the provision of adequate transport infrastructure as an important contribution to improve their living conditions (World Bank 2003).

3.2.3 Contribution towards poverty alleviation

Investment in the development of road infrastructure is a necessary condition for sustainable poverty reduction. Without an adequate and functioning economic infrastructure, of which the road infrastructure is an essential element, achieving sustained growth is unthinkable. The indirect effects can be enhanced if the growth is labour-intensive and if it is located in those areas and sectors where poor people reside. Furthermore, economic frameworks like monetary stability, good governance and the development of human capital of the poor will have a positive effect on poverty. According to Weisbrod and Weisbrod (1997:1) the application of labour-based methods in road infrastructure investments is favourable for the following reasons:

- Communities are more involved in roadworks, which may engender a responsibility toward the use of road infrastructure.
- Labour-based projects usually train even the unskilled labourers and these skills can be used in continued maintenance or other jobs.
- Labour-based groups can work on a number of sites at one time, so allowing a 'lengthman' system to be used.
- If the population density is sufficient along the road, contractors can be village-based.

In rural areas and where the majority of workers are women, maintenance works can be done on piecework rates that can take up to half a day to allow community members to conduct other tasks such as child care or farm work. If these effects encompass the economic activities and sectors in which the poor participate, investment in infrastructure will have a direct poverty-reducing impact. It is, however, important to note that the evaluation of the impact of investment in infrastructure on poverty reduction requires a general equilibrium approach, since the impact of an intervention in infrastructure on poverty will depend on the net effect of outcomes in related product and factor markets on poor people's livelihoods (World Bank 1994).

In summary, it is argued that road infrastructure development can make a considerable contribution to reduce poverty, both directly and indirectly. However, not all developments contribute to poverty reduction. It is therefore essential to consider the extent to which infrastructure development projects benefit the poor. The answer to this question depends substantially on the distribution of incomes, the methods of growth generation and the prevailing structural conditions in a country. Wattam (1998) argues that the indirect effects on poverty will be stronger if the growth is labour-intensive and it takes place within the localities of poor communities (Wattam 1998).

3.2.4 Creation of employment opportunities

Construction and maintenance of the road infrastructure generates labour demand, especially for low-skilled labour. Employment is created during the construction of the transport infrastructure, and later through maintenance and operation. The employment effects during construction are strongest if labour-intensive methods are used. According to the social accounting matrix 2004, a further look at the use of labour by the transport sector reveals that most of the factor remuneration goes to capital, skilled labour followed by highly skilled labour, with the least amount of resources going to semi-skilled and unskilled workers (McCutcheon 2008).

According to Taylor and Bekabye (1999) labour-based methods have a significantly higher employment creation potential when compared to equipment-based methods. Their study reflects that labour-based technology in roadworks has generated about 2.5 - 4.0 times as much employment of unskilled labourers as equipment-based methods. In Uganda between 1998 and 1999. Based on an investment of Ush 30 billion per year in feeder road rehabilitation, it was estimated that using labour-based methods of construction would create the equivalent of 107 657 full-time jobs in Uganda, while using equipment-based methods would only create 36 418 jobs (Seruma 2007:13).

In Botswana a national programme of labour-intensive road construction units was set up within District Councils which are semi-autonomous bodies under the overall responsibility of the Ministry of Local Governments and Lands. This programme has resulted in the creation of over 3 000 jobs during the construction and upgrading of nearly 2 000 km of road (McCutcheon 2008).

Expanding the transport infrastructure can, however, also play a negative role in relation to job creation. A typical example is the labour-intensive works (*Padat Karya* in Indonesian language) which have been implemented in Indonesia since 1970s as a means of achieving national goals on employment creation, income creation and poverty alleviation and reinforcement of national infrastructure goals (Atinc 2000). All these programmes were discontinued in 1998 as a result of the economic crisis and inappropriate targeting mechanism, since the programme was targeted towards retrenched workers within the urban areas. Furthermore, the planning approach to the programmes was also top-down, non-participatory and uncoordinated (International Labour Organization 2005).

3.2.5 Increase in gross domestic product

Transport improvements reduce the cost of shipping agricultural products to market and extend the distance to break-even locations, thereby expanding the area of land under cultivation, and expanding the production of exports. Moreover, transport improvements reduce production costs by lowering the delivered price of inputs; including capital and information (the latter by facilitating increased speed of know-how and technological diffusion). Consequently, they increase net farm gate prices and raise farmer incomes, although the extent hinges on the competitiveness of the transport service market (Binswanger et al. 1993).

A study by Binswanger et al. (1993) used data from eighty-five randomly selected districts of India to examine the role of rural roads, among other factors, in agricultural investment and output. The study found that accessible

roads contributed directly to the growth of agricultural output, to increased use of fertiliser, and to commercial bank expansion. Some of the extended benefits included major changes in the agricultural economy, including higher outputs, transformation of the agricultural output mix from low-value cereals to high-value fruit orchards, and increased use of modern inputs, especially fertilisers. Moreover, improved access to education and health facilities increased enrolment rates in rural schools, as well as the frequency of visits to health care services, and enabled the recruitment of professional personnel to staff schools and health facilities. Again, positive feedback from higher rural incomes may have contributed to reverse causality (Wei-Bin 2007).

3.2.6 Environmental impact

The impact of the development of transport infrastructure on the environment has a long history. In the early days of transport infrastructure development, canal and railway development in the 18th and 19th century faced opposition from groups and individuals who objected to what we now call 'environmental grounds'. These infrastructure developments gave rise to considerable environmental impacts, both directly in the construction and operation, and indirectly through the industrial and other land uses they encouraged (Hoyle and Knowles 1992). The construction and operation of a transport element such as road construction, is a development which will have direct and indirect impacts on the environment, and will give rise to the indirect impacts through its associated land use and socio-economic effects.

According to the World Bank (2004) the environment sustainability of road development includes the surrounding objects and conditions as well as the circumstances of life of the society. This definition is broad and the potential number of environmental impacts is therefore large. However, it is possible to group environmental impacts by type, as set out in the World Bank (2004):

- Direct impacts caused by road development itself (for example, land consumption, removal of vegetation, severance).
- Indirect impacts are usually linked closely with the project, but may have more profound consequences on the environment than direct impacts. An example would include the degradation of surface water quality by the erosion of land..
- Cumulative impacts in the context of road development are characterised by the de-vegetation and eventual erosion of a roadside.

Before discussing various types of impacts, it should be noted that a number of factors affect the specific impacts of any particular transport mode. Firstly, the geographical context such as built-up area or rural area; terrain and ecosystem of varying types; secondly, traffic levels in the transport system; and lastly, the characteristics of the vehicles and usage of the transport system (Hoyle and Knowles 1992).

Environmental impacts of road construction include the impacts on the biophysical environment. The indirect environmental impacts of rural transport development are not easy to predict, because they are likely to be of a long-term nature. A typical example is the impact of the roads which were used to 'open up' the tropical rain forests of Brazil. This initiative had encouraged the development of settled farming communities, but at the expense of the indigenous people's livelihoods, and at the expense of the natural ecology (World Bank 2004).

Transport is a major contributor to air pollution since movement on the roads depends largely on the combustion of fossil fuels from vehicles. In most transport systems, the source of energy is carried in the vehicle, usually as refined petroleum products such as petrol and diesel. The major pollutants include Carbon Dioxide (CO²), Carbon Monoxide (CO) Nitrogen Oxide (NO^x), Hydrocarbons (C^xH^x), Lead (Pb), Sulphur Oxide (SO_x) and suspended particulates. All of these are harmful to the flora and fauna including human life, effecting particularly respiratory systems.

The Hydrocarbon Benzene, contained in petrol (leaded and unleaded), is also carcinogenic. Traffic fumes contribute to about half of the average non-smoker's daily intake of Benzene. Lead affects human organs including the brain and hence intelligence, especially during childhood. There is also a broader dimension to the impact of transportation emissions. Carbon Dioxide is a greenhouse gas and contributes to global warming and climate change while Nitrogen and Sulphur Oxides contribute to acid rain (Hoyle and Knowles 1992).

It is important to recognise that both negative and positive environmental impacts may arise from the road construction project. For example, the provision of extra road capacity, as part of an integrated transport strategy, may lead to a reduction in air pollution by removing the incidences of standing traffic, but may also increase severance and have safety implications for pedestrians and non-motorised transport due to increased vehicle speeds (Hoyle and Knowles 1992).

Within the context of environmental awareness, road construction offers negative environmental challenges such as noise pollution. According to Hoyle and Knowles (1992) all forms of mechanised movements generate noise. Therefore, transport noise forms a large part of the total noise in many environments, both urban and rural. Although transport noise has tended to stabilise since the late 1970s, it has been estimated that of the total population of nearly 8 000 million people in OECD countries, about 135 million were exposed in the late 1980s to transport noise, regarded by most authorities as unacceptably high. This means that road development projects can be the prototypical local public good, however, the environmental impact of noise is felt locally and impacts on the lives of surrounding communities (Nelson, 1987:1).

The development of transport infrastructure can also be the agents of environmental destruction, not only because of increased traffic, but also because they open up hitherto various inaccessible areas. This of course is

not necessarily bad. However, the availability of transport may encourage commercial activities, highly profitable in the short term, but harmful to the environment, and long term to the inhabitants themselves (World Bank 2004). Hoyle and Knowles (1998:9) note that the influence and effects of transport on the entire environment are widely regarded as critical issues, and environmental impact assessment is a critical element in transport planning.

3.3 Labour-intensive road infrastructure

Community-based labour-intensive works, specifically within the road sector, is not a phenomenon exclusive to developing countries, it is also found in the local traditions of the developed countries. In the past as in the present, communities all over the world would build paths and trails to satisfy their need for access and transport. These initiatives have a long history of altering both social and economic structures of local and surrounding communities in various ways, including positive trickle-down effects on local economic and community development, and potential contribution in fighting poverty.

Community-based labour-intensive works has a long history in Africa with the most notable successes in Tunisia, Kenya and Morocco. In Morocco, a large scale national promotion programme was launched in 1961 with the aim to enhance opportunities for rural unemployed in productive works, and slowing down the rural exodus and associated problems with rural populations in the development process. Although started initially as an emergency relief works programme for rural areas, the programme gradually acquired a development orientation (Thwala 2001).

The Tunisian works programme known as *Worksites* was developed between 1959 and 1960 to combat underdevelopment through the creation of job opportunities. The Algerian public sponsored works programme known as *Worksites* for full employment began operating in 1962 as a relief operation. However, the programme emerged as a development orientated to maximise employment in various land development programmes and agrarian reforms.

The Kenyan experience indicates that the programme played a key role in road infrastructure development. In this case, their programme output was over 12 000 kilometres of rural access roads constructed and more than 80 000 men-years of employment created (Thwala 2001).

Community-based labour-intensive works also have a long history in South Africa. The major turning point was the launch of the National Public Works Programme after the 1994 elections by the Government of National Unity. This programme focused on a process of labour intensification and increased training and capacity building in the provision of infrastructure. The emergence of Community Based Public Works (CBPWP) further advanced these goals by focusing on the development of smaller companies and institutionalising regulatory bodies (Thwala 2001).

The Extended public works programme (EPWP) later became one of the measures agreed upon at the Growth and Development Summit in 2003, to address the problem of unemployment (Philips 2004c) and poverty reduction in South Africa. This resulted in the development of an EPWP policy and legislative frameworks aimed to create employment in situations of high unemployment or underemployment, through road infrastructure development and maintenance programmes such as the Gundo Lashu programme in Limpopo province and Zibambebe programme in KwaZulu-Natal province. The policy and legislative context of labour-intensive road construction is investigated in detail in section 3.5 of this chapter.

While the Gundo Lashu and Zibambebe programmes clearly identifies the importance of labour-intensive or labour-based type works, the activities remain a short-term unemployment relief and income-generating programme. These projects therefore suffered from various challenges ranging from a lack of community participation to poor product quality, low quality engineering supervision and inadequate planning for future financing and maintenance, and thus low sustainability.

3.4 Targeting for labour-intensive programmes

The quest to eliminate poverty is one of the greatest and most challenging endeavours. An appropriate targeting mechanism to direct limited resources is therefore an area worth investigating, to encourage positive decision making and so achieve greatest impact on improving the lives of disadvantaged people.

Targeting is also an important concern of development and poverty reduction programmes, since it is imperative that valuable resources are appropriately directed and effectively utilised. The rationale for targeting is that, especially when resources are limited, it is better to give a smaller group (such as the poor) a greater amount of support, rather than provide a smaller amount of support to everyone. The argument is that targeting is pro-poor because it reduces “leakages” of scarce public resources to people who do not need assistance. Targeting is based on the premise that there is a given section of the poor who can be identified reasonably accurately and affordably. This is firstly based on a conception, rather than an image, of a fixed section of the poor, and secondly on the belief that this section can be marked off using methods that are reliable and cost-effective (Elbers et al. 2004).

Targeting is the means of identifying which members of society should receive a particular benefit. This concept has two elements: first, defining which categories of people should be eligible to receive benefits; and second, establishing mechanisms for identifying those individuals within the population. Targeting can be based on different units, such as households or individuals. However, the major focus thus far has been whom to target and not so much on what to target, which is an oversight. When the objective of the programme is to reduce poverty sustainably, there are generally three steps to be considered. First, actionable reasons for poverty must be identified. Second, programmes must be devised that target these particular reasons. Third, efforts must be made to direct these programmes toward the people who most need the support. The first and second steps of this process

have mostly been neglected so far, and the third and subsequent step has received the most attention (Gelbach and Pritchett 2002).

Targeting experiences in public works programmes vary considerably. In most interventions, the target groups are broadly defined and this increases errors of exclusion and inclusion. Subbarao (1997), and Slater and Tsoka (2006) reflect that most safety-net interventions are targeted on vulnerable groups rather than on a broader assessment of poverty, risk and vulnerability. There are two levels of targeting that require consideration in PWP: the targeting of the project areas or communities (geographic targeting) and the selection of beneficiaries at community level.

Targeting is a key and useful approach to maximise efficiencies in poverty focused development initiatives such as community-based labour-intensive programmes. There are various targeting approaches but indicator targeting, geographical targeting, community-based targeting, and self-targeting are the most relevant for targeting people and areas for labour-intensive transport projects.

3.4.1 Indicator targeting

Indicator targeting, or a means testing approach, is a commonly used approach and it encompasses a broad range of alternative methodologies. A verified means test is the most sought-after technique, but lack of reliable information on incomes has prompted users to rely upon some other indicators, including age, acreage, asset holdings, education, employment, gender, and place of residence. The costs of assembling even these alternative bits of information reliably can overwhelm programme administrators. Keeping this information current over successive years is a more forbidding task. Many beneficiaries remain on the rolls even after their earnings increase beyond the eligibility cut-off (Besley and Kanbur 1993).

Another challenge for indicator targeting is that incentives for cheating and corruption are especially likely in situations where incomes are variable, undocumented, and not directly verifiable which is a common condition of most poor people. Targeting programmes through fixed indicators can also face political viability considerations. Because there are fewer stakeholders in a narrowly targeted programme as opposed to a universal one, opposition to programmes narrowly targeted to particular groups, can overwhelm the political will to continue with such a programme (Gelbach and Pritchett 2002).

During episodes of recession, budget cuts are deepest in programmes that are narrowly targeted toward a particular group (Ravallion 2004). An intention to target programme benefits narrowly is quite often compromised because of a need to muster broader political support for the program. In such situations, “attempts to achieve ‘more for the poor’ through the use of indicator targeting may in fact mean less for the poor” as programme budgets become tighter (Gelbach and Pritchett 2002:42).

3.4.2 Geographical targeting

The most common feature of geographical targeting is that the distribution of programme beneficiaries is driven by the pattern of eligibility, especially where beneficiary allocations are fixed and characterised by regional quotas. This makes it easier to budget and plan a programme with a fixed number of beneficiaries, which has a pre-assigned geographical distribution. However, given the budgetary constraints of many public works programmes, the issue of the geographical focus of the intervention arises at national, sub-national and community level (Simler and Nhate 2005).

Geographic targeting is in most cases set for a political reason to influence political decisions; however this process requires information that identifies the geographic locations or groups of individuals with similar characteristics of poverty or vulnerability. Bloom et al. (2007) notes that in many developing countries most data on the geographical distribution of poverty or co-variates

of poverty are not readily available, and this creates challenges in selecting the project sites for public works programmes.

Geographical targeting is more attractive when poverty in a country is concentrated within particular areas. This method is less useful in large parts of the world where high levels of income diversity exist within regions and even within communities (Elbers et al. 2004). Poverty mapping based on small-area estimation can help improve coverage and reduce leakages by lowering the population of targeted units but it can be very costly to implement (Elbers et al. 2003).

Geographical targeting is more viable when the geography itself contributes to poverty and when migration is not a feasible option (Ravallion and Wodon 1999). It can also be applied more effectively when ethnic, historical and location-based disadvantages overlap, as they do in most developing countries (Schady 2002). In such situations geographic targeting can therefore be helpful to deal with large concentrations of the poor. Schady (2002) argues that this approach by itself does not help to determine the reasons that cause poverty or reasons that promote relief from poverty. As a result any programme based on targeting beneficiaries (or geographic regions) remains seriously incomplete when reasons for escape and descent are not simultaneously targeted (Simler and Nhate 2005). The magnitude of reduction in poverty that could be realised through geographical targeting has been analysed for only a few African countries: Burkina Faso (Bigman and Fofack 2000), Ghana (Fofack 2000) and Mozambique (Simler and Nhate 2005). In general, these studies have gained from geographical targeting.

The scope of the administrative areas has a serious implication on the effectiveness of geographical targeting. Bigman and Fofack (2000) argues that geographical targeting at the level of the province or the region may offer an effective approach for reaching the poor in countries where there are substantial disparities in living conditions between geographical areas, and where administering these programmes is relatively less complex because the

local administration is already in place. Although targeting at these high levels of geographical aggregation is likely to be more effective in reducing leakage and enhancing coverage than general, non-targeted programs, quantitatively the effectiveness of these programmes tends to be rather small.

Contrary to the concept of a broader geographic targeting approach is the narrow geographical targeting at the level of the village or the urban community. This type of targeting has the potential to reduce the leakage of benefits to the non-poor in countries or regions where the socio-economic conditions and the standard of living of the majority of the population in the villages or the urban communities are rather similar. Often areas have similar sources of income and most households are affected by the same agro-climatic and geographic conditions, including road conditions, the distance to the nearest town, and the availability of public facilities for health, education and water supply. Consequently, income inequality between individuals in these countries or regions is often due, to a considerable degree, to income differences between villages and only to a lesser degree to income differences between individuals within villages (Bigman and Fofack 2000).

Targeting at the lower geographical level of the district or the village requires, however, much more information on the spatial distribution of poverty across districts or villages and on the characteristics of the poor population in these areas. However, the information on the standard of living of the population is provided, in most developing countries, by a household survey, and the size of the sample in the standard survey is far too small to allow an estimation of the incidence of poverty at the level of the village or the district for the entire country (Bigman and Fofack 2000).

3.4.3 Community-based targeting

A community-based targeting approach is defined as a state policy of contracting with community groups or intermediary agents to have them carry out one or more of the following activities: identify programme recipients,

monitoring of the delivery of the benefits, and/or engaging or participation in some part of the delivery process (Coning and Kevane 2000:3).

This approach, according to Conning and Kevane (2000), is significant in redistributing resources toward disadvantaged groups in order to sustain political coalitions to support critical structural reforms. Unfortunately, the growing awareness of the importance of community-based programmes and projects in developing countries has not been translated into effective action because of the failure of traditional planning and implementation approaches, to effectively reach and engage the poor. This has led to experimentation with new bottom-up service delivery options and poverty alleviation mechanisms that more actively involve the poor and their communities in programme design, implementation and monitoring.

This approach is based on the undeniable fact that there is richer and more accurate knowledge about poverty at a local level. To get around problems of identifying a set of effective eligibility criteria, community-based targeting approaches are often used. This is because communities are sometimes better placed to identify the target population without needing to collect lots of information on household characteristics. Communities may also be better placed for defining the target population in the first place. For instance, through participatory approaches, communities can themselves define the target population for a particular programme. However, there are some weaknesses with community-based targeting approaches. Firstly, a given community's subjective poverty assessment may not necessarily correspond with 'actual' poverty as defined by the programme's architects. Secondly, it is often unclear how the relative allocation of beneficiaries between communities should be determined (Conning and Kevane 2000).

The key challenge to this approach also emanates from the fact that the knowledge of community-based targeting among the project leaders may not be appropriately utilised; in fact, inequality within a village may actually deteriorate if the local elites capture processes of decision making and benefit

allocation (Jalan and Ravallion 2002). Inequalities in the exercise of power may never be entirely smoothed out, but they can be ameliorated if the investment choices are publicly justified on the basis of transparent analysis, and do not remain purely an exercise of arbitrary power.

3.4.4 Self-targeting

Self-targeting is employed in programmes that are open to all but which are designed in such a way as to be more appealing to poor people and less appealing to others. Usually, there is some sort of work requirement. In other cases food aid and other incentives have been provided that poorer people will most likely consume because they lack other options, but which richer people will avoid. Self-targeting can assist the poor who are aware of such a programme and who are physically able to complete the work requirement. However, considerable costs are entailed for those who participate by way of queuing, foregoing other income-earning opportunities and acquiring the required certification (Ravallion and Datt 2004). In addition, self-targeting can work poorly amid conditions of imperfect factor markets. According to Barrett and Clay (2003:176) “it may be hardest to reach the truly needy where the need is greatest.”

The self-targeting approach is also useful to sustain livelihoods over a short period. This is due to the fact that when the cause of poverty is not lack of food or lack of makeshift employment, self-targeted schemes may end up providing little more than temporary income infusions. They can help poor people survive another day or week or month. Elbers et al. (2004) further argues that although this is important, it does not help people escape from poverty.

3.4.5 Outcomes of targeting

The various targeting approaches have been used widely in most development programmes. The outcomes of these approaches have yielded

mixed results. While a few programmes have successfully targeted groups in extreme poverty, evaluations of targeted programs have been generally quite unflattering (Matin and Hulme 2003). A comprehensive analysis of targeted programmes found that compared to untargeted or universal assistance, targeting has not consistently worked better in terms of reaching the poor. While in the median the poor received 25 percent more resources than they would have received in an untargeted program, in another 25 percent of targeted programmes these benefits were actually regressive, leaving the poor worse off than in universal programmes (Coady et al. 2004). No single method of targeting was universally best. Targeting mechanisms that had high median scores also had higher variability in terms of their ability to reach the intended beneficiaries. Other evaluations of targeted programmes in developing and industrialized countries, have also concluded that their benefits are at best no more progressive than a uniform transfer to all citizens would be (Gelbach and Pritchett 2002).

In addition, targeting can have perverse effects, including stigmatisation of the intended beneficiaries. Targeting beneficiaries has been relatively more useful for relief programs and programs that act as social safety nets (Coady et al. 2004) or which can help correct gender imbalances. In most other cases it has not helped reduce the incidence of poverty. As a result of these challenges, a combination of targeting methods have been found more accurate and useful in various circumstances, for instance, a combination of geographical and community-based targeting has been suggested, particularly for communities where poorer sections are better organised (United Nations Development Programme 2000).

The labour-based Road Maintenance Demonstration Project in Botswana was implemented with the aim of reducing poverty in 1998. The pilot project covered the construction of 252 km road length. A socio-economic impact study was carried out in 2002 to assess the positive (and negative) impact of the labour-based road maintenance on the working and non-working households, and the participating communities as a whole. The findings of the

impact assessment demonstrate that when a significant number of households are earning a reasonable wage, the income flowing into a community through those employed households does have a spin-on effect. Although households were employed in blocks of time, rather than continuously, the level of earnings was sufficiently high to enable them to meet immediate basic needs and make other 'investments'. These investments often created casual employment opportunities for other people in the community (McCutcheon 2008).

McCord and Van Seventer (2004) argued that unemployment in South Africa is of a structural type rather than transitional because of the sustained high unemployment rates that the country is facing. This situation makes the EPWP, which increases the supply of semi-skilled labour, a non-efficient tool in the ambition to reduce unemployment. McCord and Van Seventer (2004) argue that the focus for EPWP in South Africa should be on trying to create a demand for labour instead of increasing the supply. They also stress that during their assessment, the scope of EPWP was still too small to produce a significant effect on unemployment. In their paper, which contains a thorough examination of two South African EPWPs, McCord and Van Seventer (2004) argue that there is a mismatch between the type of labour demanded in the country and the supply of labour which the EPWP provide. They further argue that the type of labour needed in South Africa is people with higher education and not semi-skilled labour, which is readily available.

Contrary to the notion that EPWP projects contribute towards poverty alleviation, McCord and Van Seventer (2004) found that the participation of local people in the EPWP had a potential of being significantly advantageous concerning the non-income poverty for these households (e.g. when looking at the number of skipped meals among adults, school attendance by children in the household and opportunities to purchase better clothes).

Looking at this McCord and Van Seventer (2004) believes that the EPWP can be a part of building human and social capital, though they argue that the

results could be even more significant if the EPWP targeted even poorer people. However, when it comes to poverty measured in income they (McCord and Van Seventer 2004) claim that the employment period within the EPWP is too short to make a sustainable difference in the participating household's economy, and that the additional income was quickly consumed instead of invested. McCord (2003) was also critical of the way that the EPWP is described in the popular discourse as a comprehensive solution to South Africa's unemployment predicament. This has led to policy makers being influenced and the EPWP becoming too broad.

With regard to the prospects for EPWP participants in the labour market, McCord (2003) also investigates how individuals having participated in the two examined PWP, perform on the labour market. Her conclusion is that partaking in the programme does not enhance the individual's chances of finding a sustainable job. This she says is because of the extreme levels of rural (where most projects are placed) unemployment and the small demand for low- and semi-skilled labour. In her conclusions she claims that "the gap between policy expectation and programme reality is significant" and that "there is an urgent need to open up the policy space and to seek alternative responses to this critical problem", McCord and Van Seventer (2004).

3.5 The South African context

3.5.1 Road infrastructure in South Africa

Road infrastructure in South Africa reflects the disparities arising from previous patterns of spatial development, which were created by apartheid policies. As a result, rural areas are characterised by poor infrastructure, large distances, dispersed demand and low incomes. Because of this, and historical backlogs in service delivery, rural people have poor access to basic social services and mainstream economic activities (South Africa 2003). Therefore, the need to achieve sustainable social and economic development in South Africa's rural areas poses a number of formidable challenges, some of which stem from the inherent diversity of South Africa's rural areas as a result of the

relatively unique combination of historical legacies, typical rural conditions, and cross-cutting local governance and transformation requirements.

According to the South African Rural Transport Strategy (South Africa 2003: 11) the following are some key challenges and issues for infrastructure provision in South Africa:

- Historical backlogs, continuing under-investment in road infrastructure and reactive responses to the road maintenance programmes, especially in rural areas.
- Sheer physical remoteness and low population densities of some areas, and the attendant transport provision, accessibility, vast networks of poor quality, low-volume roads and low demand thresholds.
- Existing technical and managerial weaknesses of most rural district councils and municipalities, which in turn, present formidable capacity-building requirements.

3.5.2 Policy and legislation

The South African government's support for the development of roads and transport infrastructure emanated from the plight of rural people which has been highlighted by numerous policies and legislations. According to Banister (2001:218) policy-making is the crucial factor in realizing economic growth benefits from a transport infrastructure investment. Whereas 50 percent of the population of South Africa is rural, the rural areas contain 72 percent of those members of the total population who are poor. Compared to their urban counterparts, rural people have vastly inferior access to basic social services and the economic mainstream. Given this context, the delivery of rural transport infrastructure and services can be a significant catalyst for sustainable economic development, improved social access and poverty alleviation in South Africa's rural areas (South Africa 2003: v).

Appropriate planning approaches and implementation of the public works programme, specifically road construction and maintenance projects fits into broader government's policies and long-term vision and strategies presented in this section.

3.5.2.1 The Constitution of South Africa Act 108 of 1996

The Bill of Rights as contained in the Constitution of South Africa (South Africa 1996c) is regarded as the cornerstone of democracy. Section 7(1) of the Constitution says that the Bill of Rights enshrines the rights of all the people of South Africa and affirms the democratic values of human dignity, equality and freedom. Chapter 7, Section 152 (1) and (2) sets out a broad framework for the functions of the local government, in accordance with this framework the objectives of local government is to:

- Provide democratic and accountable government for local communities.
- Ensure the provision of services to the community in a sustainable manner for the benefit of present and future generations.
- Promote social and economic development.
- Encourage the involvement of communities and community-based organisations in the matters of local government.

With regard to the developmental duties of municipalities, Section 153 stipulates that a municipality must structure and manage its administration, budgeting and planning processes to give priority to the basic needs of the community, and to promote the social and economic development of the community; and participate in national and provincial development programmes (South Africa 1996c).

3.5.2.2 The Reconstruction and Development Programme

The Reconstruction and Development Programme (South Africa 1994), demonstrated the centrality of the infrastructural programme to meet basic needs and the link between this programme and economic growth. The RDP

document further argued that there must be a significant role for public sector investment. In a section of the Reconstruction and Development Programme (South Africa 1994:18-19) entitled 'Jobs through Public Works', several components of a vision for the Public Works were described by Khosa (1997) as follows:

- The democratic government must play a leading role in building an economy, which offers to all South Africans the opportunity to contribute productively. All job creation programmes should cater particularly for women and youth. Implementing agencies should include representatives from women's and youth organisations.
- In the short term, the RDP must generate programmes to address unemployment. These measures must be an integral part of the programme to build the economy, and must also relate to meeting basic needs.
- All short-term job creation programmes must ensure incomes and labour standards, link into local, regional or national programmes, and promote education, training and community capacity and empowerment. Particular objectives were also listed in the RDP document.
- The key area where special measures to create jobs can link to building and meeting basic needs, is in redressing apartheid-created infrastructural disparities. There must be a coordinated NPWP to provide much needed infrastructure, to repair environmental damage, and to link back into, expand and contribute to the restructuring of the industrial agricultural base.

A further component of the public works programme is the provision of education and training and the involvement of communities in the process that they are empowered to contribute to their own governance.

- The PWP must maximise the involvement of women and youth in the poorest rural households and most deprived regions to create assets such as water supply, sanitation and clinics. These must have significant socio-economic benefits, particularly with respect to production which meets women's basic needs (such as child care facilities).

- The PWP must coordinate with and link to other job creation and labour intensive construction initiatives; however, such programmes must not abuse labour standards nor create unfair competition within sectors.

3.5.2.3 The Growth, Employment and Redistribution Strategy

The Growth Employment and Redistribution (GEAR) strategy (South Africa 1996a), highlighted the priorities of the government in line with measures to promote investments and economic growth. In line with this strategy the government promoted the growth and development of road infrastructure including EPWP, as it seeks to achieve a competitive fast-growing economy which creates sufficient jobs for all work seekers, redistribution of income and opportunities in favour of the poor, a society in which sound health, education and other services are available to all, and the environment where places of work are productive.

According to the GEAR strategy, by the 21st century every South African will enjoy a wide range of economic, social and cultural opportunities. Investment in infrastructure and in skills can play a major role in the creation of new economic activities, by providing means of accessing high technology goods and services in all areas of South Africa. A number of immediate, medium term, and long term objectives were pursued including the government's goal to increase job creation and capacity of the economy. It was also envisaged that a quarter of the new jobs will be created through accelerated labour-based infrastructural development and maintenance of public works in urban and rural areas (South Africa 1996a:18).

3.5.2.4 Intergovernmental Relations Framework

The Intergovernmental Relations Framework Act 13 of 2005 provides the principles of cooperative government, as set out in Chapter 3 of the Constitution. This is to promote and facilitate intergovernmental relations, for local government to implement national policies and legislations. Cited in the

Act's preamble are challenges facing South Africa as a developing state, that need government to address poverty, underdevelopment, marginalisation of people and communities and other legacies of apartheid and discrimination (South Africa 2005a).

In support of the intergovernmental relation framework, the Municipal Systems Act 32 of 2000 promotes the development of an Integrated Development Plan (IDP) as a key planning process, guiding and informing all planning and development activities at the municipality level (Atkinson et al. 2002). To facilitate the implementation of the IDP process the government has channeled the financial resources for EPWP road infrastructure development through the Municipal Infrastructure Grant (MIG). This is an infrastructure grant direct from national government and aims to provide a basic level of service to the poorest of the poor. Schedule 4 funding allocation conditions are prescriptive for municipalities to adhere to the labour-intensive construction methods in terms of the EPWP guidelines agreed to between Department of Public Works, National Treasury and the South African Local Government Association (Philips 2004c).

3.5.2.5 National White Paper on Transport Policy

Both the National Public Works Programme and the Extended Public Works Programme are supported by the vision statement of National Department of Transport, as set out in the Draft White Paper on National Transport Policy (South Africa 1996b:2), to: *"Provide safe, reliable, affordable, efficient, and fully integrated transport infrastructure...in a fashion which supports government strategies for economic and social development whilst being environmentally and economically sustainable"*.

In order to progress towards this vision the broad goals of this policy is to support the goals of the Reconstruction and Development Programme for meeting basic needs, growing the economy, developing human resources, and democratizing decision making. The rural transport strategy for South Africa was also to address the challenges experienced by rural communities

in South Africa. The strategy aimed at developing balanced and sustainable rural transport systems in order to redress the overly complex and un-coordinated rural roads planning and procurement process; the result of the multitude of roads procuring agencies and funding sources. The main emphasis of the strategy was to improve access roads, develop passable roads, and address neglected infrastructure and corridors which are linked to markets and other social services. The rural transport implementation plan was developed also to focus on key deliverables which among others include rural transport brokering services, capacity building of local communities through labour-intensive programmes and technical support to local government (South Africa 2003).

3.5.2.6 The Labour Market Commission and Public Works

The presidential commission on the labour market recognised the centrality of public works in the reconstruction of the South African society. Government's attempt to foster this enabling environment is partially reflected in the developed framework agreement for labour-intensive construction (New Framework Agreement, June 1996 (South Africa 2006b)). The agreement was an attempt to reach compromise between unions and employees regarding appropriate wages, benefits and minimum standards for workers on large-scale public works programmes.

In line with the above the South African government also set out ten economic priorities to meet the Accelerated and Shared Growth Initiative of South Africa's (AsgiSA's) target to reduce poverty by 2014. Among these priorities is the roll-out of overhauled public transport infrastructure, which is still suffering from the legacy of apartheid urban planning that kept people far from places of work. This priority is in line with the government's efforts to establish a "co-ordinated national human resources development strategy" which involve measures to increase skills development and training with a focus on AsgiSA's priorities. Achieving the ten priorities will make an important contribution to transforming the structure of the South African economy to

promote employment, growth and halve poverty in line with the AsgiSA's objectives (South Africa 2006b).

3.6 Conclusion

The literature reveals that there are both direct and indirect relationships between the investment in road infrastructure and development. Measures to realise these benefits are, however, based on various targeting mechanisms which have the potential for exclusion of key stakeholders both in planning, decision-making and implementation. Since this research is grounded within a local rural context in South Africa, it is important to be aware of policy and legislation with regard to labour-intensive road construction for development.

The next chapter will provide more details on the study area and the research methodology that was used to collect and analyse the data in order to address the research objectives.

CHAPTER 4

Research Methodology and Study Setting

4.1 Introduction

The goal of this chapter is to provide an account of the methodological consideration for this study as informed by the research objectives. The chapter begins with an explanation of the institutional arrangements regarding road construction in South Africa. A rationale for selecting the Gundo Lashu programme is provided and the study area in Limpopo province is described. In the remainder of the chapter, the research methodology is outlined and details are provided on the overall study methodology within the framework of the available methods and theories. A detailed explanation is provided on how the data collection instruments were developed, including the outline of the process followed to obtain permission to gather different types of data and how the data was collected. The identification of types of data to address the research objectives is also discussed.

4.2 Institutional arrangement

The nature and extent of road infrastructure in South Africa reflect the disparities in spatial development that resulted from apartheid policies. Infrastructure provision was skewed in favour of the commercial farming areas, and suited to the needs of a highly controlled policy environment, including the agricultural marketing system. This resulted in a lack of transport infrastructure in certain rural areas with poor roads access. Most rural areas in South Africa, specifically in provinces such as Limpopo, Eastern Cape and KwaZulu Natal, are characterised by poor infrastructure, long distances, dispersed demand and low incomes (South Africa 2003). The cost of living for poor, rural people is therefore generally higher than it need be because of their lack of access to transport and communications infrastructure, basic amenities such as water and electricity, and social services such as health and education (South Africa 2000b).

In South Africa, provincial roads are an exclusive Schedule 5A provincial function, while municipal roads, traffic and parking are exclusive Schedule 5B municipal functions. In practice, responsibilities for the delivery of rural transport infrastructure fall mainly on the municipal and provincial spheres of government, and in Limpopo the Department of Public Works (DPW) and the Limpopo Road Agency (RAL) assist the municipalities. The focus of rural infrastructure projects managed by these agencies has been on rural district and access roads. Many of the projects have had a strong community involvement component, and there has been significant job creation and poverty alleviation (South Africa 2003:1).

The Department of Transport plays a largely facilitative and regulatory role. It develops the policy and legislative framework, which is implemented through provincial departments, local government and public entities. Transport policy is spelt out in the 1996 White Paper on National Transport Policy. The National Land Transport Transition Act (NLTTA), Act 22 of 2000, sets out a framework for integrated land transport planning and service delivery across provinces and local government. The National Land Transport Transition Act defines the responsibilities of provinces and municipalities in relation to planning and management of land transport. The Act requires that both spheres prepare transport plans in line with the framework developed by the Department of Transport. It also provides for the establishment of local transport authorities by municipalities to improve local transport service delivery. Transport authorities are expected to develop transport plans and then oversee their implementation, develop local land transport policy, and perform financial planning and management for land transport functions. These include transport planning, infrastructure, operations, services, maintenance, monitoring and administration (South Africa 2003).

Within this context, the provinces, local authorities, and the DPW are collectively spending considerable amounts on rural district and access roads, resulting in significant job creation and poverty alleviation. However, the multitudes of roads-procuring agencies and different funding sources have

resulted in an overly complex and uncoordinated rural roads planning and procurement process. These complexities are caused by:

- Different development processes and initiatives, many of them resulting in competing road project proposals.
- Different forums and channels for interacting with communities (not all of which are yet coordinated in terms of IDP processes).
- Different contract types, procurement mechanisms and protocols.
- Different design standards and approaches.

Given that there are considerable variations in institutional arrangements between different provinces, and that many of the arrangements are possibly unconstitutional (i.e. failing to vest the local sphere of government with the primary responsibility for local rural roads), it was clear that there was a need for at least some institutional alignment and transformation. In terms of infrastructure planning and measure to ensure sustainability both in the development and maintenance of transport infrastructure, the South African government initiated the development of an Integrated and Sustainable Rural Development Programme (ISRDP). This programme is being developed and managed by the Department of Provincial and Local Government. The main objective of the ISRDP is to ensure that the rural development strategy is implemented in a coordinated and integrated manner to ensure sustainability and effectiveness of development initiatives (South Africa 2003).

The institutionalisation of the IDP process is only one of a range of significant reforms to have been instituted in terms of the Municipal Systems Act, and other legislation that has sought to give proper effect to the constitutional powers and responsibilities of the local sphere of government (South Africa 2003:8). However, at a national level, most of the funding for rural, local and access roads is provided by the National Department of Public Works in terms of the Poverty Alleviation Programme and the Community-based Public Works Programme.

4.3 Programme overview

In order to understand the study setting it is important to understand the background of the areas where projects were selected and an overall description of the project and scope. In this section, an overview of the Gundo Lashu programme is provided. This is followed by justification for the selection of projects and the description of the geographical areas of Vhembe District Municipality and the Makhado and Thulamela local municipalities.

4.3.1 Overview of the Gundo Lashu Programme

The Gundo Lashu programme is being implemented in the Limpopo province as a subsidiary of the EPWP programme (as outlined in section 1.4.4), which is a national initiative that aims to draw a significant number of the unemployed into productive work. This programme involves creating temporary work opportunities for the unemployed, while ensuring that workers gain skills and training on the job (Road Agency Limpopo 2007). The overall EPWP employment target is outlined in table 4.1.

Table 4.1: EPWP Road Infrastructure Delivery Targets

Infrastructure Programme (KM)	Implementation Period					Total
	2004/5	2005/6	2006/7	2007/8	2008/9	
Provincial Roads	4 300	4 800	5 300	6 000	6 400	26 800
Municipal Roads	1 600	1 900	2 100	2 300	2 500	10 400
Storm water Pavements	230	270	300	320	350	1 470
	20	25	30	30	35	150

Source: Road Agency Limpopo, 2009

The programme is funded by the Department of Public Works and in 2003/4 the budget was R50 million. The budget increased to R103 million in the 2004/2005 financial year. To ensure long-term sustainability, the Road Agency had expected a budget of R100 million for the 2005/2006 financial year. As reflected in the annual report, the total Gundo Lashu programme budget for the period 2002 to 2009 was R22 790 728.31 (RAL 2009).

The programme has over the past years achieved a 600 percent increase in employment creation compared to similar conventional machine-intensive road- works, without increasing the overall cost per kilometre of road upgraded. For each project, the contractors employed between 60 and 100 local workers on a task-based payment system as required by the Code of Good Practice for Special Public Works Programmes (Road Agency Limpopo 2007). The programme involves the use of innovative methods in executing projects in order to maximise employment and create skills development opportunities for the targeted beneficiaries, without compromising the product quality. Within the infrastructure project, labour-intensive construction methods were key to achieve this objective (Philips 2004). In light of this, the programme serves as one of the government initiatives to bridge the gap between economic growth and the large numbers of unskilled and unemployed people who have not yet enjoyed the benefits of economic development.

4.3.2 Infrastructure delivery model

The Gundo Lashu programme is implemented within the EPWP infrastructure plan. This plan is being led by the Department of Public Works and includes other relevant stakeholders such as the Department of Transport, Department of Local Government, Limpopo Road Agency and other government departments.

Geographical targeting (as explained in section 3.5.2) was used for the broader expanded public works programmes in South Africa and within the Gundo Lashu programme in particular. The assumptions underpinning the geographical targeting of these programmes in Limpopo province are primarily based on the poverty dynamic of the province. In supplement to this approach, a community-based targeting method is used to provide an account of how communities are prioritised for project implementation (Road Agency Limpopo 2007). From the inception and during the training stage and the post training stage, the Gundo Lashu programme has implemented two broad models of labour-intensive construction.

4.3.2.1 The SAACE labour-intensive construction model

During the training phase, the South African Association of Consulting Engineers Labour-Intensive Construction (SAACE-LIC) model was adopted. The key focus of this model was to capacitate a number of people from the community to continue as independent emerging contractors after the completion of the project. In theory they can be used to maintain and extend the new infrastructure. The distinct feature of this model is based on its emphasis on capacity building for the community to ensure that a number of people from the community would be empowered to continue as independent emerging contractors, after the completion of the project. In theory they could be used to maintain and extend the new infrastructure. The guideline on the selection of labour-intensive projects (Department of Water and Forestry 2001) stipulates that the SAACE-LIC approach consists of the following steps:

- People with the potential to become independent contractors are sourced from the community.
- They are then trained in the basics of contracting (tendering, contract documentation, financial management and technical aspects).
- After completion of the training course they are allowed to tender for small "labour only" contracts and are mentored and supported during its execution by client appointed construction and materials managers. Very basic contract documentation is used and most financial constraints such as performance bonds and guarantees, are waived.

Within this model it is unrealistic to assume that these emerging contractors will have the necessary skills to execute their obligations responsibly. The client then augments this lack of capacity by providing the skills through the direct appointment of construction and materials managers. Those who demonstrate their ability by successful completion of these small contracts are allowed to tender for larger contracts. Mentoring is still provided by the construction and materials managers, but at a lower level. This process can

be repeated till the emerging contractor can act as a fully-fledged contractor. Every subsequent level of contract reduces the involvement of particularly the construction manager, and the contractor must provide these skills himself. The most significant advantage of this approach is that it is the only implementation model which has as end result, people that are capacitated to start their own construction businesses. It is in the true spirit of the RDP. People are not trained to be labourers for contractors, instead they actually have the opportunity to become small contractors.

The model also creates significant employment in the community and even those people who will not become emerging contractors, have the benefit of temporary employment for the duration of the project. Furthermore, the model leaves trained people behind within the community with a theoretical ability to take over expansion and/or maintenance of the infrastructure created. It should thus be possible to utilise these emerging contractors on a permanent basis to undertake construction and routine maintenance (Department of Water and Forestry 2001).

The biggest disadvantage of this model is the fact that it is a more expensive method of project implementation and should be reserved for projects on which the additional cost of training and mentoring is warranted. The contractual situation is also significantly more complex and the client is exposed to a number of risks which is normally borne by the contractor (Department of Water and Forestry 2001).

4.2.2.2 Conventional contracts with labour-intensive pre-requisite

During the post-training phase, the programme adopts a conventional contract model with labour-intensive prerequisite. This method of project implementation is well-understood and simple to use. It has a very basic contractual arrangement from the client's point of view, as the only contracts involved are entered into with a consulting engineer to provide design and supervisory services and the selected contractor to execute the project (Department of Water and Forestry 2001).

The contractor is fully responsible to find and manage the labour, materials and plant required to execute the works. Where it is specified that he use labour- intensive methods, it places further responsibility on him to find and train labour (for example to dig trenches) and to price the project (at his risk) correctly, to cover any additional costs. (It is normally assumed that a labour-based approach will cost more than a plant-based approach, because of slower progress). The Department of Water and Forestry (2001) reflects that the advantages of this approach emanate from the following:

- The model is simple and well understood in the construction industry.
- The responsibility and risk of project execution are placed on the contractor who is assumed to have all the required technical, managerial and financial skills to accept this responsibility.
- The larger value of the portion of the contract is diverted to the lower income groups. It also specifies that labour must be sourced from the neighbouring communities in which case they directly benefit from the influx of money.
- Some training and skills transfer takes place and it can be assumed that a number of the people employed as labourers may use this opportunity as a stepping stone to embark on a career in construction (chargehand, foreman or artisan). Unfortunately, it is likely that they will leave the area and follow the contractor to wherever new projects are executed. The skills do not remain in the community and are therefore not available for ongoing maintenance of the infrastructure.

The major disadvantages of this model as outlined in the guidelines for the selection of labour-intensive projects (Department of Water and Forestry 2001) include:

- This approach is generally more expensive than plant-intensive contracts due to inter alia, slower progress and longer construction times.
- Skills transfer and training is limited to that necessary to ensure the labourers understand what is required of them. Higher skill levels are

normally imported by the contractor from his permanent staff. Structured training can be prescribed as part of the contract and this increases costs.

- After completion of the contract and after the contractor has handed over the project, it is unlikely that the remaining skills will be sufficient to maintain the infrastructure.

The key common feature of these models is the use of labour-based methods in the construction and maintenance of road infrastructure. During the construction period, road infrastructure within the Gundo Lashu programme was primarily constructed using manual labour (Figure 4.1 (a) and (b)) , aided in part by light equipment (Figure 4.2). Roads were constructed using labour-based practices and products in order to maximise the number of job opportunities per unit of expenditure. Some of the key activities in line with the above processes are depicted in figures 4.1 and 4.2.

Figure 4.1 (a): Labour-intensive road construction activities



Source: Photograph captured by Mulalo Musekene (2007)

Figure 4.1 (b): Labour-intensive road construction activities



Source: Photograph captured by Mulalo Musekene (2007)

During the construction stage local community members use light equipment for construction purposes. At this stage, wheelbarrows are used for the transportation of the aggregate from the stockpile to the location of the mixing plant over a distance of approximately 50 metres. This is followed by the construction of base layer by mixing of the stabilising agent using a shutter system and screening off. Once the base is completed, the base surface is primed and fine, coarse concrete is sprayed.

The maintenance of roads infrastructure using labour-intensive methods is a key focus area within the Gundo Lashu programme. Projects of this nature were also sampled for the study. Figure 4.2 shows some of the key activities on road maintenance.

Figure 4.2: Labour-intensive road maintenance activities



Source: Photographs captured by Mulalo Musekene (2007)

In summary, both the models were applicable in the case of construction types using labour-intensive practices. Within the Gundo Lashu programme these projects range from the construction of basic rural access roads to the maintenance of such infrastructures.

4.2.3 Description of the Study Area

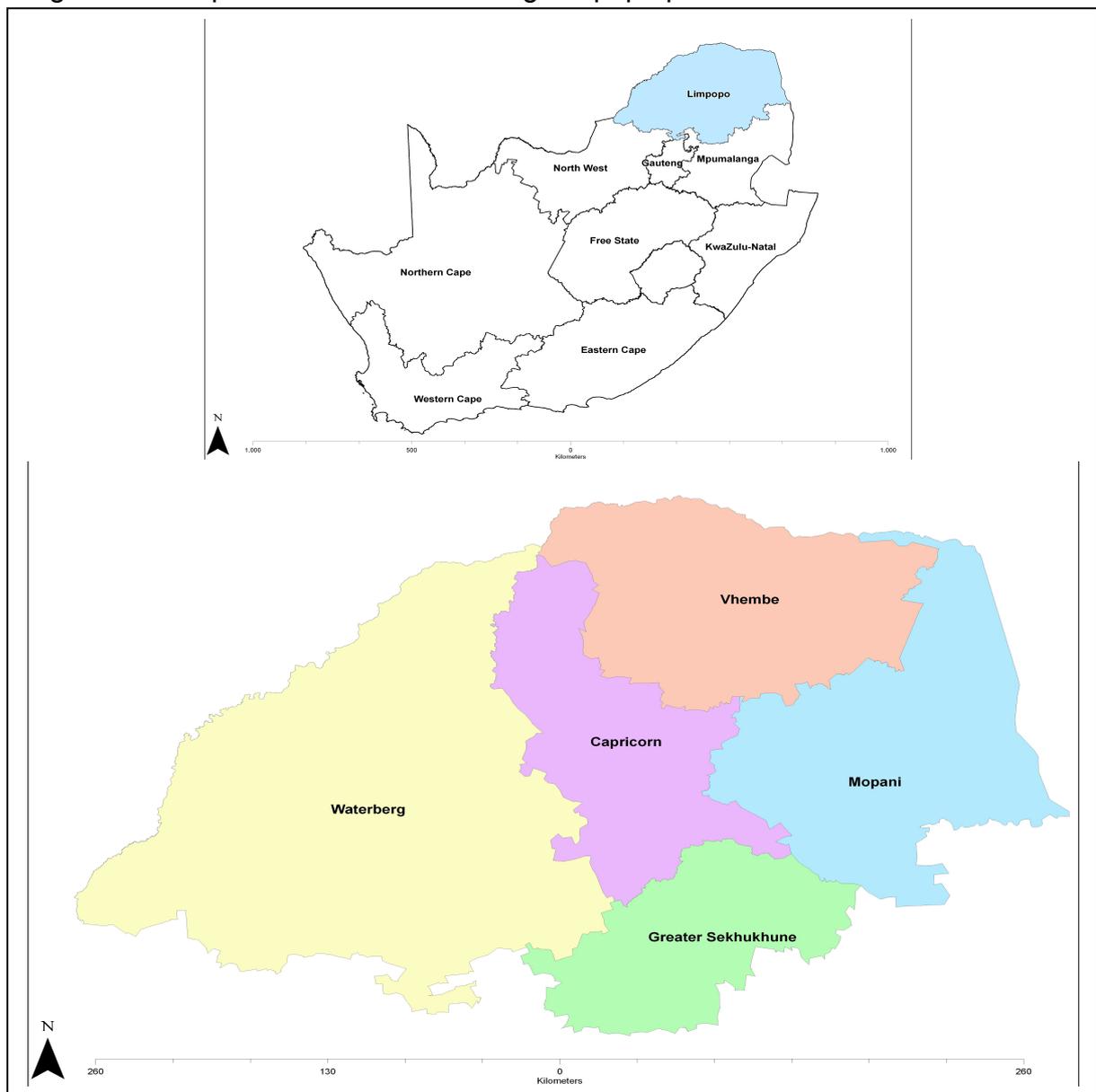
The Gundo Lashu programme is implemented in Limpopo Province. The province is situated at the North-eastern corner of South Africa, sharing international borders with Botswana, Zimbabwe and Mozambique (Figure 4.3). The province encloses 123 910 km², constituting 10.2 percent of the country's total land area and it is divided into five district municipalities namely, Capricorn, Mopani, Greater Sekhukhune, Vhembe and Waterberg (Statistics South Africa 2003). Mid-year population estimates for Statistics South Africa (2009) reflects that Limpopo had an estimated population of 5 227 200. It is estimated that 54.6 percent are women and 45.4 percent men. The province has a relatively large population (39.4%) percent under the age of 15 years. In 2009 the unemployment rate in Limpopo was estimated to be 35,6 percent (Eisenburg 2009).

The National Household Travel Survey (NHTS) define travel day for household members as any weekday between Monday to Friday. Travel day can therefore be considered to be a "typical weekday" and would include regular daily activities such as working, going to school and some irregular activities such as visiting the doctor. While there is no formal statistics on those who walk for various other purposed such as leisure, tourism and social activities, the province has the highest number of households who walk to work. Official statistics from the NHTS reflects that 45 percent of the total workforce walk to work as compared to those who use private cars and public transport such as buses, trains and taxis (Department of Transport 2005).

The Vhembe District Municipality is composed of 4 local municipalities (Figure 4.4), namely: Makhado, Thulamela, Mutale and Musina local municipalities. The majority of the population of the Vhembe district municipal area reside in rural communities and only 8.8 percent reside in urban areas. Within the geographical area of Vhembe District Municipality there are 279 villages and 5 formal towns. The population constitute 1.5 percent of the total provincial population (Statistics South Africa 2007, Eisenburg 2005).

The Makhado local municipality is situated in the North-eastern part of Vhembe District. According to Statistics South Africa (2007), the municipality had an estimated population of 458 153 at the end of the year 2007. The local economy is unable to provide sufficient employment opportunities for the needs of the economically active population (Integrated Development Plan 2008). Almost 77 percent of the population in the municipality is economically inactive as a result of the high percentage of the population under the age of 15, which per definition renders them economically inactive.

Figure 4.3: Map of South Africa showing Limpopo province and 5 districts



Source: SASSA GIS 2008

The Makhado municipal IDP (Integrated Development Plan 2008) reflects a lack of economic activity and investment to create employment opportunities in the municipality. According to Statistics South Africa (1996) the level of employment in Makhado local municipality is only 45 percent. The Thulamela local municipality on the other hand is situated in the North-eastern section of the Vhembe district in the Limpopo Province. This is also a rural municipality with a total geographical area of 2 966.41 square km. The municipality has a total population of 584 563 and only 28 percent are economically active. The total unemployment figure among the economic active population, amounts to 82 148 (Integrated Development Plan 2008:68).

The road network in Limpopo Province is administered by RAL, the South African National Roads Agency Limited (SANRAL) and district and local municipalities. In 2005, there were 6 412 km of paved roads and 15 251 km of gravel roads in the province with a total road length of 21 663 km. This excludes the road network in towns, the length of which is not known.

Main roads within the province are the high order roads in the network which carries higher traffic volumes consisting of trucks and buses. These roads are used to connect local towns and villages by public transport, which in optimal conditions allow fluid connection to secondary roads and the articulation of rural population to urban areas. District roads on the other hand effectively extend the road network further and function as connectors between the main roads and the smaller settlements, farming communities and places of lesser economic activity (Ribbens 2006).

Roads within Vhembe District and its local municipalities are classified in line with the functional classification system for South African roads. These roads are further distinguished by their paved status. Table 4.2 shows the status of the road network in Vhembe district in line with their paved status.

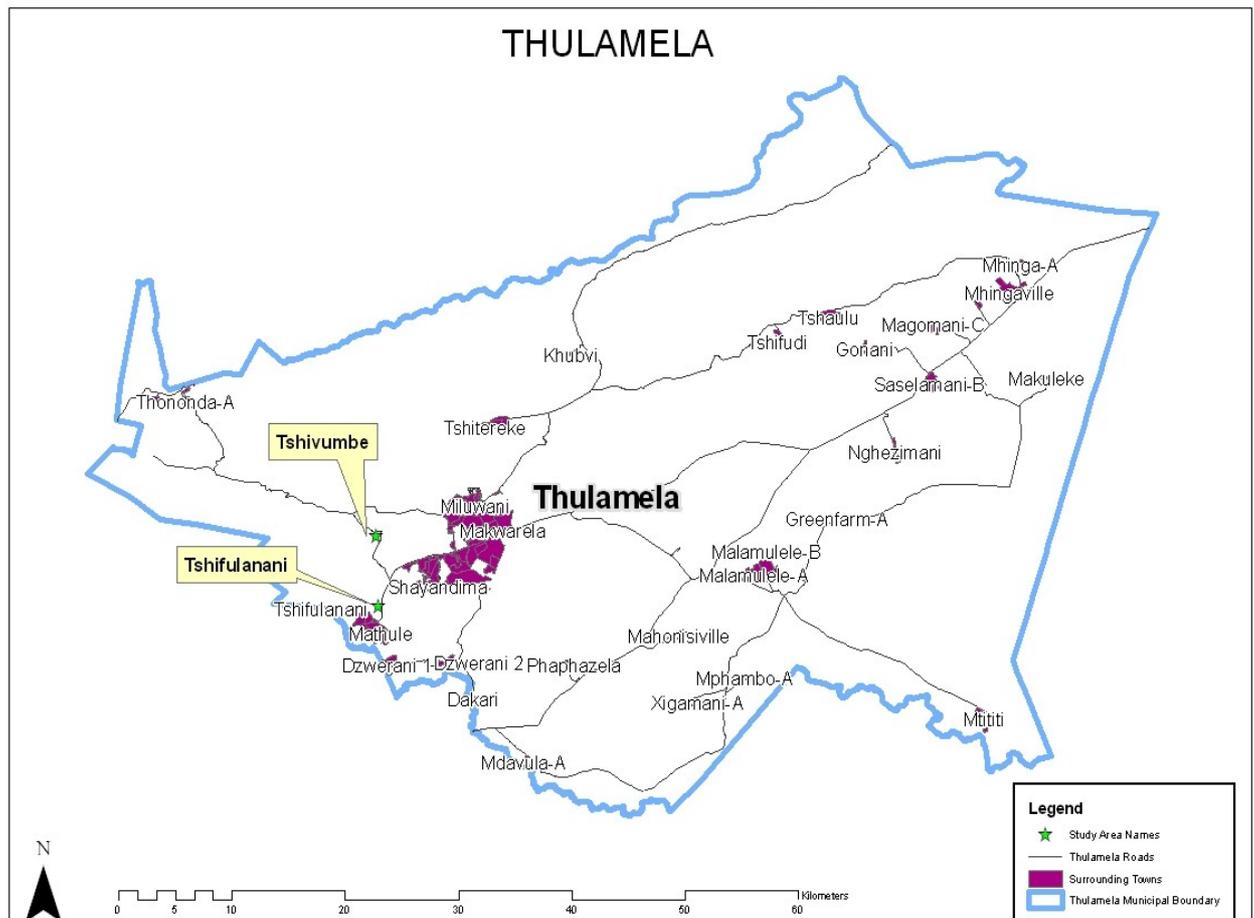
Table 4.2: Road network in Vhembe District 2005

Municipality name	Local Municipalities	Paved roads (Km)	Unpaved roads (km)	Total roads (km)
Vhembe District Municipality	Makhado	608	1 067	1 675
	Thulamela	258	696	954
	Musina	353	543	896
	Mutale	88	424	512
	Total	1 307	2 730	4 037

Source: RAL 2005

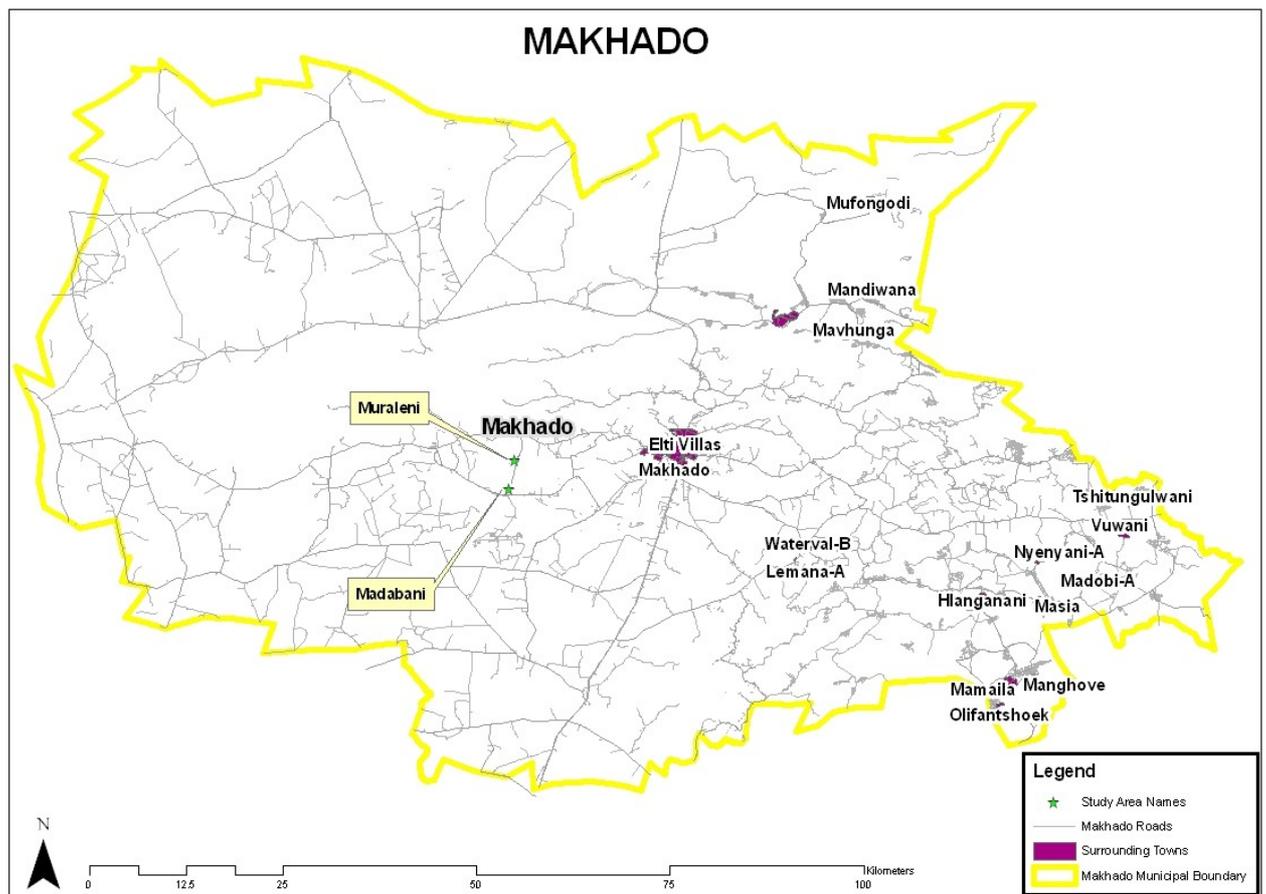
Both Makhado and Thulamela are characterised by provincial road networks, local roads and rural access roads. Figure 4.5 and 4.6 show the road networks and the sampled road projects in the Thulamela and Makhado local municipalities respectively. The specific roads which are the key focus of this study, are generally classified as access roads.

Figure 4.5: Route Network in Thulamela Local Municipality



Source: SASSA GIS 2008

Figure 4.6: Route Network in Makhado Local Municipality



Source: SASSA GIS 2008

The study covers 6 projects on access roads which provide access to communities and villages within the Makhado and Thulamela local municipalities. Table 4.3 provides a list of the sampled road construction and maintenance projects constructed using labour-intensive methods.

Table 4.3: List of sampled projects

Project Area	Road Number	Length Km
1Tshifulanani-Tshivhumbe	D3724	3.7
2Tshifulanani-Tshivhumbe	D3724	6.8
Muraleni-Madabani	D4016	1.6
Maebane-Makhitha	D3676, D5003	3.3
Schoemansdal-Makhitha	D3700	5.2
Muraleni-Madabani	D5003	3.5

The analysis of the results of National Household Travel Survey (Department of Transport 2005) revealed that the rural road network in the municipal and district road system is a significant catalyst for development and typically accounts for more than half of their transport network. However, the majority of the population of both Makhado and Thulamela local municipalities resides in the rural areas which are mainly characterised by underdeveloped rural and access road networks. The local rural road infrastructure is not developed to its full potential which leads to a lack of proper linkages between the various economic activities (Integrated Development Plan 2008).

The average distance to a public transport stop is relatively long in the different communities within the district and in many areas no precise transport stop is available for most rural populations. Walking is the predominant mode of transport used to get to the public transport stops. In this area bus stops and taxi services can be found within a 12 minute walking distance on average from people's homes, Medical services, welfare offices and a police station are within a 60 minute walking distance from the majority of households (Department of Transport 2005).

The National Household Travel Survey (Department of Transport 2005) found that walking is the primary mode of transportation for access to most services in rural areas. The results of the survey show that walking remains the primary mode of transportation up to a distance of 5 km in rural areas. A notable difference between urban and rural transport is that the use of donkeys in transportation is still a significant mode of transportation in rural areas. The use of motorised transportation remains limited in rural areas, in spite of the growing average distance to services (Department of Transport 2005).

4.3 Research methodology

In this section the study research methodology is outlined. The section further provides detail of the overall study methodology within the framework of the available methods and theories. According to Harmse (2004:28) "methods

used in both economic and transport geography have changed over time, partly due to the social nature of science and the struggle between competing philosophical positions". In order to do the complex evaluation of the impact of the Gundo Lashu programme, this study will rely on a number of different theoretical and methodological approaches. This study can, therefore, be characterised as empirical exploratory research where different approaches are used. The most predominant is critical realism based on the work of Andrew Sayer (1992) which acknowledges that there is an objective, mind-independent reality while at the same time accepting the role of perception and cognition in the understanding of events and situations.

Critical realism as a philosophy of science, positions itself between positivism and post-modernism and post-structuralism by refuting the positivism's 'obsession' with quantification and measurement, while at the same time rejecting post-modernism and post-structuralism's denunciation of non-linguistic, non-discursive or non-semiotic phenomena. It is further argued that this approach is "a synthesis, which emerges from, and attempts to transcend, positivism's thesis of a foundational-absolute stance and post-modernism's antithesis of chaotic relativism" (Johnson and Duberley 2000). Brown et al. (2002) argues that the notion of abstraction is central to understanding critical realism and its contribution to social science research. Thus critical realism has been developed from the 'post-Kuhnian' critique of positivism which argues that the "truth must be more than the outputs of a language game yet it cannot be absolute" (Johnson and Duberley 2000:151).

According to Johnson et al. (2000) critical human geography is marked by conceptual pluralism and an openness to a wide range of critical theoretical approaches, including anarchism, environmentalism, feminism, Marxism, post-Marxism, post-structuralism, and psychoanalysis. Critical realism is often associated with the British philosopher Bhaskar (1989; 1998) who developed a general philosophy of science. Bhaskar (1998:1) further attempted to examine the central methodological debate which focuses on the extent to which society can "be studied in the same way as nature". Johnson, et al. (2000) describes critical realism as a diverse and rapidly changing set of

ideas and practices within human geography, linked by a shared commitment to emancipator politics within and beyond the discipline. It includes the promotion of progressive social change and the development of a broad range of critical theories and their application in geographical research and political practice.

From a methodological point of view, critical realism provides the foundation for the use of multiple methodological approaches. In order to overcome problems associated with critical realism as well as addressing the accusation of ontological abstraction, this study combines critical realism approaches with pragmatism, to form what Johnson and Duberley (2000: 148) call a 'pragmatic-critical realism' to allow subject-object transactions to be established.

Based on this approach, the data collection exercise was based on observation with the knowledge that social reality is theory-laden rather than theory-determined (Sayer 1992:83). In this case two different kinds of research design, which include an intensive and an extensive research design are relevant for the study, regardless of the fact that they have different orientations, ask different questions, and use different methodological techniques Sayer (1992).

According to Sayer (1992), an intensive research design is employed when the focus of the study is to obtain in-depth knowledge of specific phenomena and mainly applies qualitative methods and analysis. Extensive research design on the other hand is being used since the focus of the study is to explore the common properties and general patterns regarding the impact of the Gundo Lashu programme on both project participants and non-participants at a broader geographical scale.

Other realists advocate the use of mixed methods, and discuss the complementary nature of intensive and extensive methods. In this regard Lawson and Staeheli (1990:18) argue that researchers must "combine methodologies as different rounds raise different questions, some of which

require qualitative and some which require quantitative techniques.” A methodological triangulation approach, which according to Bryman (2001:2) and Lawson and Staeheli (1990) refers to the use of more than one method to investigate the same research problem, was therefore deemed appropriate to meet the study’s data information needs. In this case the triangulation technique was used to confirm, cross-validate, and corroborate the findings of the study. The study used these methods separately as a means to offset the weaknesses inherent within one method with the strengths of the other method.

According to O’Donoghue and Punch (2003:78), a triangulation technique is often used to indicate that more than one method can be used in a study with a view to double (or triple) check results. The use of a triangulation approach would also increase the validity and reliability of data gathered. Hammersely and Atkinson (1994) support this, adding that this approach strengthens research findings through the combination of information sources and analytical approaches. Methodological triangulation, according to Denzin (1970:313) overcomes any bias which is inherent within a single method approach and adds value to the theoretical debate.

Generally, the study aims to explore and evaluate the impact of labour-intensive construction and maintenance programmes in road infrastructure in Limpopo province. The impact evaluation study will quantify the impacts of the Gundo Lashu programme on a range of outcome indicators. Qualitative methods have limited efficacy for rigorous evaluation of such impacts, but they can add context and depth to quantitative survey findings and help to explore impact pathways. However, this study is also required to assess perceptions of the key respondents towards the design and implementation of the project for which qualitative methods are entirely appropriate. So the qualitative component of the study will simultaneously strengthen the quantitative component and generate additional findings.

The first objective of the study is to describe the nature and delivery mechanisms of labour-intensive programmes in the study area. The

appropriate data required to answer this objective includes secondary data sources such as various policies and strategic documents related to the establishment, planning and implementation of the Gundo Lashu programme. Key data sources include the EPWP policy framework and subsequent legislations, Municipal Integrated Development Plans, and maps of project localities generated from the South African Social Security Agency and the South African Demarcation Board. This information will be corroborated by field observations in various project sites where labour-intensive construction and maintenance were applied.

The second objective relates to the assessment of the impact of labour-intensive road projects on the project participants and their communities by determining the economic benefits and economic impacts of the projects. The outcomes must be assessed to determine whether the project had the desired effects on individual participants, their households, and the community and determining whether the effects are attributable to the project's intervention or to other causes. The relevant data required to answer this objective and sub-objectives included primary data collected through a questionnaire from both the treatment and the control groups. Other secondary data sets include the results of the National Household Travel Survey, Community Surveys and Census Survey data from Statistics South Africa.

In order to explore the constraints and challenges experienced in the execution of labour-intensive road-based initiatives, secondary data from project status reports and in-depth interviews with both the project manager and site managers were deemed necessary to answer the research objective.

4.3.1 Sampled projects

The selection of projects to be evaluated was among the key methodological considerations for this study. Resource constraints did not allow for the evaluation of all projects within the Gundo Lashu Programme, which implied that those projects sampled were to be carefully selected. Based on the list of the existing projects within the Gundo Lashu Programme obtained from the

Limpopo Road Agency (RAL), the choice of the projects studied was based on pre-assessment in terms of representative and relevance.

The sampling of the projects was based on a number of criteria. The first criterion was the uniqueness of the project. Secondly, projects which demonstrated the greater use of labour-intensive methods during both the construction phase and the maintenance phase were selected. The last criterion was using projects which were started between 2000 and 2004. This is based on the fact that the year-end 2008 marked the final pilot stage of Gundo Lashu to prepare for a review and future replication of the model, and there was a need to evaluate projects within the programme which were implemented at commencement of the programme. The following projects complied with the selection criteria explained above: The Tshifulanani-Tshivhumbe road, the Muraleni-Madabani road, and the Maebane-Makhitha road. The description and the list of projects in the Gundo Lashu programme was provided in table 4.3.

4.3.2 The selection of the study group

The targeting of participants within the Gundo Lashu programme is in line with the affirmative action targets of the EPWP Code of Good Practice which recommend the employment of youth, women and people living with disabilities for participation in labour-intensive projects. As such, project participants were recruited from the local communities to support economic empowerment at local levels. A brief account of the demographic profile of the respondents in the treatment and control study groups and their households in terms of age, gender, educational levels and household compositions, follows in the next paragraphs. The difference between the treatment and control study groups were explained in Chapter 1 (section 1.4.5).

At the time the data was collected the Gundo Lashu programme employed a total of 1 339 people in labour-intensive jobs in the six selected projects. The population thus constituted 1 339 and a sample of about 5% was selected from the population for the treatment group. The study sample covered a total

number of 128 respondents and consisted of 64 respondents in the control group and 64 respondents in the treatment group.

The treatment group was drawn from project communes where the Gundo Lashu programme was implemented, with a specific focus on projects executed through labour-intensive construction and maintenance methods. The control group was drawn from non-project communes where labour-intensive road construction and maintenance projects were prioritized but had not yet taken place when the study was conducted. This group was therefore not affected by the direct activities of the Gundo Lashu programme. The size of the control group was taken to be equivalent to that of the treatment group.

The general characteristics of the participants in the control group resemble the treatment group, however, some members fell outside the limit, generally characterised by the following:

- Local people who reside within 30 km radius from the project
- Not participated in the Gundo Lashu programme
- Unemployed youth and those with disabilities.

Respondents within the treatment group were found in a variety of ways. Initial contacts were made with the contractors in each project in the study area who provided the researcher with a list of all the registered project participants. The majority of the respondents were found to be residing within the localities where projects were undertaken (project communes). The participants in the study were identified using snowball and purposive sampling techniques.

These techniques were used because there were difficulties in locating the target population from the list provided by the contractors. In many instances, the respondents could not be located using the addresses provided in the contractors' project list. In such cases, respondents that were residing at the addresses provided by the contractors were requested to recruit others project participants who were willing to contribute to the study. In this way,

many respondents in the treatment group were recruited and gave valuable information to complete the study. Purposive sampling was used to identify respondents (in the treatment group) from the lists provided by the contractors. The selection of this sampling design was made on the basis of the research objectives based on the empirical assessment of the reasonableness, efficiency and feasibility of the study design in the light of the given objectives. Purposive sampling can take a number of forms; the most important for this study was the selection by an expert of a typical sample.

To ensure that the study developed a comparable group (control group), purposive sampling was used to identify areas and communities who have not had the opportunity to participate in a labour-intensive programme. This group did not have a chance to participate, either as a result of the fact that they stayed outside the target area for the Gundo Lashu programme (outside 30 kilometers radius) or their areas or communities were not prioritized for the roll-out of the programme. Table 4.4 provides a detailed list of the sampled areas and the number of respondents.

Table 4.4: List of sampled communes and respondents

Treatment Areas	Number of respondents	Control Areas	Number of respondents
Tshifulanani-Tshivhumbe	30	Duthuni	30
Muraleni-Madabani	20	Madombidzha	10
Maebane-Makhitha	24	Rathidili	10
		Ha-Magau	24
Total	64		64

The participants in both the treatment and control groups were identified and recruited in May and June 2007. The two groups were identical in terms of their employment status (unemployed) in addition, they were all poor and living in rural communities. All the people selected mainly survived on government support initiatives such as social grants and other welfare programmes. The two groups were essentially comparable, since they had equal opportunity to participate in the programme. A cross validation to ensure that the two groups were comparable was based on odd ratios of the

above key indicators constructed, using a conditional logistic regression model.

The age distribution of the respondents, both from the control and treatment groups, resembled the typical broad-base pyramid of poverty-focused projects within the developing countries characterised by a large middle-aged group (between 16 and 45 years) and a steadily decreasing portion of the older age groups (46 years and above). The total mean age for the treatment group was 32 years, with age ranging from a minimum of 22 years to a maximum of 57 years. The control group's mean age was 31 years with a minimum age of 20 years and a maximum age of 48 years.

A statistical test was also conducted to test for the significant difference in ages between the two sampled groups. The variance ratio test (sdtest) for the variable, respondent's age show no significant difference on ages between the control and the treatment groups. Since $P = 0.5841 > 0.05$, it was concluded that there were respondents of similar ages in the two groups, hence comparison for mean ages becomes appropriate. The P-Value was $0.6257 > 0.05$ and therefore, the mean ages of both the treatment and the control groups were equal at a 0.05 percent level of significance.

The gender profiles of the study target groups were composed of a large number of middle-aged women between the ages of 16 and 35 years and a large group of men between the age of 25 and 36 years. Another distinctive feature of the sampled respondents was that both the treatment and control groups had a high female/male ratios. Females account for 64.8 percent of all the respondents and males account for only 35.2 percent.

With regard to education attainments, literacy level was used as the key aspects measurement instrument. Almost 8 percent of the sampled respondents from the overall sample were illiterate, 44 percent were males and 64 percent females. In order to assess the respondents' levels of education both from the control and treatment groups, a statistical t-test was conducted. The P value was $0.610 > 0.05$ and it was concluded that the

Gundo Lashu programme participants and the respondents from the control group completed similar levels of education.

Household composition was also a key determining factor for inclusion in the study. In this case the household dependency index was examined in order to understand the respondents' household composition. The study used the comparison of means of household size of the two sampled groups. However, before comparing means of the two sampled groups, the variance of two independent sample groups had to be compared using the variance ratio test (sdtest). The results shows that $P=0.0800 > 0.05$, and it was concluded that the household size was similar in both the treatment and the control groups. Hence, comparison of mean household size became appropriate. Thereafter the mean household size was compared using the two-sample unpaired t-test. The results show that P-value is $0.4342 > 0.05$, therefore the mean household dependents of both the treatment and the control groups were equal at the 0.05 percent level of significance. This means that the averaged household size of the sampled groups was almost similar. The total mean household size for the treatment group was 4.125, with a minimum household size of 1 dependent and a maximum of 8 dependents. Among the control group, the mean household size was 4.343 with a minimum household size of 1 dependent and a maximum of 7 dependents.

The control group thus comprised of respondents who resemble the treatment group in most observable characteristics, with the exception that this group did not have exposure to the treatment, as they did not participate in any labour- intensive road project.

4.3.3 Data collection methods

The data needed to reach the objectives of this study required both secondary and primary data. The collection of the primary data was based on ethnographic strategies which are generally applied in economic and transport geography as a methodology. Ethnography attempts to understand social and

economic phenomena from the perspective of participants in the social setting under the study (Schensul et al. 1999).

One of the most common methods for collecting data in an ethnographic study is direct first-hand observation of various works undertaken at specific sites. Another common method is interviewing, which include conversations of different formats, which can be used to aid in the discovery of the perceptions of respondents. A questionnaire is helpful as a valid instrument for measuring changes resulting from respondents' participation in the programme.

A combination of observations, interviews, and questionnaires were used in this research to collect primary data from the two sampled groups. Data collection for the study by means of questionnaires and interviews lasted for a 2 month period from 02 May to 30 June 2007 and again for a month during July 2008.

4.3.3.1 The questionnaire

Parfitt (1997:76) stresses that, in the context of human geography, the questionnaire survey is an indispensable tool when primary data is required about people, their behaviour, attitudes and opinions. However, Parfitt (1997) cautioned that the content of the questionnaire needs to be firmly rooted in the research question.

During the development of the questionnaire, the monitoring and evaluation framework used by the Department of Public Works was obtained. This matrix included the reporting templates required by RAL from various contractors. Furthermore, preliminary project status reports were received from RAL.

A broad questionnaire was developed using both closed and open-ended questions to provide both quantitative and qualitative responses. A copy of the questionnaire used is included in Appendix E. Open-ended questions were designed to add value to other answers from the respondents (Cohen et al. 2003). The main objective of the questionnaire survey was to capture

information on the respondents' characteristics and their socio economic activities to determine the impact which can directly be attribute to the project intervention. The questionnaire was developed to capture data related to the following aspects:

- Overview description of the area and projects.
- Key activities undertaken in various employment categories within the projects.
- Screening questions to determine the relevancy of the selected respondents, specifically regarding respondents' work experiences on related projects and the description of the respondents roles in the project.
- Project classifications and the duration for participation.
- Motivation for participation and training received during the project lifespan.
- Household income and expenditure patters.
- Household composition and skills of household members.
- Access to services including health, educational and public transport facilities.
- Respondents' biographical characteristics such as gender, age, marital status, educational level and employment status.

For data collection purposes, a total number of four people were responsible for the collection of primary data from the respondents. This consists of the researcher who was assisted by three field workers. The recruitment of field workers was based on their understanding and fluency of the local language (Tshivenda). The field workers were trained in various elements of the questionnaire and simultaneously the instrument was pre-tested to ensure that they would be capable of interviewing individuals in the target localities. The training for this project covered issues such as the application of research ethics, fine-tuning interviewing skills, covering the specific research issues and objectives, as well as an in-depth focus on the content and application of the questionnaire to be administered. Interviewing as well as general communication and probing skills of the interviewers were evaluated and enhanced with role-play exercises using the survey instrument. During the

role-play, each field worker conducted two interviews among each other. This training process served several important functions:

- It ensured that the field workers fully understood the issues specifically relating to the current project, and could use the instruments optimally to obtain the highest quality of data.
- It contributed to ongoing investment in capacity building and skills sharing among previously disadvantaged individuals.
- It ensured that the instrument worked as intended.

4.3.3.2 Interviews

The impact of the labour-intensive projects is very broad and called for mixed methods of obtaining the required data; therefore, data was collected from the respondents on their perceptions regarding the official objectives of the Gundo Lashu programme. The information that was obtained through interviews included the feasibility of implementing labour-based methods for rural road rehabilitation and maintenance, and the programme's ability to improve livelihoods in rural communities through:

- Job creation (employment targets: 60 percent women, 40 percent men, 20 percent youth and 2 percent disabled)
- Skills transfer
- Improved access to markets and services

Interview questions in line with the above were structured as open-ended questions and were asked at the end of the questionnaire. The key objective was to provide insight into the respondents' individual views regarding the programme outcomes. Furthermore, unstructured interviews were also conducted with the project manager for the Gundo Lashu programme at RAL offices.

4.3.3.3 Field observations

In order to capture the nature and diversity of the existing labour-intensive programmes, field observation was undertaken in the sampled projects. Jorgensen (1989) maintains that a major strength of using observational techniques, especially those based on ethnography, is to provide descriptions. Observational techniques were used to provide further information on both the Gundo Lashu programme participants and non-participants.

Actual visits and practical field work were undertaken in communities of both sampled projects and non-projects. The data collection for this observational method involved two basic steps. In the first step the choice of situations for observation was determined. The setting for observations was defined in advance in relation to the spatial differences and distribution of labour-intensive projects. The second step involved direct observation of the project activities. Access to the sites of observation was obtained from the relevant parties, including the Chief Executive Officer of the Limpopo Road Agency and community leadership structures.

The permission to conduct the study was obtained from the Limpopo Road Agency. In this case a formal letter was forwarded to the CEO of RAL requesting the permission to administer the questionnaire to the project participants. Approval was therefore granted which permits the acquisition of both secondary data in the form of project administrative data sets from RAL and collection of primary data from the programme participants. The Gundo Lashu programme manager was made available to assist with both the provision of data and access to the Gundo Lashu Projects. Permission to administer questionnaires to non-project communities was obtained from local headmen with the assistance of the leadership of the community civic structure.

Site visits were conducted to sampled areas where road construction and maintenance programmes were taking place while actual road construction activities were carried out. The initial field observations were conducted during

the month of July 2007. The researcher made sure not to alter the working schedules of the participants while on these site visits. Activities on these site visits consisted of note taking and audiovisual recordings (as discretely as possible). Field observations provided the study with insight into the geographical and demographic characteristics of each identified project.

4.3.3.4 Secondary data sources

Secondary data refers to data that the researcher did not collect directly (as opposed to primary data which is generated by the researcher) (Patton 1990). The study was conducted at community and project levels, and existing secondary data sources such as project administrative data, programme management data, and the existing records within RAL were used as data sources.

The project documentation containing the list of previous and current projects within the Gundo Lashu programme was requested from RAL. The project documentation provided general statistics regarding the project and its achievements. The following information was obtained from the project documents:

- Project description and status which include the following:
 - Geographic spread of the projects
 - List of projects undertaken and names of project communities
 - Construction method
 - Project activities
- Project targets and achievements of outputs and outcomes in line with the following variables:
 - Construction costs and total wages paid
 - Number of employees recruited per project (women, men, youth and disabled), skilled, unskilled and wage rate
 - Employees trained and number of person days trained
 - Total length of road (km) and road width (meters) constructed.

Reports and documents from the provincial department of Public Works provided a wealth of information for a range of issues including project expenditure data, project activities, outputs, guidelines and policy documents. Generally, the study utilised information from annual, quarterly and monthly reports and programme management documents containing information on outputs, that is, what has been achieved in exchange for public spending.

The background information of the study areas in the form of maps was generated from the GIS spatial database of the South African Social Security Agency. Other secondary data sources included the 2007 Community Household Survey (Statistics South Africa 2007) and the National Household Travel Survey (NHTS) of 2005 (Department of Transport 2005). The following categories of data from the NHTS were used in the study:

- Availability of passenger transport service (buses, taxis and trains).
- Distance travelled to the nearest station (public transport).
- Problems in communication and participation in activities of mass organisations due to bad roads.

Other secondary data sets from Statistics South Africa were accessed in order to shape the primary data collection instrument. Most of these data sets were used to generate norms and standards which were used to benchmark the findings of the study. Key statistical references for this study included data on community access related variables sourced from 2007 Community survey (Statistics South Africa 2007) and the outcomes of 2007/2008 Labour Force Survey (Statistics South Africa 2007 and 2008). The following list of variables from the community survey was useful to the study:

- Time to collect firewood, water etc. (min.)
- Time by foot to closest shop that sells food/consumer goods (min.)
- Time to educational facility (primary and secondary schools) (min.)
- Time to closest health facility hospital (min.)

The Labour Force Survey is a household survey specifically designed to measure various aspects of the labour market. It also provides insight into the

level and pattern of unemployment and the industrial and occupational structure of the economy. The Labour Force Survey is conducted by Statistics South Africa every six months and has a sufficiently large sample to permit general analysis of the impact of the Gundo Lashu programme on employability, as well as to provide information about the household income and structure of beneficiaries.

The Labour Force Survey data sets were used to identify information gaps for the study. Information obtained from the secondary sources described above was used to assess the data gap that existed in terms of information needed to achieve the objective of the study. The draft questionnaire was developed with these gaps in mind.

4.3.4 Data organisation and analysis

Methodologically, this research involved a holistic approach of inquiry, including the use of multiple methods and source of data. This led to the use of both qualitative and quantitative methods of data collection and interpretation. A quantitative approach was, however, the dominant orientation. The focus of the study was to measure the impact of the Gundo Lashu programme on the lives of local communities. The main sources of data were structured questionnaires, interviews, field observations and various secondary sources.

4.3.4.1 Statistical analysis

Data from the questionnaire was captured using STATA version 10 and comprehensive tables were run. The assistance of one of SASSA's statistician was acquired to ensure that there was data integrity and quality and the following functions were performed:

- Questionnaires were checked, coded and captured, and electronic data was thoroughly checked and cleaned prior to analysis.

- Check and edit codes were included in the data capture programmes to perform functions such as verification of inter-related entries, skip patterns and only allowing certain ranges of entries.

The statistician was familiarised with the objectives of the surveys and the contents of the questionnaires prior to data capture, to enable him to identify invalid responses in the questionnaires during the capturing process. Data was entered after all the questionnaires were checked to ensure that they were successfully completed. The final data was cleaned by the statistician who had a thorough understanding of the research objectives and the contents of the questionnaire.

Various methods are used in transport geography to collect primary data, such as questionnaires and interviews and various methods are available for the analyses of the primary data. Some analytic techniques are straightforward to implement and interpret; graphs and tables are two examples. Others are more complex, for example, inferential statistics like the t-test, analysis of variance, regression and chi-square (Rodrigue et al. 2009). In order to describe and summarised the data, descriptive statistics were used in the study. Frequency tables and charts were used to compare the treatment and the control groups with regards to the key variables of study. In essence, all quantitative variables collected for the study was analysed both in categorised and continuous form (Hansson 2001). In cases where there were clear reasons to choose a specific different categorisation, the categories for quantitative variables were chosen as quantiles of the distribution among controls.

The study further adopted the Matched Case-control study design which allows for the use of the Conditional Logistic Regression Analysis for data analyses. Case-control is a type of study designs that is used to identify factors that may contribute to a condition by comparing subjects who have that condition (the 'cases' or treatment group) with subjects who do not have the condition but are otherwise similar (the 'controls' or control group). Case-control studies are a relatively inexpensive and frequently-used type of study

that can be carried out by small teams or individual researchers in single facilities in a way that more structured experimental studies often cannot be (Hansson 2001; Bloom et al. 2007).

The analyses of the data collected for the study was done with STATA version 10. Comparisons were made between the two groups (control and treatment) based on odds ratios. That is, groups 1 and 2 were compared with regards to key variables of comparison, using odds ratios estimated from conditional logistic regression analysis. The basic STATA command for conditional logistic regression analysis in matched case control study designs is given by:

```
. clogit y x1 x2 x3, group (group)
```

This command compares two groups (controls and treatment) with each other on the basis of the logistic regression of y on x1, x2 and x3. For this study, each observation in the treatment group was matched with observations from the control group.

4.3.4.2 Poverty impact analysis

With regard to poverty impact analysis, components of the EPWP analytical framework for Poverty Impact Analysis were adopted for use. This technique was drawn from a recent model in the Western Cape which test efficiency of public works programme in generating income and assets to the poor (Adato et al. (1999). The impact of poverty was obtained through an assessment of the net wage generated by the project participants based on the overall government expenditure on the Gundo Lashu programme.

The central objective of the Gundo Lashu programme is to alleviate poverty through training of poor, unemployed people. The creation of short-term job opportunities through the provision of assets and services is a means to that end. The study would therefore be meaningless without an analysis of the impact the programme has on the poor. Given that project participants are members of households that at least partially share risk and resources, it was

important that the poverty impact analysis be conducted at household level. Table 4.5 provides a summary of the information required to conduct the poverty impact analysis and indicates relevant data sources.

Table 4.5: Information requirements for poverty impact analysis

Information required	Measure
Demographic composition of household	Age, gender and race composition of households and household structure
Employment status of household members	Full-time, part-time, self employed, formal/informal employment, length of time unemployed
Levels and sources of household income	Wage income, remittances, grants, capital income, subsistence farming
Expenditure patterns of household	Perceived changes in consumption of goods and services
Nutritional status of children in the households	Incidence of hunger and purchase of nutritional food
Educational of the household members	Levels of educational attainments
Correlation with other income generating activities	Whether beneficiaries or other household members enter employment or self employment after exiting the programme

4.3.4.3 Qualitative analysis

After the fieldwork, qualitative data collected by means of the questionnaire, interviews and documentary sources was qualitatively analysed. The information from interviews was summarised and coded to provide clear understandable statements and conclusion. Descriptive data and evidence relating to each question was classified into distinctive classes based on their common qualitative characteristics. The results obtained were classified into distinctive classes based on their common qualitative characteristics. For qualitative analysis, various opinions expressed by the respondents were grouped in order to determine the priority structures, to analyse both conflict and complementary responses which were expressed differently by the respondents (Mendoza et al. 1999, Rodrik 2003).

Finally, is it important to emphasise that the qualitative data was analysed and reported in close conjunction with the quantitative data, rather than in isolation. This reflects an emerging consensus in geography that triangulation of various methodologies is more powerful than applying each set of instrument on its own: Qualitative methods alone can too easily be dismissed as “anecdotal”; while quantitative methods alone might generate findings that are statistically rigorous, but difficult to interpret or rigorous but also amenable to nuanced interpretation.

4.4 Ethical considerations

At the time the data was collected there was not yet an approved research ethics policy for the College of Agriculture and Environmental Science (in which the Department of Geography is situated) at the university and the guidelines used by the Human Science Research Council on ethics in research was used during the field research. These guidelines were also summarised in the questionnaire spelling out the ethical standards for this study, and a consent form was signed by the respondents. Both these documents accompanied the questionnaire (Annexure C and D).

These guidelines emphasised the following:

That participation in the study is voluntary. It will involve an interview of approximately 1 hour in length to take place in a mutually agreed upon location. Respondents may decline to answer any of the interview questions if they so wish. Further, they may decide to withdraw from this study at any time without any negative consequences by advising the researcher. With their permission, their response will be captured in the questionnaire to facilitate collection of information, and analysed thereafter. Shortly after the interview was completed, the researcher read out their responses to give respondents an opportunity to confirm the accuracy of conversation and to add or clarify any points that they wished to.

All information provided is considered completely confidential. Names will not appear in any thesis or report resulting from this study, however, with permission anonymous quotations may be used. Data collected during this study will be retained in a safe storage until the completion of the study. Only researchers associated with this

project will have access. There are no known or anticipated risks to them as participants in this study. A copy of the actual letter to participants is given in Annexure C.

4.5 Limitations of the Study

The original intent of the study was to conduct a comparative study of the two broad EPWP programmes, namely: Zibambele programme in KwaZulu Natal and the Gundo Lashu programme in Limpopo. This was, however, impossible due to a number of factors outlined below.

There were limited financial resources for logistical arrangements and the collection of primary data from both project participants and non-participants in two different areas. The fact that geographically, the two provinces are situated far apart was problematic. The data required had to be generated from primary data gathered from the field to avoid over-reliance on secondary data sources, such as administrative data and results of Statistics South Africa, and the collection of primary data in two areas so far apart was problematic. The two areas also differ substantially in terms of cultural and linguistic characteristics and the same field workers could not be employed in the two different areas. Two sets of field workers would have had to be trained and used in the two areas.

There are also large differences between the two areas in terms of service delivery approaches. The Gundo Lashu programme's key focus is on the development of new road infrastructure with a small proportion of maintenance projects targeting women, people with a disability and youth, aiming to capacitate them with relevant skills to prepare them for absorption into the formal economic workforce. A very different approach to PWP was taken by the KwaZulu Natal Department of Transport when it initiated the Zibambele programme. Its objectives are to carry out routine maintenance on the province's rural access road network and to provide poor rural households which have no other source of regular income. The programme is based on the 'lengthman' contract system targeted towards household participation

poverty alleviation. Within the Zibambele programme, the work is allocated on a household basis, so that if the participating household member falls sick or dies, another household member may take up the activity, and thus retain the monthly income.

Furthermore, due to the continuous nature of routine road maintenance work, each household within the Zibambele programme is a contractor, and there is therefore no employer-employee relationship, and the Code of Good Practice for Special Public Works Programmes does not apply (Philips 2004a). The duration of the programme implementation was different, which resulted in significant differences in programme outcomes and impact. Zibambele was initiated in 2000 and the Gundo Lashu programme roll-out was only in 2004.

Based on the challenges highlighted above, the study thus focused entirely on the Gundo Lashu programme. From a methodological point of view, this approach was appropriate to generate findings relevant and applicable to the Gundo Lashu programme based on the programme's potential to be replicated in other provinces. The matched case study design enabled the researcher to quantify the impact of the programme based on a comparison of the programme impact generated from the counterfactual.

In order to explore the broader challenges regarding planning, management and implementation of the Gundo Lashu programme, the study had initially planned to conduct in-depth interviews with relevant officials from the sampled municipalities who are directly responsible for these projects at municipal level. Comprehensive lists of contact persons at municipalities were provided by RAL, but it proved almost impossible to identify the actual officials to be interviewed and who were involved in the Gundo Lashu programme activities. Therefore, secondary sources such as district and municipal Integrated Development Plans (IDPs) and annual reports had to be used to generate information related to the Gundo Lashu programme and the broader labour-intensive projects.

Information on implementation challenges regarding project management and institutional capacity assessment to implement labour-intensive work specifically within the transport and road sector, were planned to be generated from interviews with various implementing contractors under the Gundo Lashu programme. These interviews did not, however, take place, since these contractors were never available at the project site. In most cases contractors would refer all questions regarding implementation to the site managers. As a result, site managers were interviewed on questions regarding project management and implementation issues. This exercise was not very fruitful since most of the site managers were not knowledgeable due to the fact that they were either new (had not spent more than one month on site) or afraid to disclose critical information regarding the project.

4.6 Conclusion

In this chapter details were provided on the data sources and the organisation and methods used for the analysis of data. The reason why this study was conducted only within the Gundo Lashu programme was explained in more detail. In the next chapter, attention is given to the actual analysis of the data and the results obtained from the analysis.

CHAPTER 5

Analysis of Findings

5.1 Introduction

The key objective of the Gundo Lashu programme is to target unemployed youth, women and those with the potential to be absorbed by the formal work force. In order to create jobs in a short period of time, the approach is to expand both existing best-practice public works programmes that are labour-intensive and to introduce labour-intensive production techniques by, for example, replacing machines with labour in civil construction.

However, the general impact of the programme on individual participants and their households is unknown. Furthermore, little is known about the characteristics of those who benefit from the programme as well as the targeting approaches used for both individual participants and project communes. The focus of this study is to measure the impact of projects within the Gundo Lashu programme using a control matched-case study design, informed by responses from a treatment as well as a control group. In order to achieve this, the characteristics of the treatment group are assessed and compared with the respective control group. The measurement of impact was conducted in conjunction with a general analysis of the extent to which the programme has achieved its intended goals and objectives. In this case the focus is on the assessment of programme inputs in relation to outputs, outcomes and impact of the programme.

5.2 Analysis of programme outputs, outcomes and impact

The role of social and economic infrastructure in development is a very wide and controversial issue that has been the subject of numerous empirical studies. This study focuses on the analysis of the impact of labour-intensive road infrastructure within the Gundo Lashu programme based on the data

collected from the sampled projects. In order to determine the specific impact of the programme, the analysis is based on the data collected from a treatment group (project communes) and a control group (non-project communes) as required for the control matched case study. These analyses are essential to address the research objectives which focus on assessing and evaluating the impact of labour-intensive road projects (within the Gundo Lashu programme) on the project participants and their communities. The economic benefits and impacts of the projects will be assessed by investigating key variables such as employment opportunities generated, training outputs and the impact of training, incomes generated at project level in line with household incomes, the nature of infrastructure provided and the extent to which it improves livelihoods for the local communities in areas such as access to health and educational facilities.

5.2.1 Provision of training

The empowerment of community members and individual contractors engaged in the Gundo Lashu programme through the provision of training was one of the key objectives of the programme. The learnership determination for unemployed learners and the Code of Good Practice for Special Public Works Programme recommend that project participants receive training to facilitate greater employment for youth, women and those with greater opportunities for employment in other sectors.

The programme was required to provide unemployed people with education and skills. In order to investigate the degree to which the project complied with this requirement, the employment and training records based on administrative data for the Gundo Lashu programme was analysed. The records reflect that a total of 2 254 people were trained throughout the lifespan of the Gundo Lashu programme. During the same period a total of 6 827 jobs were created. In essence, the number of people trained for the Gundo Lashu programme should be equivalent to the number of people employed and recruited for the programme.

Given the achieved employment target of 6 827, it is expected that, based on the objective of the programme which emphasises training as the critical component of the programme, every participating employee in the programme should at least receive training at a particular stage of programme implementation. The fact that only 2 254 people were trained during the entire programme since its inception, shows that the overall Gundo Lashu programme training targets fell short by 4 573. Further investigation showed that the training targets were not met partly due to the limited capacity to implement the massive training requirements of the programme.

The programme had an overall total of 18 745 training days and this included 10 453 training days during the training phase and 8 292 days of training provided during the post training phase. Data obtained from the treatment group used in the study (table 5.1) shows that various project participants received training during the project implementation cycle. A combined total of 584 project participants received training. This includes 259 participants from the Thulamela Local Municipality and 335 people from the Makhado local Municipality.

Table 5.1 Training within the sampled projects

Municipality	Road Number	Road Length KM	Number of Jobs	Number of persons trained
Thulamela local municipality	D3724	10.5	220	74
	D3695	12.6	453	138
	D3700	7.8	111	43
	D3696	6.3	128	4
Makhado local municipality	D4016	1.6	246	150
	D3676/D5003	3.3	43	55
	D3700	5.2	73	55
	D5003	3.5	65	65
Total		50.8	1339	584

Source: RAL 2009

Based on the duration of the project, the study revealed that the projects' duration was less than 12 months in the implementation plan (duration from start of project to completion). These projects had the potential and opportunity to create an essential asset but issues related to future maintenance of the infrastructure were, however, not addressed in the training of their workers. Evidence collected further shows that the nature of the training programme received was not linked to a future infrastructure maintenance programme. This has a negative impact on the project's ability to serve as a springboard for more sustainable employment in the long run. This is also linked to the fact that training facilities and organisations for continuous capacity development do not exist within the municipalities.

With regard to emerging contractors, the study found that during the project planning stage a total number of 24 aspirant contractors from the Limpopo Province were targeted for the Gundo Lashu learnership training programme. These contractors received comprehensive training. The key focus of the training was to build contractors' capacity to enable them to graduate into independent contractors, capable of rehabilitating gravel and low volume sealed roads and to run their own businesses profitably with minimal external assistance. The formal training covered both theoretical and practical aspects of gravel road rehabilitation as well as business and financial management, environmental management, health and safety, HIV/AIDS, gender awareness and statutory requirements. Furthermore, continued training and mentorship support was provided to contractors in line with the skills gap identified during the planning stage.

Analysis of the above training programmes led to the identification of a number of gaps and challenges related to the sustainability of the contractors; specifically regarding key consent related to the graduation of the contractor to ensure independence from the Gundo Lashu programme. This is the major challenge for long-term sustainability of the programme. Furthermore, it is worth noting that the impact of training is contingent on market demand for skills, and also conditional on the ability of participants to find jobs, their

mobility, and also improved opportunities for skills transfer and start-up of income generating activities.

The post project evaluation report by RAL noted that the training programme had benefited contractors technically during the standard projects; however, no improvement could be noticed in the project management skills of the trained contractors. Furthermore, the report revealed that, although contractors were trained to develop their own rates for further tendering, some chose to use external parties for tender costing and cash flow projections, the majority of whom had limited or no background on labour-intensive programmes. This challenge was attributed to the initial targeting and selection criteria for contractors, since the entry level was set too low, which opened up possibilities for anyone including those with no basic mathematical and management knowledge to become eligible to be trained as contractors (RAL 2009).

5.2.2 Infrastructure provision

From a socio-economic perspective, road infrastructure provides access to markets, integrates markets in different areas, mitigates the risks to which the community members are exposed and improves social welfare resulting from an increased accessibility to basic social services. The provision of road access to rural markets also presents substantial spin-off social benefits to rural households. More generally, various studies reviewed in Chapter 3, linked the construction and maintenance of road infrastructure in rural areas with direct and induced benefits to the local communities, most notably in the development of infrastructure which has direct impact on transportation costs, improved access to markets, as well as growth in rural entrepreneurship (Lokshin and Yemtsov 2005).

Administrative data from RAL reflects that, since inception in 2004, the programme had constructed 222.8 km of roads by labour-intensive methods using cement and slabs, natural pavement, emulsion treated and composite

emulsion treatment base. During the training phase a total length of 110.5 km roads were constructed and an additional 112.3 km were constructed during the post-training phase.

The benefits of roads are perceived to operate through various channels which include reducing the costs of acquiring inputs, improved travel patterns for rural communities, improving access to various services, reducing the impact of shocks and permitting entry into new and more profitable activities. The extent to which the constructed road infrastructure improved community accessibility was examined based on the data obtained during the study. This was done by comparing responses generated from both the treatment and control groups. The results obtained are discussed in the next sections.

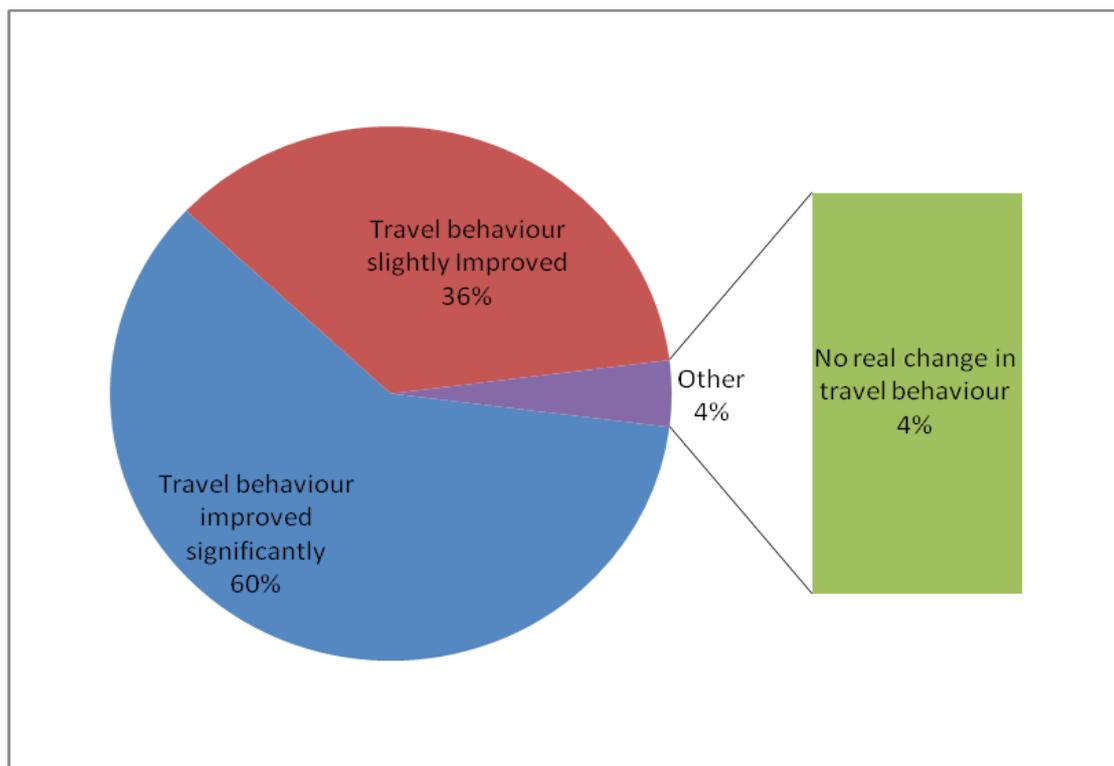
5.2.3 Improved travel patterns

Travel patterns and behaviour in both rural and urban setting holds the key to one of the greatest challenges facing transport planners – reversing the trend towards increased private car ownership and use, particularly in rural areas. There is reasonably extensive literature examining the relationship between road infrastructure development in cities and economic variables that describe the travel patterns, human behaviour and the way cities work. Most of the literature suggest that road infrastructure development projects would disproportionately attract more businesses in cities, thereby increasing population density in cities. Secondly, an increase in road access would cause an exactly proportional increase in travel and trips from rural areas to the nearest town or city.

Various researchers suggest that transport infrastructure development in rural areas would increase the population of towns and cities, and ultimately disproportionately attract poorer people to cities. Various studies were conducted in order to understand whether roads attract people to a city by making the city more attractive to workers or employers, or by increasing its access to other markets. Duranton and Turner (2008) confirmed that road

infrastructure development improves the travel patterns of people. They, however, found no evidence to support the claim that rural road infrastructure provision increases the population of towns and ultimately disproportionately attracts poor people to cities. In contrast, they suggest that improving access through road infrastructure development affects cities by making them more productive and attractive.

Figure 5.1: Impact of road on travel patterns



Source: Empirical data

In the present study the frequency at which community groups from both control and treatment groups visit the local towns using public transport was investigated. The data obtained from the questionnaires reveal that the travel patterns of the respondents from the treatment group had increased as a result of the new road infrastructure. The majority of the respondents (60 percent) indicated a significant improvement in their travel behaviour. They were able to visit their nearest town at least once in a week, more often than before the construction of the road (Figure 5.1). Only 36 percent indicated that

their travel behaviour had changed only slightly since they are able to use public transport to visit their nearest communities. Only 4 percent indicated that their travel pattern had not changed at all over time and they were not affected by the development of the road. Figure 5.1 depicts the impact of road infrastructure on the respondents' travel patterns.

The majority of the respondents from the control group (89 percent) on the other hand, indicated that there is no tangible contribution of road infrastructure to their personal and community well-being. This was substantiated by their verbal responses indicating that the government's investment in the Gundo Lashu programme is just a waste of resources. The majority of these respondents within the control group (65 percent) also indicated they would not recommend or give their approval to any labour-intensive road construction in their communities.

Most of the issues raised did not dispute the significant contribution of the projects towards improved access, but they are specifically linked to the quality of roads constructed as wastage of government resources on projects that are not preferential to most rural communities. The fact that there was a significant improvement in the travel behaviour of the treatment group, while there was little improvement in that of the control groups, indicates that the people participating in the Gundo Lashu programme benefited from the programme and its projects.

5.2.4 Access to services

Schools, health and market facilities are the major basic services available to rural communities. Households that have more access to road infrastructure spend less time walking to available services than households with poor road access. The development of road infrastructure within the project communes gave them improved access to roads and the larger accessibility resulted in time saving. This is important within a rural community set-up, since an intermediate mode of transport also helps community members to increase

the loads they are able to carry, thereby saving time that could be used for other productive work. Personal observations in the project communes revealed that through the improvement of the road, the number of motorised transport and access to public transport increased within the project communes. This promoted better use of public transport by community members to travel to destinations beyond their sphere of everyday living.

The development of road infrastructure at county and village levels has helped promote area-wide road network operations, linking the rural areas to surrounding networks to boost access for isolated rural areas and extend the socio-economic benefits of a project. The development of transport infrastructure also poses a number of social costs. According to Mock et al. (1999), road accidents might be identified as a social cost of infrastructure development and poorly maintained vehicles which impacts particularly severely on children. Mock et al. (1999) reflects that more and better roads travelled by more and faster vehicles, will probably lead to higher road accident rates for all ages. From this perspective the social (and economic) cost of transport infrastructure improvement can be very substantial.

Another key issue around access to services relates to market access. In the study the concept of market access proxy was used to determine the local community's access to markets. Health facilities in most areas within both the Makhado and Thulamela Local Municipalities are almost solely available in the towns of Makhado and Thohoyandou respectively. So it is quite likely that "travel time to nearest health facility" is a good proxy for travel time to nearest major town.

In this case, key arguments arise based on the fact that access to a health facility influences poverty, not through transport infrastructure or town market access *per se* but through the health facilities themselves. Likewise, access to a town market may improve access to education, which in turn effects poverty. In order to more closely capture the effects of access to markets, a statistical conditional logistical regression analysis was computed on two variables related to access to educational and health facilities.

5.4.4.1 Access to educational facilities

According to Porter (2003:7), the assessment of the impact of transport intervention in accessing educational facilities, specifically by young children, provides a clear-cut opportunity to focus on social as opposed to economic impacts. However, in the case of adults, it is frequently difficult to disentangle social from economic impacts. Improved transport does not necessarily mean better access to schools, health care and other social services for children. It can also mean more work, particularly when youth become involved as transport operators (Porter 2003).

In this study access to educational facilities, in terms of the time used to reach these facilities, was used to measure the differences between the two groups in the study. The study used the comparison of means of household size of the two study groups. However, before comparing the means of the two sampled groups, the variance of the two independent sample groups were compared using the variance ratio test (sdtest) and the results are shown in table 5.2 (a).

Table 5.2 (a): Variance ratio test on access to educational facilities

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
Treatment	64	32.34375	2.314467	18.51573	27.71866	36.96884
Control	64	36.875	1.996711	15.97369	32.88489	40.86511
Combined	128	34.60938	1.535554	17.37282	31.57079	37.64796
ratio = sd(Treatment) / sd(Control)					f =	1.3436
Ho: ratio = 1					degrees of freedom =	63, 63
Ha: ratio < 1		Ha: ratio != 1		Ha: ratio > 1		
Pr(F < f) = 0.8781		2*Pr(F > f) = 0.2439		Pr(F > f) = 0.1219		

Since $P = 0.2439 > 0.05$, it was concluded that there is similar access to educational facilities for both the treatment and the control communes. There is equal variance and a comparison of mean access to educational facilities can be done. The mean access to educational facilities was compared by making use of a two-sampled t-test with equal variance. The results are shown in table 5.2(b).

5.4.4.2 Access to health facilities

The time it took participants in the study to travel to health facilities was used to measure the differences between the two groups with regard to access to health facilities. The means of the times it took to access health facilities for the two sampled groups were compared. Before comparing the means of the two sampled groups, the variance of two independent sample groups were compared using the variance ratio test (sdtest) and the results are shown in table 5.3 (a).

Table 5.3 (a): Variance ratio test on access to health facilities

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
Treatment	64	36.01563	1.919704	15.35763	32.1794	39.85185
Control	64	38.90625	1.690561	13.52449	35.52793	42.28457
Combined	128	37.46094	1.280384	14.48589	34.92729	39.99459

ratio = sd(Treatment) / sd(Control)	f =	1.2895
Ho: ratio = 1	degrees of freedom =	63, 63
Ha: ratio < 1	Ha: ratio != 1	Ha: ratio > 1
Pr(F < f) = 0.8422	2*Pr(F > f) = 0.3156	Pr(F > f) = 0.1578

Since $P = 0.3156 > 0.05$ there is similar access to health facilities for both treatment and control communes. There is equal variance, and a comparison of mean access to health facilities becomes appropriate. The mean access to health facilities, using two-sampled t-test with equal variance, was compared and the results are shown in table 5.3(b).

Table 5.3 (b) Comparison of means on access to health facilities

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
Treatment	64	36.01563	1.919704	15.35763	32.1794	39.85185
Control	64	38.90625	1.690561	13.52449	35.52793	42.28457
Combined	128	37.46094	1.280384	14.48589	34.92729	39.99459
diff		-2.890625	2.55798		-7.952791	2.171541
diff = mean(treatment) - mean(Control)					t =	-1.1300
Ho: diff = 0					degrees of freedom =	126
Ha: diff < 0		Ha: diff != 0		Ha: diff > 0		
Pr(T < t) = 0.1303		Pr(T > t) = 0.2606		Pr(T > t) = 0.8697		

The P-value is 0.2606 > 0.05, which implies that the mean access to health facilities of both the treatment and the control groups are equal at the 0.05 percent level of significance. The empirical data showed that the total mean access to health facilities for the treatment group was 36.01 minutes with travel time ranging from 5 to 80 minutes.

The control group, on the other hand, had a mean access to educational facilities of 39 minutes with travel times ranging between 15 and 80 minutes. Although the mean travel time to health facilities was less for the treatment group (36.01 minutes) than for the control group (39 minutes), the availability of roads did not have a significant impact on travelling time to health facilities.

5.2.5 Employment opportunities

The main aim of the Gundo Lashu programme was to influence the levels of unemployment in the rural areas. Road construction projects invariably have an impact on employment creation, in that direct jobs are created during the construction activities in projects which are aligned with the objective of the programme to draw significant numbers of the unemployed into productive work. In this instance, the overall EPWP targets for the 2004 to 2009 financial periods was to generate approximately 1 million jobs by drawing significant numbers of the unemployed into productive work, accompanied by training to increase their capacity to earn income (Department of Public Works 2007).

In response to the above, the Gundo Lashu programme planned to achieve their objective through the implementation of labour-intensive road development and maintenance projects. Table 5.4 provides a summary of the administrative data on training, employment creation and the extent of the infrastructure constructed within the Gundo Lashu programme.

Table 5.4: Summary of the Gundo Lashu programme outputs (2004-2009)

Project Phases	Length KM	Jobs Created	Person days of work	Persons trained	Persons days Trained
Training Phase	110.5	4 311	1 092 741	1 306	10 453
Post training	112.3	2 516	192 448	948	8 292
Total	222.8	6 827	1 285 189	2 254	18 745

Source: RAL 2009.

The programme created a total of 6 827 jobs and 1 285 189 person days of work from 2004 to 2009 (Table 5.4). During the training phase a total of 4 311 jobs (and 1 092 741 person days of work) were created. The table further reflects that only 192 448 person days of work and 2 516 jobs were created in the post training phase. This is clearly a significant contribution to redressing unemployment, from the perspective of providing the employed with exposure to the world of work. However, these were mostly short-term and unsustainable jobs. Table 5.5 provides a detailed disaggregation of the total number of jobs created in each project phase within the Gundo Lashu programme during the period 2004 to 2009.

Table 5.5: Employment disaggregation by participant groups (2004-2009)

Project Phases	Length KM	Youth	Women	Disabled
Training	110.5	1 838	1 884	13
Post training	112.3	1 158	1 322	2
Total	222.8	2 996	3 206	15

Source: RAL, 2009.

Table 5.5 shows that the programme created a total of 3 206 jobs for women (comprised of females of all age categories) during the project life cycle. Almost 1 884 jobs for women were created during the training stage. The number of jobs decreased to 1 322 during the post training phase. The table further shows that a total number of 2 996 jobs were created for youth (comprised of males and females below the age of 35 years). This included 1 838 jobs which were created during the training phase and 1 158 jobs which were created during the post training phase.

The analysis shows that the total number of jobs created for both the youth and women decreased by almost 50 percent in the post training stage despite the fact that the total road length constructed, increased from 110.5 km to 112.3 km. The sharp decline in employment output creation between the training phase and the post training phase for the period 2008-2009 may be due to limited reporting and unavailability of consolidated programme performance data.

The temporary nature of employment offered under the EPWP must be understood in terms of its objective of providing spill-over benefits (work experience and training), rather than being intended to contribute significantly to aggregate employment or poverty relief *per se*. In this way, in addition to the provision of a temporary cash wage which provides immediate and temporary assistance to participants, the purpose of the temporary jobs created in the EPWP is explicitly to offer training and work experience to the unemployed, in order to improve their labour market performance once they have exited from the programme.

Data analysed in this study shows that the programme managed to improve the quality of the labour supply based on the training and work experience provided to the participants during the duration of the project. Practical work experience and training have the potential to enable those who participated in the programme, to be employed in suitable jobs in the future.

Key findings of the Labour Force Survey (Statistics South Africa 2007) reflects that a total of 12 648 000 South Africans were employed in the year to March 2007 as compared to the total number of 12 451 000 people who were employed during the same period in the previous year (March 2006). The data further reflects that the estimate for discouraged job seekers for March 2006 was 3 683 000. The successive data shows that there were an estimated 3 503 000 discouraged job seekers in South Africa on March 2007. This implies that there was a net gain of 197 000 jobs in during the year March 2006 to March 2007 (Statistics South Africa 2007). From a theoretical perspective it is therefore reasonable to conclude that the implementation of public works programmes, such as the Gundo Lashu programme, had a positive impact on South Africa's unemployment challenges and growth path. The main mechanism through which increased demand for unskilled labour would impact on national economic growth would be the stimulation of aggregate demand.

5.2.5.1 Involvement in work activities

Involvement in different work activities provide an indication of the extent to which project participants are able to make a living or earn an income after the project has ended. The respondents were asked to indicate if they were involved in any or all of a list of seven different activities in the week preceding the survey. They had to indicate "yes" or "no" to each activity. The results from the survey show that larger percentages of people in the treatment group were engaged in specified activities than the people in the control group. The activities provided covered both paid and unpaid jobs.

Table 5.6 shows the different types of work activities which the respondents were involved in. The people in the control group tended to be mainly involved in running a business, helping unpaid in a household business or working for a wage or salary. While these were also the most popular activities among the control group, the number of people involved in each activity was much smaller than in the treatment group.

Table 5.6: Various work activities undertaken by respondents

Work Activities	Treatment	Control
Run or do any kind of business, big or small for yourself or with one or more partners	59%	41%
Do any work for a wage, salary or commission or payment in kind (excl. domestic work)	62%	28%
Help unpaid in a household business of any kind	67%	38%
Do any work on your own or the household's plot, farm, food garden	34%	12%
Do any construction or major repair work, on your own home	52%	23%

The results from the survey (Table 5.6) showed that 38 of the 64 respondents (59%) in the treatment group were involved in running a business or doing any kind of business for themselves or with one or more partners (including family members). Only 26 or 41% of the respondents in the control group were involved in running a business or doing any kind of business. Not surprisingly, of the 64 respondents who participated in the labour-based projects, 33 (or 52%) were involved in construction or major repair work on their home while only 23% of the control group were busy with such activities.

5.2.5.2 Period spent looking for a job

Nearly half (46 percent) of the treatment group had been looking for work for less than three months, 22 percent indicated they had been looking for work between 3 and 6 months, 15 percent were looking for work for less than a year while only 10 percent have been looking for work for more than a year. Responses from the control group, however, depicts a different scenario. Only a small fraction, i.e. 12 percent, had only been looking for work in the past three months and 34 percent had been looking for work for about 6 months to a year. About a third (30 percent) indicated that they did not know how long they have been looking for work but it had been more than a year since they had a job.

Table 5.7: Period of time trying to find work

Period	Treatment	Control
Less than 3 months	46 %	12 %
3 months to less than 6 months	22 %	20 %
6 months to less than 1 year	15 %	34 %
1 year or more	10 %	4 %
Don't know	7 %	30 %

The people in the control group had been out of work for some time due to, according to them, seasonal patterns of employment. When prompted to justify why they exerted little effort to look for work, the control group showed little support for the notion that non-project participants do not wish to work. Arguments against this include the low monetary value of the project wages, which is insufficient for participants to live on, and lack of desire to develop themselves in preparation for future work prospects.

5.2.5.3 Opportunity for future employment

Since the Gundo Lashu programme only provided employment and earnings for a specific period for participants, an important question is what happened to participants' household income after their eligibility for the Gundo Lashu programme employment ended and they transitioned to other market-based employment. One expectation is that a reduction in income due to the loss of the Gundo Lashu programme earnings will be partly offset by increased new employment opportunities. Participating members were encouraged to seek employment in anticipation of lost of the Gundo Lashu programme earnings, and participants were well aware of the duration of their participation in the project.

Although the Gundo Lashu programme is not entirely a training program, participants' job placements provided them with valuable work experience to enhance their skills and improve their employability. The training also provided participants with the opportunity to develop transferable generic or soft skills,

which could potentially make them more effective workers. These skills, such as flexibility, adaptability, teamwork, and problem solving, are difficult to teach but are of great value to prospective employers, and can improve participants' success in finding and retaining employment after the Gundo Lashu programme. The overall positive effects of the Gundo Lashu programme on key working skills provides hope that a community-based employment program can improve participants' employability, even if many of the community jobs are lower skilled. Although the Gundo Lashu programme did not include any formal mechanisms to encourage working skill development among participants, these were enhanced through the provision of basic job readiness training, combined with varied work experience.

The offering of skills training and capacity building programmes to participants in exchange for their participation in the Gundo Lashu programme can lead to changes not only in participants' skills, but also in their attitudes towards work. Participants in the Gundo Lashu programme typically did not have a strong attachment to the labour market before participation. The participation of the treatment group in the Gundo Lashu programme is expected to offer them a marked change in their employment situation in future. This change is reflected in their responses in terms of the programme's effects on their attitudes towards work thereby excluding them from the "discouraged work-seekers" category as described by Statistic South Africa (Statistics South Africa 2007).

In line with the quarterly labour force guide, discouraged work seekers are categorised on the basis that they wanted to work and the main reason why they did not try to find work was because there were no jobs available in the area, they were unable to find work requiring their skills and or they have lost hope of finding any kind of work (Statistics South Africa 2007).

The responses obtained from both the treatment and the control groups on the question regarding the possibility of finding a job were subjected to a conditional logistic regression analysis. A conditional (fixed effects) logistic

regression (clogit) was calculated for jobs, age, gender, marital status and levels of education. The results obtained are presented in table 5.8.

Table 5.8: Possibilities of finding work

Job	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
age	-0.03963	0.04573	-0.87	0.386	-0.12926	0.05001
gender	-0.33914	0.78789	-0.43	0.667	-1.88338	1.20510
marital	0.04385	0.27899	0.16	0.875	-0.50297	0.59068
educat	-0.37624	0.53256	-0.71	0.480	-1.42005	0.66757

The P-values obtained for the variables age, gender, marital status and levels of education were all larger than 0.05. At the 0.05 level of significance, there is no statistically significant difference between the control group and the treatment group when it comes to the possibility of finding work in future. It seems as if the intervention in terms of participation in the programme did not achieve the intended aim of assisting participants in obtaining jobs after their involvement in the programme ended.

The responses to the questions whether they worked for pay during the week preceding the survey, indicated that many of the treatment group (those who participated in the Gundo Lashu programme as workers) did not have a job and that they have returned to the unemployed labour pool after their term in the short-term public works programmes. Most of them were not absorbed into other labour-intensive programmes, such as the programmes within the social or environmental sectors, after completing their term with the Gundo Lashu Programme. The implementation of multiple short-term public works projects may therefore serve only to churn the unemployed, replacing one cohort of unemployed with another in the short-term employment projects. People are only removed temporarily from the pool of unemployed labour and the programmes are not addressing the underlying problem of unemployment, nor are they having a significant or sustained impact on the livelihoods of the participants.

5.2.6 The impact on personal and household income

This section presents the results of the counterfactual analysis and shows the impact that labour-intensive construction within the Gundo Lashu programme had on rural household's per capita income and consumption. The various rural roads projects affect the income of the beneficiary population through different mechanisms. Key among this is the impact on household per capita income and the development of income generating opportunities. In the case of the sampled study areas, it was expected that household consumption would increase in the control group (the household were people participating in the Gundo Lashu projects) due to an increase in household income, and this will consequently reduce poverty in the area.

The effects of road infrastructure on income structure cannot be established *a priori* and it remains an essentially empirical issue. Administrative data on financial reporting for the Gundo Lashu programme made it possible to compare the income level and composition of households who benefited from the sampled projects, with income level and composition of households of the non-participants or respondents from communes who did not have projects (control group).

5.2.6.1 Personal income analysis (wage level)

Wage levels in the Gundo Lashu programme is determined and governed by the terms of the Code of Good Practice for Special Public Works Programmes (Department of Public Works 2007). Contractors are contractually required to employ local workers on the basis of gender, age disability and quotas. This was because of difficulties in setting up labour-intensive wages in line with the legislated (or regulated) minimum wages. Within the sector there was fear of cases where the rate could be set too high if compared with prevailing unskilled market wages for similar work in the areas concerned and this would result in the project not being economically viable. In other cases there was a fear that the minimum rate could be too low to attract and motivate workers.

In general, the administrative data obtained from RAL shows that the total overall wages for the Gundo Lashu programme was R40 981 655. This amount is divided into R32 933 255 for wages paid during the training phase and R8 048 400 paid to project participants in the form of wages during the post training phase. The administrative data on compensation of employees for the Gundo Lashu programme participants per sampled project is summarised in Table 5.9 and 5.10 respectively.

Table 5.9: Total project wages paid in Thulamela Local Municipality

Municipality	Road Number	Road Length KM	Number of Jobs	Total wages in Rand
Thulamela Local municipality	D3724	10.5	220	17 077 750
	D3695	12.6	453	2 733 730
	D3700	7.8	111	974 010
	D3696	6.3	128	974 010
Total		36.2	912	R21 759 500

Source: RAL, 2009.

This shows that a total amount of R21 795 000 was earned by beneficiaries for road construction in the sampled projects in the Thulamela Local Municipality and R1 871 236 was paid in the form of wages to the participants in the Makhado Local Municipality (Table 5.10).

Table 5.10: Total project wages paid in Makhado Local Municipality

Municipality	Road Number	Road Length KM	Number of Jobs	Total wages in Rand
Makhado local municipality	D4016	1.6	246	693 040
	D3676/D5003	3.3	43	145 500
	D3700	5.2	73	139 650
	D5003	3.5	65	893 046
Total		13.4	427	R1 871 236

Source: RAL, 2009.

Within the labour-intensive employment spectrum, wages can be negotiated; hence employers are not governed by the industry minimum wages. As compared to other labour-intensive public works programmes, the study found

that the wage level for the Gundo Lashu programme has been set at a 'moderate' rather than low level to cater for trade-off between coverage and impact, since higher wage would mean fewer participants and greater rationing of employment opportunities.

For the Gundo Lashu programme the industry minimum wage level was about R50 per day (US\$ 7.0) during the post training stage (RAL 2009). This can be compared with wage levels in labour-intensive projects in other Southern African countries. The results of an ILO comparative analysis of labour versus equipment-based techniques in the road sector of Lesotho and Zimbabwe, showed a variation in the magnitude of the wage levels of their labour-based programmes (Tajgman and de Veen 1998).

In Lesotho wage levels were set at the relatively high wage rate of US\$ 4.90 per day (i.e. the set minimum wage at the time of the study). The break-even wage rate for Lesotho (the wage level up to which the labour-based technique remained more competitive than the equipment-based technique) was US\$ 14.50 per day, which is exceptionally high (in most countries the break-even wage would not be higher than US\$ 4). The results for Zimbabwe, in the same study, showed a rather narrow margin. While the minimum wage rate at the time of the study had just been increased to US\$ 2.82 per day, a wage of US\$ 1.14 was still applied in rural areas. Compared to the wages paid in Lesotho and Zimbabwe the wages received by the participants in the Gundo Lashu programme is moderate to high.

Besides the wage level, various concerns were raised by project participants such as the inconsistent implementation of wages and the application of wage rates and confusion and uncertainty over the period of participation and the duration of project implementation. While the limitations of investment in roads as an instrument of economic and social change have been recognised for more than a decade (Howe 2003), it is clear that the most direct benefit of investment in road infrastructure is the income resulting from employment on

the physical works. All other benefits are indirect and depend on the movement of people and goods becoming more efficient i.e. faster, cheaper, more frequent, or more reliable.

5.2.6.2 Household income analysis

Existing evidence suggests that unemployment is a critical determinant of poverty in South Africa. However, not all households are equally vulnerable to trade-induced losses of employment. This section, therefore, proposes to use household income data to analyse the impact of the Gundo Lashu programme on household income. The Income and Expenditure Survey (IES) of 2005/2006 (Statistics South Africa 2008b) estimated the annual gross income of South African households at R929,2 billion. The bulk of this (74,3% of gross income) was derived from work activities, with salaries and wages totaling R599,9 billion (64,6% of gross income) and self-employment and other business income totaling R90,9 billion (9,8% of gross income). Social insurance and grants accounted for 6,1% of gross income, equivalent to R56,8 billion. Within this category, state old age and war pensions (R25,3 billion) and family and other allowances and grants (R20 billion) were the most important (together accounting for 4,9% of gross income) (Statistics South Africa 2008b).

The information on the respondents' household income obtained from the responses to the questionnaires was used to assess the impact of the Gundo Lashu programme. Total household income was calculated by aggregating income from all the sources provided by the respondents. A comparison of mean household income of the two sampled groups was made. Before comparing the means of the two sampled groups, the variance of the two independent sample groups was compared using the variance ratio test (sdtest) and the results are shown in table 5.11(a).

Table 5.11 (a): Variance ratio test on Household Income

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
Treatment	64	1669.375	161.454	1291.632	1346.735	1992.015
Control	64	1324.844	142.0876	1136.701	1040.904	1608.783
combined	128	1497.109	108.1974	1224.114	1283.006	1711.213

ratio = sd(Treatment) / sd(Control)	f =	1.2912
Ho: ratio = 1	degrees of freedom =	63, 63
Ha: ratio < 1	Ha: ratio != 1	Ha: ratio > 1
Pr(F < f) = 0.8435	2*Pr(F > f) = 0.3131	Pr(F > f) = 0.1565

Since $P = 0.3131 > 0.05$ (Table 5.11(a)), it was concluded that household incomes for both the treatment and the control communes are comparable and a comparison of mean household income was done. The results of the analysis are shown in table 5.11(b). The P-value is $0.1117 > 0.05$ and therefore the mean households' income of both the treatment and the control groups are significant at the 0.05 percent level.

Table 5.11 (b) Comparison of means on household's Income

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
Treatment	64	1669.375	161.454	1291.632	1346.735	1992.015
Control	64	1324.844	142.0876	1136.701	1040.904	1608.783
combined	128	1497.109	108.1974	1224.114	1283.006	1711.213
diff		344.5313	215.0728		-81.091	770.1539

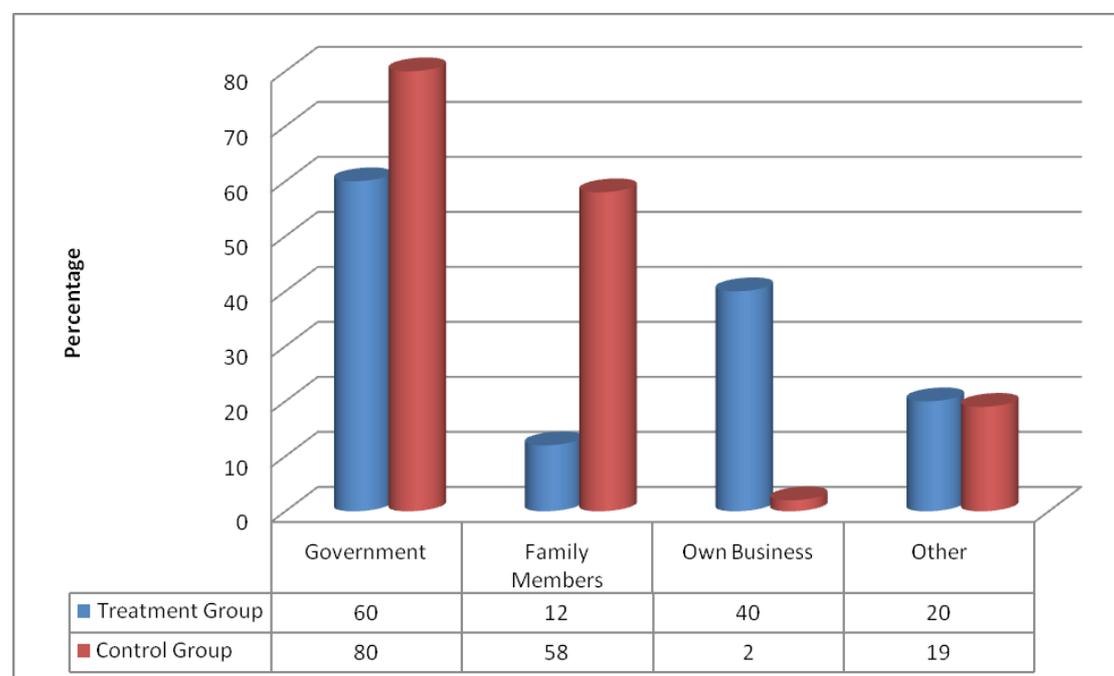
diff = mean(Treatment) - mean(Control)	t =	1.6019
Ho: diff = 0	degrees of freedom =	126
Ha: diff < 0	Ha: diff != 0	Ha: diff > 0
Pr(T < t) = 0.9442	Pr(T > t) = 0.1117	Pr(T > t) = 0.0558

The mean monthly value of household income for the treatment group was R1 669.37, with a minimum monthly household income of R180.00 and a maximum of R3 090.00. For the control group the mean monthly household income was R1 324.844 with household income ranging between R400.00 and R4 000.00. In both cases the data were skewed by high transfers from private maintenance, government social security transfers, pensions, and other transfers.

Figure 5.2 shows the various income sources of the two study groups. Respondents were asked to indicate the amounts of income they receive from various sources. Most respondents received income from more than one source. About 60 percent of the treatment group (households where a member is involved in the Gundo Lashu programme), and 80 percent of the control group, received government support in the form of grants and other social transfers.

Among the treatment group, almost 20 percent would not disclose their major source of financial support. A mere 12 percent of the respondents reported that they receive financial support from family members while 40 percent had their own business. In the control group a large percentage of respondents (58%) received financial support from their family members while only 2 percent were involved in their own business. Almost 19 percent reported other sources of income as they did not want to disclose their major sources of financial support.

Figure 5.2: Respondents' household income sources



In contrast to the notion that the Gundo Lashu programme would have a direct impact on the respondents' household income, the study found that the

impact was statistically insignificant. It appeared that the development and maintenance of local roads through areas in which the Gundo Lashu programme was implemented did not improve household incomes in the affected communes, since there was no evidence that the wages of the project participants increased the total household income significantly.

When considering wages earned within the Gundo Lashu programme, the average duration of employment is four months where programme participants are exposed to one episode of employment for a four month period. These projects are therefore not a sustained source of income and not a remedy for chronic poverty. This conclusion is based on the fact that the stabilisation effect of income is contingent on the length of the period over which employment is offered, and it is achieved through sustained employment, provided either through a medium to long-term programme or cyclical employment provision at times of minimum labour market demand. Furthermore, the short-term nature of their participation did not provide the people in the treatment group with an opportunity to accumulate assets which would then enable participants to move out of poverty.

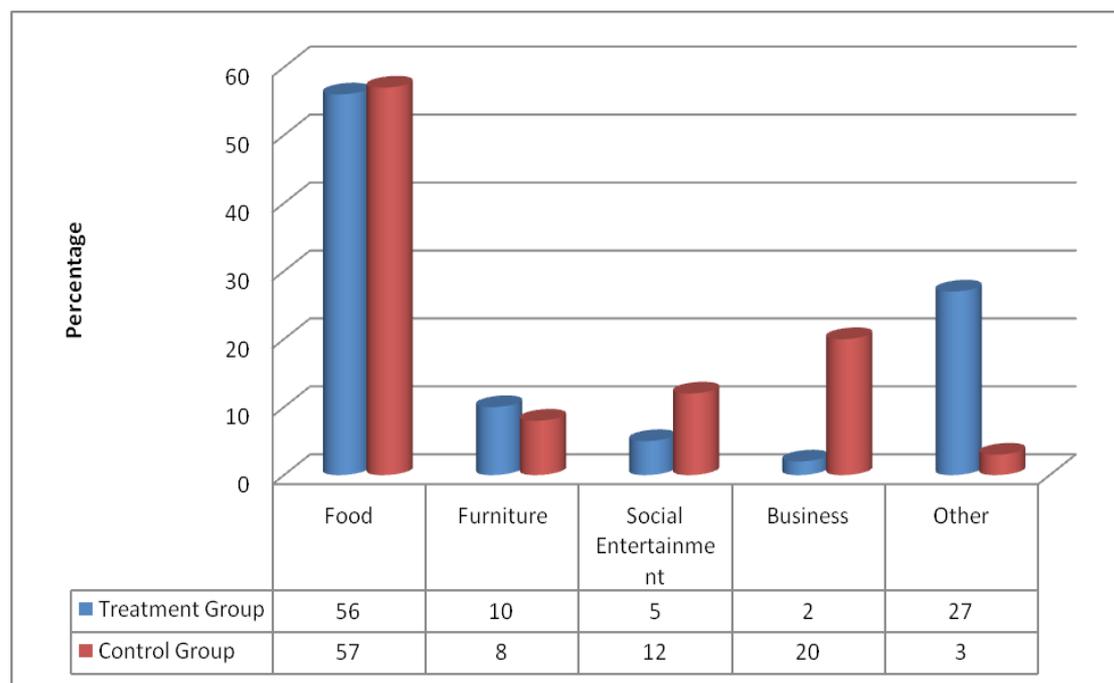
It can therefore be concluded that while the Gundo Lashu programme led to large gains in earnings during the course of the project, it had no specific long- term effect on the treatment group's household income. Even though the treatment group members had experienced large significant gains in personal income this was offset by the communities over reliance on substantial government social assistance programmes, such as child support grants, leading to virtually no increase in total household income.

5.2.6.3 Household expenditure pattern

This section considers how the household income was spent in order to gain further insight into the effect that project wages had in the households of treatment group (project participants). Respondents were asked to estimate the amounts that they spent each month on a range of expenditure categories.

Figure 5.3 depicts the contribution of each category to the overall household expenditure. The data reveals that more than half (56%) of the treatment groups' income was spent on food. This is much the same as the almost 57 percent spent on food by the control group. For both the groups, expenditure on food was the largest expenditure in the household budget. The statistical test of significance shows that there were no significant differences between the treatment and control groups in terms of the proportion of household expenditure per defined expenditure class. The incomes derived from participation in the projects therefore appears to be primarily used to buy essential food. Given the modest cash value of the project wages, it is not likely that the income could be used to cover a wide range of expenditure.

Figure 5.3: Household expenditure classification



Although project wages are targeted at specific categories within the households, the discussions thus far suggest that in families where a member is a programme participant, their project wages are pooled with other income sources such as government welfare grants to meet the broader needs of vulnerable families. To explore this issue further, respondents were asked to indicate how they spend their project income on a monthly basis. This was a huge challenge since most of the respondents indicated that they do not keep

transactional records of all their monthly purchases. The study thus relied on their speculations.

Table 5.12: Target of expenditure among the treatment group

Work Activities	Treatment group
The money is spent exclusively on children e.g. food, school fees, children's medical costs etc.	16%
A portion of the money is spent exclusively on my personal needs.	12%
The money is pooled with other household income to cover general household expenses.	67%
Other, Specify	5%
Total	100

Table 5.12 shows that 67 percent of households that received wages and salaries from the Gundo Lashu programme, pooled the money with other income to cover general household expenses. This was to be expected, as household budgets are rarely compartmentalised particularly when it comes to expenditure on food. However, almost 16 percent of the respondents reported that they spend their salaries and wages exclusively on their children. This must, however, be seen within a context where pooling of project income is combined with child grants and other income which generally contributes to the improved functioning of a poor household.

Besides evidence that the Gundo Lashu programme is reaching poor households and making a significant contribution to household income, there is also evidence that the participation of poor rural households enabled them to open bank accounts and thus promote some form of savings. Project participants also tended to be involved in financial decision making either alone or jointly with others in their households regardless of gender, and generally had some say in how the project incomes were spent.

5.2.7 Promotion of household's livelihoods

Together with the duration of employment and wage level, households' livelihoods and sustainability are critical determinants of the significance of development projects. Generally, this is based on the fact that the poor use incremental income to satisfy basic consumption needs first, and then invest in human (education and health) and social capital, and only thereafter do they invest in income generating activities. The public works wage therefore only impacts on productive investment if it is larger than the consumption needs of the household. In line with this, the study found that investments in the development of road infrastructure have had significant direct and indirect impacts on the general level of economic development in each of the project communes.

Within the literature on the development of the informal sector, some researchers have noticed the existence of a sub-category of businesses that faces growth barriers in the economy, and they have named this subcategory survival (ist) enterprises (South Africa 1995). The study found evidence of the development of these businesses by both the project participants and other local community members. Survivalist entrepreneurs do not start their business by choice but because they cannot find wage employment; they attempt to increase security and smooth consumption rather than maximising profit. For this purpose, they diversify their activities instead of specialising; and even the relatively successful ones find it difficult to accumulate capital under the imperative of sharing in the moral economy of the poor.

According to South Africa (1995), survivalist enterprises represent a set of activities undertaken by people unable to secure regular wage employment or access to an economic sector of their choice. Generally speaking, the incomes generated from these businesses, which tend to be run by women, usually fall short of even a minimum standard of income, with little capital investment, virtually no skills training and only constrained opportunities for expansion into a viable business. Overall, poverty and a desperate attempt to survive are the prime defining features of these enterprises. Moreover,

survival entrepreneurs operate in an environment characterised by unreliable institutions, negligent or even predatory government agents, and multiple but volatile sources of household income. In Wood's (2003) term, they survive by 'destructive uncertainty'. These entrepreneurs have to cope not just with short-term shocks but also with unpredictable hazards, and the avoidance of unnecessary risks is absolutely imperative.

Improved roads and the ability to transport goods better provide opportunities for those who can afford to invest in business start-up initiatives such as informal markets and linkages with other bigger markets. Often one of the first impacts of a new road is on local periodic markets. Porter (2003:10) reported on cases in Nigeria, Ghana and Kenya, where the building of major new paved roads led to the quite rapid re-organisation of the marketing system, encouraging the decline and demise of many smaller off-road markets. The main argument is that the impact of market decline, especially in areas where population density is low is not necessarily only economic, since the market tends to have an important social function. For certain groups, and in particular circumstances, the social impact of market loss occasioned by road construction can be very substantial, as was the case in Borneo in the 1980s and 1990s. Residents in off-road locations who are less mobile due to physical, financial or cultural constraints, notably the very poor, the disabled and elderly, children, and women whose travel is constrained by cultural conventions are particularly vulnerable (Porter 2003).

With regard to the opportunity for business start-up, the study found that 17 percent of the respondents in the treatment (project participants) started businesses since the roads were constructed, with almost 69 percent of them indicating that the road was a deciding factor for business start-up. The majority of these businesses were small informal markets along the roads, supplying consumable and agricultural products to local community. Experiences within the communities involved in the Gundo Lashu programme can be linked with similar experiences from labour-intensive programmes in Ghana. In Ghana small contractors were trained to rehabilitate and maintain

feeder roads using employment-intensive methods. As a result, the programme assisted in the establishment of 93 domestic contracting firms, of which 54 were equipped with appropriate light hauling and compacting equipment (Tajgman and Jan de Veen 1998).

Other experiences in countries such as Colombia also provide useful information on how labour-intensive programmes can promote household livelihoods of the local communities. According to Tajgman and Jan de Veen (1998) the Colombian government, through its Ministry of Public Works and Transport, initiated a project in 1984 for the maintenance of roads through micro-enterprises. In 1993, some 400 of these enterprises maintained the greater part of the 25 000 km of Colombia's road network and employed approximately 5 000 unskilled workers for this purpose. Micro-enterprises established themselves as an association with a legal status recognised by the National Cooperatives Department.

Within the project communes, the study found that there has been a better availability and mix of transport services, and an increased flow of goods and services. These areas are primarily agricultural communities with higher vulnerability to natural shocks or fluctuations in commodity prices. Their ability to diversify to other sources of income was, therefore, important to reduce poverty. In practice, it is those community members who are most secure and with savings who are able to make the best use of the opportunities from better road infrastructure. However, the outcomes of the Gundo Lashu programme in the sampled study areas suggest that better rural roads have allowed those with some savings to diversify into activities with substantial better returns. Project communes have demonstrated the ability to generate surplus funds to invest in trading (even at very modest levels), purchase products to sell, or create a network of connections and relationships outside the community enabling them to take advantage of trading or working opportunities.

5.3 Overall impact of road infrastructure development

5.3.1 Empirical evidence from other projects

Road infrastructure development programmes have been a significant factor of economic growth and development in various parts of the world. The World Bank (1994) employed an empirical approach to explore the association between road infrastructure and economic development. Different regression analyses were carried out using GNP per capita as dependent variable and selected indicators of magnitude and condition of road networks as independent variable.

The results from the cross-section and time-series analysis of data from 98 countries, showed consistent and significant associations between economic development, in terms of per capita GNP, and road infrastructure, in terms of per capita length of paved road network. The data show that the per capita stock of road infrastructure in high-income economies is dramatically greater than in middle and low income economies. For instance, the average density of paved roads (km/million inhabitants) varies from 170 in low income economies to 1 660 in middle and 10 110 in high income economies; the latter being 5 800 percent higher than the low-income group. Road conditions seem to be associated with economic development: the average density of paved roads in good condition (km/million inhabitants) varies from 40 in low income economies to 470 in middle and 8 550 in high income economies World Bank (1994).

The findings of the World Bank (1994) indicate that there is a clear contrast between road infrastructure and income in low and middle income economies in Africa. The difference in average per capita GNP between the two country groups is 220 percent, the density of paved roads in good condition varies by about 370 percent from one group to the other. Various authors have examined the issue of causality and it is plain that the direction of causation between changes in income and changes in road infrastructure is not clear-cut.

In line with various opinions presented above, the purpose of this section is to establish the overall impact of the Gundo Lashu programme on general issues related to access, households' livelihood and poverty reduction. Travel time, or isolation, has been established as a significant determinant of poverty reduction in a variety of studies, although estimates of the size of the impact vary substantially. Kwon (2000) finds that a 1 percent increase in road investment was associated with a 0.3 percent decrease in poverty incidence through direct impact on wage and employment in Indonesia (Kwon 2000). Jalan and Ravallion (2002) found that for every 1 percent increase in kilometre of roads per capita, household consumption increased by 0.08 percent in poor regions in China (Jalan and Ravallion 2002). Glewwe et al. (2000) reached the conclusion that rural communes in Vietnam with paved roads have a 67 percent higher probability of escaping poverty than those without. Several studies found that rural roads have a very high impact on poverty reduction in places as diverse as India and Uganda (Fan 2008).

5.3.2 Impacts of the Gundo Lashu programme

In line with the variation in research findings presented above, the analysis of the impact of the Gundo Lashu programme on the communities participating in the programme, was also mixed. The participants received training but the training was not successful in enabling participants to obtain sustainable employment after leaving the programme (section 5.2.1). Creating and running a small business was a more common activity among the treatment group than the control group (section 5.2.5.1). The time spent looking for a job was also very different in terms of the two groups. A large percentage of the treatment group (those who participated in the programme) job-hunted for less than 3 months, while in the control group a large percentage job-hunted for more than six months (section 5.2.5.2).

The Gundo Lashu programme created and improved infrastructure in the two local municipalities and enabled participants in the programme (treatment group) to travel more frequently. The non-participants (in the control group) were of the opinion that roads constructed did not have a positive effect and it

was a waste of government money (section 5.2.3) The provision of roads and the participation in the programme shortened the time to access basic services such as educational and health facilities (section 5.2.4). These findings are consistent with findings by Mashiri et al. (2005) who found that the construction of the Amadiba road in the Eastern Cape province of South Africa had significantly reduced travel time and increased journey comfort. Where it took more than four hours for villagers and tourists to travel from the R61 to Mtentu before the project, the average time after the project was reduced to less than two hours. For the Amadiba community the reduced travel time and comfort as a result of the upgraded road were important factors that contributed to their quality of life (Mashiri et al. 2005:862).

Given the poor state of infrastructure within the Gundo Lashu communities, it can be concluded that travel time is also an important determinant of rural poverty, although it must be kept in mind that other weaknesses in the economy could reduce those advantages of proximities to towns and markets (e.g. poor public service delivery).

The Gundo Lashu programme had a mixed effect on the household income of members of treatment and control groups. The extent to which the programme participants (treatment group) reported having increased hardship at the end of the programme may be due, in part, to project participants experiencing a larger reduction in earnings after completion of the project. While they were not observed to be less likely to meet their necessary financial obligations, such as groceries, housing, and day-to-day expenses, some project members had other financial obligations, such as consumer credit, while they were working in the Gundo Lashu programme. Therefore, these members were unable to meet those commitments once they were no longer receiving the Gundo Lashu earnings. However, the programmes' effects on personal finances did not indicate that the Gundo Lashu programme led to any substantial differences in the extent to which program group members reduced their savings or increased their debt obligations after they left the program.

The control group settlements were almost inevitably affected since they were disadvantaged in the allocation of public resources similar to the Gundo Lashu programme communes. Such funding allocations could have been used on other services such as schools and clinics, which for maximum economic benefit have to be located centrally when resources are scarce. These findings are consistent with that of Creightney (1993) who found that there are complex linked social and economic impacts of off-road residences, not merely physical deprivations and economic disadvantage, but also negative perceptions of isolation and invisibility which themselves impact on economic and social conditions. Of course not all residents will be disadvantaged to the same extent. Indeed, as discussed above, the burdens of communities away from the programme intervention, notably the above-average transport burden associated with head-loading goods to and from the paved road, often fall most heavily on women and their children.

Since the Gundo Lashu programme had mixed effects, it is no surprise that it had a divergent effect on participants' livelihood in line with the hardship experienced by the programme participants after the project completion. The participants in the treatment group were more prone to report having experienced hardship after their participation, with 86 per cent reporting that their household income met little to none of their needs. On the other hand, almost two-thirds of the control group members reported that their income met nearly all of their household expenses and financial needs.

There was, however, some indication that a large number of respondents among the treatment group faced increased hardship following the end of their participation. The general conclusion drawn from the analyses reflects that although many participants were unable to find employment immediately after the end of the programme, there was an expectation that those who continued searching for jobs would be in a better position to acquire jobs than they otherwise would have been had they not participated in the Gundo Lashu programme. However, to measure this impact one needs to wait longer for participants to actually find employment since it is premature to assess overall

tangible impact at this stage. As indicated in table 5.7, the majority of the Gundo Lashu programme participants are job-hunting. Looking for a job serves as a reliable indicator of the success of the programme, hence it gives us an indication of the possibility of employment in the future.

5.4 Assessment of the planning and implementation of the Gundo Lashu programme

The analysis of data obtained from the interviews with project participants and the secondary data such as the project administrative data, monitoring and evaluation framework and IDP reviews, highlighted a number of key challenges and barriers which are detrimental to the success of the Gundo Lashu programme. Key among these is the political influence on road infrastructure development and maintenance. Political interests have had a strong influence on road alignment programmes across much of sub-Saharan countries, and the Gundo Lashu programme is no exception.

In 1960, shortly after Ghana achieved its independence, Gould asks rhetorically: If an area is known to be a strong-hold of the Opposition, will it get funds for tarring its roads? When roads are built around the villages of the Opposition chief, is it simply a matter of terrain and drainage (Porter 2002:292)? Clearly roads cannot be built everywhere, but it is important to acknowledge the political factors which influence road construction and maintenance programmes. Political motivation can lead to inefficiencies as well as inclusion and exclusion in terms of the targeting of communities and people who should be participating in the transport infrastructure investment programmes. Some of the key challenges faced by the Gundo Lashu programme are classified and discussed in this section. The following topics will receive attention: management and planning barriers, structural and functional barriers, human resource barriers, and funding barriers.

5.4.1 Management and planning barrier

All EPWP infrastructure projects, including the Gundo Lashu programme, are funded through Municipal Infrastructure grants which are allocated through the department of Provincial and Local Government. Municipalities are required to identify possible infrastructure projects through the IDP process and prioritise projects that are suitable and amenable for labour-intensive methods.

Roads within the Gundo Lashu programme were planned through the IDP process. The community is normally informed of the project and its intended scope during the design stage. One of the two identified shortcomings was that not enough technical information was provided to the local communities. This task, which should be performed by the civil consultant, should be presented at the early stage of project implementation. This process is meant to get buy-in from local community structures both as it relates to the method of construction and the extent and scope of the project. Although this is perceived as an initial indication and an estimate by the project team, it is perceived as a promise by the community. When the limited budgets at a later stage depict the actual scope, or increased material prices for the project, it creates unhappiness in the community.

During the survey and interviews with the participants in the control group the researcher found that these communities did not want roads constructed by labour-intensive methods in their areas and would prefer contractors to use conventional methods. This raised questions regarding the significance of employment generated through these projects and alleviation of poverty levels. It creates an impression that most communities do not regard labour-intensive road projects as a value-adding activity.

These findings are in line with the findings of McCutcheon (1989:119) who pointed out that labour-intensive methods are widely regarded as backward and rejected as incompatible with the modern world. Even after construction by means of labour-intensive methods the taint of backwardness still lingers.

A common assumption about labour-intensive work is that it is only pick-‘n-shovel work because the tools and techniques are simple, the work involved is not “proper” engineering and therefore does not require thorough analysis and planning. This attitude is, according to McCutcheon (1989), exacerbated by the lack of appreciation of the sound theoretical basis for the substitution of labour for equipment, because it is not known that good results can be achieved and no attempt is made to be competitive. The information obtained from the participants in the Gundo Lashu programme also revealed that mismanagement of various related projects by contractors and the poor standard of workmanship on some roads, undoubtedly contributed to these negative attitudes towards labour-intensive construction methods.

With regard to project prioritisation, interviews with RAL showed that the agency attempted to meet the IDP objectives by adhering to the prescribed planning processes. Contrary to this, another secondary source showed that the planning process for most of the projects under the Gundo Lashu programme were *ad hoc* in nature. Some projects were initiated as a result of a crisis, some lacked spatial focus and projects often did not have any links to municipal or local rural development and infrastructural planning. An example is the Madabani project which was initiated in response to a train and bus accident which killed 25 people in 2007.

From the secondary data, it is evident that the prioritisation of projects within the Gundo Lashu programme should take advantage of all opportunities that pertain to the establishment of infrastructure in the broader public interest. This would then lead to instil a sense of ownership and pride in the programme participants. Furthermore, in pursuit of this approach, the prioritisation of projects within the Gundo Lashu programme would instil a desire to pursue investment where the programme is composed of projects aimed at creating infrastructure, geared particularly towards the needs of the poor.

While there are a number of management barriers that exist within the programme, anecdotal findings revealed that districts and local municipalities

have to a large extent not been able to realise their planned targets for the projects under the Gundo Lashu programme. This was a result of inadequacies both from the Department of Labour, Districts Councils and the province. This, in particular, relates to lack of policy direction, but also incorrect application of the defined policy and guidelines. These findings reaffirm the conclusions of Mashiri et al. (2005) that governance issues in the management of community-based projects are critical and that there is a need for a legitimate, balanced and representative institutional framework underpinned by a consistent management structure, which is appropriately located in the overall scheme of things. Within the Gundo Lashu programme, these shortcomings resulted in the municipalities not discharging their roles and responsibilities, such as supervision, monitoring and evaluation as intended. A number of the inadequacies identified from the secondary data sources include:

- Inappropriate decisions and recommendations related to the recruitment and appointment of project workers.
- Inappropriate decisions related to the products used for road surfacing.
- Undue and unwarranted vertical and horizontal reporting.

The EPWP does not prescribe to contractor employers either how labour should be recruited or how to deal with applications for employment from individuals who are willing to participate in the projects. For this reason, EPWP contractor employers in the study area worked closely with community structures, including the Community Liaison Officer from the project host communities. This is done for the purpose of the identification of potential project participants. The research, however, identified the following problems with the implementation of this approach:

- Decisions on the communities from which people are recruited are not properly regulated and it is left to employment contractors to decide. The equitable distribution of benefit from the EPWP is therefore not regulated.
- There is no standardised description of the tasks, duties and procedures to be completed in terms of the community liaison function of contractor

employers. Therefore, this function can in effect be executed by each contractor employer as he/she deems fit.

- The recruitment and application of programme participants are not properly regulated. Therefore, the process is open to abuse. Participants can for example be recruited into the EPWP more than once and unsuitable participants or people outside of the population targeted by the EPWP may find their way into the programme.

With regard to the planning, and in terms of the prioritisation of projects under the Gundo Lashu programme, an analysis was done of the planning prescripts as outlined in the Spatial Planning Framework for South Africa, which emphasise that development and spatial projects should be created around the demands of developing the country's existing infrastructure. The results of the analysis show that unnecessary infrastructure projects are being created in various communities in order to ensure that EPWP projects take place.

The prioritisation of infrastructure projects for the benefit of a labour-intensive public works programme is important. In fact, if an expanded labour-intensive PWP is decided upon, then it is imperative for the successful pursuit of such a programme that all relevant structures re-orientate themselves to give precedence to already planned or need-based infrastructure projects, that lend themselves best to the purposes of such a programme as far as possible.

An analysis of the secondary data showed that at project completion stage, most sampled projects were delayed in work completion. The reasons for the delays were as follows:

- The contractor worked on too many projects at the same time.
- Seasonal fluctuation in the cost of major construction materials, such as cement.
- The contractor expected the material cost to reduce during certain seasons and therefore preferred to wait and be fined for the delay.

- Labour shortage during agricultural seasons.
- Problems with working conditions due to adverse weather conditions.

It was further found that most work was carried out by subcontractors and employees of the main contractor were rarely present on site. In the cases where labour subcontractors were employed, the contractor's supervisor only made very brief visits to the construction site to check on work progress and requirements of construction materials.

With regard to training and inter-departmental coordination, training on labour-intensive projects during the construction stage was to be coordinated and funded by the Department of Labour and facilitated by the service provider identified and contracted by the Department of Labour. Research found that there were various challenges with regard to this arrangement. Firstly, the process of RAL and the Department of Labour differ greatly and it was very difficult to coordinate exact stages which were suitable for both the employees and the contractor. This resulted in impediments on skills transfer and as a result some participants finished their project prior to receiving any training. This has led to negative attitudes towards the project in participants as well as causing the project to diverge from its intended objectives.

With regard to monitoring and evaluation, the Department of Public Works in consultation with other government departments has developed a monitoring and evaluation framework for the EPWP. This framework was adopted for reporting in the Gundo Lashu programme. The research, however, found that the EPWP monitoring and evaluation focus was aimed at a national level, with a focus on higher level objectives and outputs and representing a more strategic perspective to performance management and reporting. The framework was based on the assumption of increased harmonization of reporting in the assessment of progress, but has limited scope to measure the long-term results of such projects. There is an increasing emphasis on the accountability of the intervention's consequences (output indicators), instead of looking only at results or impact indicators related to government

programmes. An example of an output indicator would be the length of roads constructed. Despite the considerable attention paid to monitoring and evaluation systems in the overall EPWP and in the Gundo Lashu programme in particular, the monitoring and evaluation indicators were still widely rooted in the traditional confines of project and programme implementation by a single agency.

In response to mounting requirements for accountability, the EPWP developed a monitoring and evaluation systems to show outputs obtained. With the increased focus on quantifying the extent to which programmes impact on poverty and economic development, there is a need for monitoring and evaluation systems that cover programme outcomes and impacts. Moreover, people at grass-root levels actually ask for results from their democratic government and there is a need for result-based monitoring and evaluation systems beyond programme level, which requires coordination across various provincial and local level systems and other systems of government, including civil society and others concerned.

5.4.2 Human resource barrier

Human resources, that is, people, including project participants and project management team, are critical to the performance of the project. The development and implementation of road projects involve a huge investment in human resources both at the design and implementation stages. The RAL report reflects that during the project design stage, human resources which is categorized as consultants, specifically civil consultants, project management and onsite supervisory staff and contractors, were significant for the effective implementation of projects under the Gundo Lashu programme. In line with the above, the inherent requirements for the programme from various stakeholders were the following:

- Consultants and implementers needed to be trained in labour-intensive construction (NQF Level 7 or similar).
- Consultants were required to have experience in labour-intensive work.

- Consultants had to be committed to the objectives of the programme.

An analysis of the data obtained revealed that since the initial training programme in 2001/2002, there has been a number of staff changes and developments with new firms being formed by break-away staff from the initial selected firms. The high staff turn-over among these contractors seriously affected the quality of site supervision. As a result of this migration, some of the contractors were at times without trained technicians, and this had a negative impact on the execution of most of the projects.

Another key challenge which had serious implications for management and planning relates to the inequitable allocation of experienced technicians to perform work within the programme. The data shows that most of the Gundo Lashu technicians were inexperienced in terms of performing supervisory roles in the projects and thus had a negative impact on the completion of various projects and also deprive the programme of experienced input.

The data revealed that the programme had an inherited lack of capacity due to shortage of skills (from service providers) with a large pool of unskilled project participants who required training. It was found that limited project management skills compounded by inadequate knowledge of labour-intensive management and supervision, hindered the performance of the sampled programmes. This had a spill-over into the development of appropriate monitoring systems to ensure consistent reporting on programme drawbacks and perceived challenges. As a result, some projects were forced to change the construction methods from labour-intensive to capital-intensive in order to meet the set project target dates for completion. It is normally anticipated that higher supervision inputs are required during the labour-intensive construction phase to provide an opportunity for coaching and guidance of the contractors in addition to regular supervisory duties. Hence a monthly provision of 11 and 14 days, for technicians and engineers respectively, were included in the consultancy agreement per project. The data, however, revealed that time spent on the site was not used efficiently, since limited or no guidance was

provided, and as a result some work had to be re-done. This had a negative impact for the timeous completion of some projects.

With regard to the involvement of community members in labour-intensive road construction, the CIDB practice manual on implementing employment-intensive road works, recommends that contractors are required to, where possible, make maximum use of the local labour force from the communities where projects are implemented. A community, in this regard, refers to all the surrounding villages or settlements or any group of people living within a radius of 7 km from the road corridor. The data from the sampled projects showed that the demand for unskilled labour within the sampled project areas was very low, if compared to the incidence of poverty which was extremely high. The projects targeted a large proportion of highly unskilled women participants over the age of 40 years. This was in contradiction to the programme objective of attracting young people.

Another challenge regarding community participation, relates to the involvement of people with disability in the labour-intensive construction programmes. The key challenge around this element stems from the fact that the disability target for the Gundo Lashu programme does not specify the nature and extent of disability. This makes it very difficult for the selection of suitable project participants, since most of the physical disabilities may not be relevant for a majority of the project activities.

5.4.3 Financial resource barrier

McCutcheon (2008:27) argued that previous experience related to employment creation through public infrastructure and building works in South Africa revealed that most of the projects were not planned in line with required financial resources. This resulted in the production of ill-defined products of doubtful value through processes which did not lead to the building of individual, community or institutional capacities.

Phillips (2004b:8) outlined that the current EPWP has emerged with a different funding mechanism compared to previous initiatives. This is related to the fact that the current EPWP does not have its own special budget. The Department of Public Works identified R15 billion of the Provincial and Municipal infrastructure grants for a five year period (2004-2009), to be spent on building infrastructure under the EPWP. Additional conditions were attached to these identified conditional grants. Compliance with the Guidelines for the implementation of Labour Intensive Projects for the implementation of EPWP was mandatory for provinces and municipalities, when planning infrastructure projects funded through the Provincial Infrastructure Grant and the Municipal Infrastructure Grant. These guidelines require the use of labour-intensive methods for the construction of low volume roads, trenches, stormwater drains and sidewalks. The projected amount of infrastructure that the provinces and municipalities were to construct through EPWP include 1 500 km of roads, 1 500 km of stormwater drains and 150 km of urban sidewalks, between 2004 and 2009.

The analysis of the data revealed that the funding mechanism for the Gundo Lashu programme is based on the allocations described in the previous paragraph; however, it also includes special project budgets from various other sources. It was found that there was no future (post 2009) long-term planning for infrastructure project development under the Gundo Lashu programme. Furthermore, the decentralised approach to funding poses challenges for coordination, reporting and further monitoring and evaluation of the projects.

At project level, the research found that the existing funding mechanism and arrangements creates a challenge regarding funding for future maintenance of the existing projects, as a result of the short life span of the various labour-intensive projects. Results obtained from the interviews with project participants revealed the appreciation of benefits from the project, but also revealed the concerns regarding uncertainties of funding for future maintenance of the infrastructure provided. There was also a level of discomfort among community members and project participants. During the

interviews, the participants indicated that a future funding mechanism should be made available for maintenance purposes.

The findings of the Amadiba road project study (Mashiri et al. 2005) revealed that the substantial impact on the community during the life of the project and long-term sustainability are engendered by a significant amount of project funding that needs to remain within the community, to feed the local economic circuits with a view to enhancing project multiplier effects. In contrast, the data showed that various planned programmes within the Gundo Lashu programme experienced inappropriate funding relative to the scope of the projects. The resource barrier which is mostly in terms of funding and the financial barrier resulted in a number of key projects planned for implementation, remaining at a conceptual phase while others were deferred. This has impacted negatively on the delivery of services and the scope of reach of the programme in the district.

5.4.4 Functional and structural barriers

During the research a number of functional and structural barriers related to road infrastructure provision within the Gundo Lashu programme were identified. These barriers must be attended to and removed or resolved for an effective and efficient implementation of labour-intensive construction and maintenance programmes.

Given the nature of the labour-intensive approach as well as the limitation on traffic volumes, various roads, identified for construction under the programme, were municipal and access roads. Identification of these roads was done during the conceptualisation of the programme and agreements reached with the host and local municipalities. These roads were further linked to the municipal infrastructure development plan at that stage. Due to the revolving nature of the municipal infrastructure development plans, various projects identified during the initial stage were implemented years later which resulted in a mismatch between the municipalities' current infrastructure plans and the initial agreement with RAL.

The researcher had assumed that there would be proper collaboration and communication between RAL and the host municipalities, but that was not the case. Lack of proper planning and implementation arrangement between RAL and municipalities resulted in a separation between these structures. These separations were as a result of unclear mandates and structural barriers that existed between RAL and the municipalities where the municipalities felt that the labour-intensive project was imposed on them. As a result, most municipalities were not involved in the planning and implementation process which resulted in inappropriate handover of the completed road infrastructure to local municipalities. The data from the study revealed that the lack of involvement by most municipalities was caused by a lack of resources for future maintenance by municipalities, limited knowledge of labour-intensive construction projects by municipalities and structural challenges resulting from roads which fall within the cross-boundary municipalities.

With regard to project and participant targeting, the EPWP Code of Good Practice recommend the utilisation of local resources, specifically the recruitment of project participants from communities within the 7 km radius from the road corridor. The analysis of the data in this research shows that the participants' recruitment strategy has the potential to limit the participation at a larger scale, as a result of artificial administrative and geographic boundaries within rural areas. The argument in this case is based on the fact that structural and functional boundaries within regions and districts in rural areas profoundly impede the involvement of the poorest and vulnerable citizens in participating in poverty related programmes.

The objective of participation of poor people in labour-intensive programmes is about promoting the social and economic cohesion among the poor and vulnerable groups. It is therefore conceivable that access to participate in various poverty related programmes, including the Gundo Lashu programme, should be facilitated and improved across and within municipalities, districts and at inter-provincial levels. This would promote partnership linkages between projects under the Gundo Lashu programme and other related programmes that exist within the province. The major intention of this

approach, and an important output of the programme, is to improve the levels of human development (in terms of the Human Development Index) of the project participants.

The analysis of the targeting mechanism and approach toward participation also revealed some inconsistencies in the Gundo Lashu targeting approaches in comparison with targeting mechanisms used in other sectors, as discussed in the literature review. The analysis identified a misalignment of the Gundo Lashu programme's targeting approach, especially in relation to the means-test targeting approach used by the government social assistance programme. These inconsistencies have had a profound negative impact on government's efforts to develop and support a cohort of rural poor people who require government interventions.

The functional and structural barriers were analysed and it was linked to the monitoring and reporting framework and system for the Gundo Lashu programme and the EPWP in general. During the process of analysis, specifically the secondary data analysis, various gaps and limitations were identified in terms of the project focusing on project and programme results, rather than on programme outputs. The following are some of the constraints and gaps in terms of the functional and structural barriers within the Gundo Lashu programme:

- Projects under the Gundo Lashu programme were designed and approved with a monitoring and evaluation framework of limited scope and with no monitoring and evaluation budgets. The current and existing framework for monitoring and evaluation does not focus on results but is driven from the traditional monitoring and evaluation system design which focuses on inputs and outputs, specifically in line with the emphasis on monitoring and reporting on budgets. The monitoring and evaluation system is not results-driven and could therefore offer limited assistance in determining and measuring the programme results. This challenge complicated the study design since the researcher had to formulate indicators to measure the results of the programme. This process also presents a major limitation for

other studies that intend to measure the impact of the programme, specifically along various socio-economic impact indicators.

- The study has revealed multiple outcomes on the Gundo Lashu programme design. For instance, the development of two outputs which reveal a weak understanding of the programme theory of change as a result programme; results were therefore reported based on outputs which are aggregated to produce the results at outcome level and not the other way around.
- One of the key data and reporting limitations identified in the study was the inappropriate reporting by contractors. This is largely due to the reporting limitation imposed by the existing Monitoring and Evaluation system. As a result, very few of the Gundo Lashu programme monitoring and evaluation reports captured information on important lessons of failure that could benefit future planning.

The study identified various gaps within the reporting, monitoring and evaluation system for the Gundo Lashu programme and the overall EPWP in the following areas:

- The programme does not have a central data-base or archive for lessons learnt and good practices.
- There is a lack of central knowledge management systems for easy access and retrieval of data by various stakeholders including research institutions, academia and other institution of interest to the programme.
- There is a non-existence of peer-reviews for project designs and progress reviews.

5.4.5 Communication and coordination barrier

The most common barrier that was identified as a cross-cutting barrier was communication and coordination. The study found that a major weakness of the Gundo Lashu programme is that of communication and coordination

which is linked to political and strategic direction. Undoubtedly improved communication and coordination vertically between national, province and municipal spheres of government and horizontally across districts and municipalities, is one of the key challenges faced in the successful implementation of the Gundo Lashu programme and the overall EPWP. This emanated from the fact that the responsible department does not have the necessary authority to insist on participation from other departments. In particular it is widely recognised that the link between the implementing agency (RAL), Department of Public Works, municipalities and the project communes is poor and in some instances is non-existent.

5.5 Conclusion

One of the objectives of this study was to assess and evaluate the impact of labour-intensive road projects in the project participants and their communities. In this chapter the primary and secondary data obtained was used to analyse and evaluate the outputs, outcomes and impacts of the Gundo Lashu programme on the communities falling within the areas where the projects are implemented.

Attention was given to the impact of the programme in terms of, among others, training, infrastructure provision, access to services, employment and income of people living within the target areas of the programme. The third objective of the study was to explore the constraints and challenges experienced in the execution of labour-intensive road-based initiatives. The barriers to successful implementation of the programme in terms of management, planning, human resources and financial resources were also investigated. In the next chapter the results obtained from the analysis will be used to generate possible recommendations for the study in line with perceived intentions to roll out the Gundo Lashu programme during the second phase implementation period.

CHAPTER 6

Findings, Conclusion and Recommendations

6.1 Introduction

In this research the impact of the construction and maintenance projects within the Gundo Lashu programme was examined. The economic benefits and impacts of the programme was quantified based on data obtained from project participants and their households. The impact of labour-intensive road projects was measured, based on an assessment of project outputs and outcomes to determine whether the project had the desired effects on individual participants and their households. A key objective of the study was to explore the constraints and challenges experienced in the execution of labour-intensive road-based initiatives. In this chapter, a summary of the key findings is provided, based on the analyses as reported in the preceding chapters. At the end of this chapter some key recommendations are made on how decision-makers should continue to make use of labour-intensive methods to improve programme design and future implementation.

6.2 Summary of Findings

This section focuses on some key findings which demonstrate the impact of the Gundo Lashu programme on the participants and their communities. The focus is on the socio-economic benefits of the programme on participants and households livelihoods. The aim of this summary is to gain insight into how road investments affect poverty reduction by using evidence from the Gundo Lashu programme, focusing on micro-level project and household analysis.

6.2.1 Impact on skills and training

The results of the analysis showed that the use of a labour-intensive approach to the building and maintenance of rural roads, specifically the sampled projects under the Gundo Lashu programme, had a significant impact on the

skills base of the rural youth which will give them an advantage for future employment prospects in similar and related fields.

The labour-intensive construction and maintenance initiatives within the Gundo Lashu programme have been an enabling environment for skills development and it offered its participants opportunities for future employment in other sectors. The direct benefits of the Gundo Lashu programme and its capacity to develop skills for rural communities was measured by the total number of project participants who received training during the project implementation phase. The significance and contribution to future employment could, however, not be measured since this takes place over a longer period of time.

6.2.2 Improved access to services

The results of the data gathered showed that the sampled rural communities assign a high priority to the improved basic access which the completed Gundo Lashu programme will provide. This expansion of access is seen as reducing their vulnerability, improving their communications and enabling them to engage in social activities outside their communities. In the absence of improved opportunities to use roads, these communities rely on a primary network of paths, tracks, and gravel routes which are sometimes impassable during rainy seasons. Improvements to primary road networks, therefore, reduce the burden in undertaking basic household and productive tasks. This has a significant poverty reduction impact by enhancing their time efficiencies. In this context, the increased access is likely to have an impact on their overall well-being as it provides contact with markets outside the communities. As a result of the road projects, people in the participating communities are in a better position to commute and community members are better able to compete with other communities for economic activities.

The data indicated that local project communes had limited access to social infrastructure available in the surrounding communities because of the poor connections and also due to limited public transport. Added to this was the inadequate access to economic and social infrastructure, including health facilities and primary schools.

Before the implementation of the projects, the communities had very little access to specific services essential for economic development. The study showed that there were only partial improvements in the developments of economic and social infrastructure near the road projects. There is still considerable lack of economic and social infrastructure in the regions adjacent to the project roads. The projects, however, addressed the challenge of lack of access with the development of all-weather road infrastructures which is essential for addressing the immediate needs of the local communities. Although improvements were very limited they are substantial when compared to the non-project communes where the data obtained indicated the non-existence of economic opportunities in the form of development of survivalist business enterprises.

In summary, the decision to develop new roads and maintain the existing road infrastructure through labour-intensive methods in all the sampled areas proved to be of limited developmental efficacy. In addition, the study found that, in general, the conditions of the project roads in the purview of the Gundo Lashu programme were unsatisfactory. This conclusion is based on the fact that after 3 years of operation, the condition of various sampled projects was already so poor that their use was seriously restricted.

6.2.3 Impact on poverty and sustainable livelihoods

The results from the study confirm the theory that better rural roads are a necessary but not a sufficient condition for rural communities to graduate from poverty. There was little evidence generated from the study to demonstrate that the road construction projects within the Gundo Lashu programme have had a direct impact in terms of reducing the poverty of the people living in the

sampled study areas. The ability of community members to make significant economic use of available roads depends on their asset base and the entitlements to resources and opportunities that they can command, as well as on the passage of time. In a few instances respondents who invested savings, made possible by their involvement in the road projects in a small business or who used the skills obtained from the projects, were better off. Some of the people from the project communes also benefited through the indirect impact of the road improvements, such as better access to other services and opportunities that existed in the economy.

The research took cognisance of the fact that poverty reduction is not an explicit and primary objective of the Gundo Lashu programme, and the point was frequently stressed during the data collection process. In general, respondents, however, indicated that they would like to see a more explicit objective of poverty reduction in the design of projects in future. They indicated that appropriate measures should be included as a means of achieving the objective of poverty reduction. Road projects focusing on poverty in the future would, however, require genuinely integrated project components that offer the poor an opportunity to diversify and broaden their choices, and thus strengthen livelihood capital by taking advantage of improved rural roads.

6.2.4 Impact on jobs opportunities

One key economic impact of the sampled projects, which is also consistent with the programme objectives, was the overall employment effects of projects. The overall EPWP has as target the creation of over 1 million employment opportunities. Within the Gundo Lashu programme a total of just over 6 827 employment opportunities were created, which is above the employment target set for the programme. The employment opportunities created largely benefitted the unskilled and jobless poor women and youth who were recruited from the project communes. These employment effects

could have been increased even further beyond the set targets but various projects reported delays in construction and in some instances there were technology shifts from labour-intensive to capital-intensive construction.

6.2.5 Impact on household income

One of the findings from the analysis of the data is that there are important differences in income sources between the control and treatment groups. While the project income constituted the highest contribution to the treatment group's household incomes, the control group was found to be largely dependent on government grants for survival.

The individual and household incomes in the treatment communes were assessed in terms of overall monthly household income drawn from both active projects and other financial sources that are used for household survival. Income was also assessed in terms of the poverty line, and some the study showed that project incomes play an important role in reducing poverty. For the analysis a Household Subsistence Line (HSL) of R486.00 per adult per month equivalent was used as an indicator of household poverty. The investigation showed that even with the addition of income from participation in the projects, the majority of respondents from both the treatment and control groups, reported a monthly adjusted per capita income significantly below the household subsistence poverty line of R486.00. The statistical analyses also confirmed this. The results of the variance ratio test showed that the differences in monthly household incomes for both the treatment and control groups were statistically insignificant.

A comparison of mean households' monthly income, however, showed that the mean household income for the treatment group was R1 669.37, which is higher than the mean household income of R1 324.844 for the control group. The minimum household monthly income was R400.00 and the maximum was R4 000.00. In essence, it can be concluded that participation in the Gundo Lashu programme did not move the participant households out of poverty. It

did, however, reduce the poverty gap, resulting in a reduction in the intensity of income poverty of the project participants and their households. This is based on the argument that, in most cases, money generated through participation in these projects complemented other household income sources, such as government grants and/or other welfare payments received. These income and welfare grants are important as social safety nets for households, rather than individuals, living in poverty. As such all the income sources combined are part of the households' means of survival.

6.2.6 Planning for road development and maintenance

The planning for municipal infrastructure, such as roads, is the responsibility of the local government, and this planning should be done within the prescripts and ambit of the IDP. The Municipal Structures Act 1998 (Act 117 of 1998) and the Municipal Systems Act 2000 (Act 32 of 2000) provides for municipalities to integrate and coordinate plans and programmes with other spheres of government and stakeholders. The Municipal Systems Act 2000 (Act 32 of 2000) outlines the process for greater community participation by encouraging municipalities to create conducive environments for job creation and the provision of basic services in an effective and efficient manner.

6.2.6.1 Project targeting and design

Given the widespread levels of poverty in the Limpopo province, the use of appropriate targeting mechanisms is critical in the selection of programme implementation areas as well as relevant community members for participation in labour-intensive projects. As outlined, all approaches to targeting have limitations. This can lead to inefficiencies as well as inclusion and exclusion errors in terms of the targeting of communities and people who should be participating in the transport infrastructure investment programmes. This section provides a summary of key findings based on the analysis of the targeting approaches used for the Gundo Lashu programme.

The study found that the poor condition of the roads constructed within the Gundo Lashu programme, in most study locations, were linked to institutional weaknesses of the local municipalities. This is due to the fact that the maintenance plan within the Gundo Lashu programme should be the responsibility of the local government and the municipality. The study found that there was no formal hand-over of these roads from RAL to the respective municipalities during the project completion phase. As a result, roads which were constructed within the Gundo Lashu programme may not be properly maintained in the future, due to a lack of succession and integrated planning processes and synergy between the municipal local economic development plan and the Gundo Lashu programme. This can decrease the benefits expected to be derived from the project. An analysis of the municipal Medium Term Expenditure Framework budget revealed a lack of funding dedicated to the Gundo Lashu programme. The lack of funding can potentially stall future maintenance of the infrastructure.

The establishment of regular and transparent maintenance regimes and criteria for rehabilitation becomes difficult after the project completion and as a result most roads are left without maintenance funding, resulting in a huge backlog with only periodic maintenance. Roads consequently have to be constructed, and due to no maintenance they deteriorate, and then they have to be reconstructed again in other planning cycles. As a result, communities experience peaks and troughs of accessibility, rather than having a constant and guaranteed level of access.

6.2.6.2 Barriers to planning, implementation and reporting

Municipal planning is aimed at strengthening and increasing the capacity of municipal staff and other stakeholders involved in road management. This is meant to ensure that the municipality is positioned as the key actor in the process in close relationship with other local actors. The study found that huge deficiencies exist in the inter-linkages between the programme planning process and the municipal planning system. The planning process for most of

the projects within the Gundo Lashu programme was *ad hoc* in nature and they were initiated as a result of a crisis. Planning often lacked spatial focus and was sometimes done without any link to municipal or local rural development and infrastructural planning.

With regard to the maintenance of projects after completion, the study found that there was a lack of a proper infrastructure maintenance plan. Long-term social and economic benefits from roads are often threatened by a neglect of periodic maintenance. Rural roads, particularly paved roads, quickly deteriorate if not regularly maintained and benefits can be lost if they are periodically impassable or the overall condition is bad. The poor are generally risk averse and they will not engage in a new activity if they know that the road on which such a new activity would depend, will shortly be temporarily unusable or its condition will deteriorate to such an extent in the following year, that using it will result in an increase in costs and time.

The study found that there are a number of key barriers to proper planning, implementation and monitoring and evaluation of projects within the Gundo Lashu programme. Key among these includes: management and planning barriers, structural and functional barriers, human resource barriers, and funding barriers. These barriers and their impact were analysed in Chapter 4. These barriers pose a significant challenge regarding programme design, targeting and implementation, and the monitoring and evaluation of projects within the Gundo Lashu programme.

The aim of monitoring and evaluation is to improve management effectiveness and accountability by defining realistic expected results. Expected results are monitored and evaluated through the use of key performance indicators, integrating lessons learned into management decisions and reporting on performance. In line with the above, the study identified various gaps within the reporting, monitoring and evaluation system for the Gundo Lashu programme. This ranges from a monitoring and evaluation system which is not results based, and indicators which are not inclusive of programme

outcomes and impacts to the nonexistence of a computerized central database for reporting purposes, the absence of a knowledge management system or portal for easy access and retrieval of data by various stakeholders, including research institutions, academia and other institution of interest to the programme and the lack of peer-reviews for project designs and performance progress.

6.3 Key recommendations

6.3.1 Comprehensive road planning

Planning in the context of an integrated programme needs a proper period of preparation in order to be effective and sustainable. Mechanisms should be institutionalised to ensure that the communities and other key stakeholders such as local government structures are involved in most aspects of the investment design, implementation and maintenance phases of the project.

It is therefore recommended that a comprehensive master plan be drawn up for the Gundo Lashu programme which is integrated with rural road network planning, developed at local government level. This would be an ideal tool to increase the effectiveness of rural road investment and stakeholder involvement. The central task of the master planning process would be to identify, from a large number of rural roads in the project area, a core network that would provide the basic minimum road connectivity between villages and centres of economic activity, based on the existing road networks and the travel patterns of local communities.

It is further recommended that a local municipality should establish partnerships with relevant authorities at the local level to determine the type of improvement required for each road on the core network. A detailed road network inventory and condition survey should be conducted for the entire core network to develop a database containing specifications for each road, such as the following: road name, jurisdiction, length, road type, number of

bridges and cross-drainage facilities, overall conditions, access during rainy season, population served, and current levels of traffic.

Based on the results of the inventory a number of roads can then be identified for improvement. The roads which are a priority should be ranked for cost-effectiveness according to the number of people served per unit amount of investment required to bring the road up to basic access standard. Local political and administrative structures should also be involved in the development of transport plans in order to ensure public ownership of transport plans and the building of organisational and institutional capacity at municipal level.

6.3.2 Project targeting mechanisms

While acknowledging that the Gundo Lashu programme is not entirely poverty targeted, the study emphasised the significant contribution the programme has had on addressing the poverty problem. It is therefore recommended that the criteria for road selection of projects should include a poverty component. This can be a weighting by the size of population living in poverty within the zone of influence of a road, in combination with other conventional criteria such as population density and inter-linkages with other economic activities. The roads serving poverty areas could, for example, only be upgraded to a standard that is needed to connect them to the main road network.

In conjunction with the above, it is recommended that a technical pre-feasibility analysis be done for projects to initially establish if they are suitable for labour-intensive construction. The feasibility analysis would produce indicative information regarding scope and scale of the project, together with associated cost and time. All potential labour-intensive projects could be assessed in terms of the attributes such as the following: location of project, type of project, the extent to which labour-intensive methods may productively be used in different types of construction, scale of project/programme, lead times and the relation between duration of programme and overhead costs.

It is further recommended that communities and local community structures be fully involved at the planning stage and agreement should be reached based on among others, the nature of the project, level of service, method of service delivery, availability of labour, selection of trainees and workers, wage rates and conditions of employment. Legitimate local level institutions should be involved in and oversee the planning and implementation of projects within the Gundo Lashu programme to enhance greater community participation and ensure that the programme is assimilated into community development plans.

6.3.3 Development of guidelines for future maintenance

It is recommended that a maintenance handbook be developed for municipalities to provide guidelines and timetables for future maintenance work on local access roads. There should also be a clause in the agreement between the national coordinating government department and local municipalities that maintenance costs for these local access roads should be allocated annually from the municipal budget. The guidelines for the establishment of local development structures should be utilised to enhance the identification, consultation and facilitation of programmes and projects at community level.

6.3.4 Skills training and capacity development

It is recommended that local municipality should ensure that all job creation programmes funded through the Gundo Lashu programme have a satisfactory training component. Government funding of the Gundo Lashu programme should be contingent on the integration of an adequate training component into the project. Furthermore, training standards should be developed in order to ensure that training offered is of such quality that the beneficiaries or project participants are employable in future. This should, however, not affect the process of service delivery.

Opportunities beyond the Gundo Lashu programme should be addressed in advance, with a focus on assistance regarding possible career development paths. In this regard, it is recommended that local training and capacity building institutions should be fully involved in exploring measures to ensure integration of training programmes for the participants. These programmes should include, among others, labour-intensive training programmes on construction and maintenance and training in other social fields.

6.3.5 Shift towards results-based monitoring and evaluation

Assessment of the existing monitoring and evaluation framework for the Gundo Lashu programme showed that there is a lack of outcome indicators in the approved indicator matrix. This is a serious omission, given that both the outcomes and impact indicators are the highest results the programme should be striving to achieve.

The study has shown that there are various inherent inadequacies and challenges in the application of the existing monitoring and evaluation system used for the reporting of the achievements of the Gundo Lashu programme. It is therefore recommended that in order to strengthen the current monitoring and evaluation system at various levels and components of a results-based monitoring and evaluation system should be factored in the results-chain model, which includes inputs, activities, outputs, outcomes and impact and their linkages. The rationale for this recommendation is to enable the programme implementers to agree on baselines which will be used to measure the programme performance over a long-term. Failure to develop a proper baseline in line with the identified results based indicators would mean the programme indicators and targets are eroded of their significance.

6.4 Research contribution and gaps identified

Examining the distributional consequences and effects of rural road investments on self-employment, community empowerment and sustainable

livelihoods have been addressed extensively within the geography literature. These studies normally require a methodology that estimates effects over time and the ability to control unobserved heterogeneity (Lokshin and Yemtsov 2005).

Recent research and studies use improved scientific approaches for data collection to estimate the impact of road construction. Lokshin and Yemtsov (2005) demonstrated the economic benefits of roads and other infrastructural projects using a propensity score-matched double difference method. Van de Walle (2002) used the same methods to estimate the impact of road development using panel household survey data of a quasi-experimental nature to assess the impacts of road improvement projects. Valuable research (Adato et al. 1999; Thwala 2001; Adato and Haddad 2002; Philips 2004; Agingu 2004; McCord and Van Seventer 2004a) in the social and engineering fields provide evidence of employment and personal characteristics in the road sector. However, none of these provides an overview or analyses of the changes taking place over the project cycle life cycle as the project comes to conclusion.

This study is the first of its kind, within geography, to employ a matched case-control study design method to gather and analyse the survey data. Previous studies usually just examined the experiences and views of groups of labour-intensive project participants independently of each other. In contrast, in this study the experiences and views of labour-intensive road development and maintenance project participants are examined and compared with that of non-participants who had the same characteristics as the participating group. This involved separate interviews with each group as well as observation of processes involved within the labour-intensive projects. This method was successfully used to evaluate the impact of the Gundo Lashu programme and the method can now be used to evaluate other similar programmes.

The quantification of the benefits of roads to communities, both within geography and other related social sciences, have long been constrained by

methodological and data limitations. Other challenges also emanate from the time-lines for sound evaluations. The traditional estimates of the returns on road development are usually so generic, that the measurement of returns on investment does not appear to be viable. Many research studies were unsuccessful in capturing the true distributional benefits of roads for the targeted population, particularly the poor (Van de Walle, 2002). These problems are compounded by the fact that the effects of rural roads are also long-term and thus cannot only be captured through the use of administrative records, particularly since unobserved fixed area characteristics influence the placement of road investment in a village or community (Binswanger et al. 1993).

There is a need for a research-based model for the evaluation of community-based and rural development programmes and initiatives which would lead to the changing nature of evaluations in the broader field of geography. In transport geography, evaluations have played a vital role for more than one hundred years. However, the application of proper evaluation methodologies has always been limited. These methodologies have been used widely in studies in the field of epidemiology and can in future become a way of addressing the changing nature of evaluations within transport geography.

Skills development, training and poverty reduction are the key objectives of the Gundo Lashu programme. A proper analysis at project design stage is therefore necessary to determine who the poor are and on what factors their livelihood strategies depend. This requires stakeholder analyses and poverty benchmarking to establish a baseline against which project impacts can be measured in future. This study showed that significant social benefits accrue to the poor from rural road investments, particularly in accessing outside services. These are inherently unquantifiable, but can be evaluated if effective structured baseline research is done at project inception.

Regular monitoring and evaluation of livelihood and future employment opportunity impacts against this baseline, should be carried out through a

clearly defined project performance monitoring system. This will ensure that in the future, impacts on the poor are captured, rather than assumed. This would also ensure that the implementing agency would be in a better position to measure impact in line with outcomes and impact indicators, instead of a monitoring and evaluation framework which measures the performance of project impact in line with progress indicators, measuring fund disbursement and physical works. This approach is not complemented by impact indicators for identifying exactly what the outcome of works had been, particularly on the project participants.

6.5 Conclusion

The main aim of this study was to explore and evaluate the impact of labour-intensive construction and maintenance programmes in road infrastructure in South Africa, within the context of the government's policies and macro-economic strategies targeted towards infrastructure development, poverty alleviation and job creation, specifically within the Gundo Lashu programme. The conclusion drawn from the analyses indicates that the sampled projects within the Gundo Lashu programme have in fact achieved their economic development objectives in terms of among others, the total number of jobs created, the gender breakdown of these employments, total road length constructed and maintained, inter-community access and mobility. However, the social dimensions regarding the various direct and indirect impacts of the programme in relation to poverty reduction, sustainable livelihoods and opening of access to market opportunities, were not sufficiently achieved.

Another objective of the study was to determine whether the effects of the project are attributable only to the projects' intervention or to other causes as well. The analyses of the data showed that the projects affiliated within the Gundo Lashu programme, did not independently have a significant impact on the communities who participated in the projects compared with those communities and individual who did not participate in the projects. The project participants' socio-economic status did not change significantly from those communities without projects.

The programme was successful in improving the chances for those who participated to acquire employment in the long-term. However, once the contract implementation and handover is completed, it is unlikely that the skills left behind would be sufficient to maintain the infrastructure. This lead to the conclusion that the development of rural road infrastructure alone is not sufficient in tackling poverty; other mechanisms must be combined with road construction programmes. While government is focusing on addressing unemployment and skills development through the Gundo Lashu programme, there is a need to develop a cohort of poor people, through proper targeting mechanism, to ensure the integration of government services that would target the most relevant people in order to make a significant impact.

A detailed description of the nature and delivery mechanisms of labour-intensive programmes within the Gundo Lashu programme is presented in Chapter 4. Two broad labour-intensive models were applied successfully during the training phase and the post-training implementation phase. The key focus of the trial phase was capacitating of local communities to become independent emerging contractors after the completion of the trial projects. Within this model a total number of 32 emerging contractors were trained on labour-intensive methods. These contractors were then provided with small trial contracts for execution. Those who demonstrated their ability by successful completion of these small contracts were then allowed to tender for larger contracts. This model created significant employment during the trial phase.

The Conventional Contracts with Labour-intensive Prerequisites Model was applied during the post-training phase. At this stage the programme adopted a conventional contract model with a labour-intensive prerequisite and basic contractual arrangement with consulting engineers and selected contractors to execute the project. Within this model, a large value of the contract was diverted to the rural poor, since labourers were recruited from the local communities. Furthermore, project participants were capacitated with training and skills transfer which took place during project implementation.

One of the conclusions of this study is that road infrastructure development and maintenance within the Gundo Lashu programme is consistent with the prescribed labour-intensive methodology. However, within this method, the required infrastructure is provided with a compromised quality. Furthermore, the approach is generally more expensive than capital-intensive contracts due to inter alia, slower progress and longer construction times. In some cases, road construction was not completed on time; hence, it was decided to shift from labour-intensive to capital-intensive methods.

The various constraints and challenges experienced in the execution of labour-intensive road-based initiatives were also explored in this study and a detailed analysis is provided in Chapter 5. A number of challenges were identified and classified into key categories namely, management and planning barriers, structural and functional barriers, human resource barriers, and funding barriers. While the study acknowledges the effectiveness of the existing planning frameworks, the implementation of these policies in line with the Gundo Lashu programme targeting, demonstrated some critical limitations with the potential to affect programme design, targeting, implementation, reporting, and monitoring and evaluation at local levels.

Various recommendations for improved service delivery in line with targeting, and a best practice model to measure results during the programmes second-phase implementation period, were also presented. In conclusion, it can be stated that various challenges and barriers linked to the Gundo Lashu programme emanates from lack of coordination, political interferences and lack of strategic direction. Practical experience of the labour-intensive road infrastructure programmes suggests that there are policy gaps that need to be addressed if the programme is to have its desired impact on skills, employment and poverty reduction. The case of road maintenance is even worse. As governments have built up the road networks, the lack of attention to maintenance has become apparent in the declining state of the existing network.

In many cases investments now have to be made into rehabilitating the existing system which had so painstakingly been developed. In various labour-intensive programmes, the developed road infrastructures have deteriorated at a faster rate than they have been constructed. Funds for maintenance are generally spent on improvement and emergency works rather than on routine maintenance. As a result, budgets for road maintenance are insufficient and are spent on maintaining the network in acceptable condition. No funds remain, however, for routine periodic maintenance; thus the network continues to deteriorate.

Key success factors for the labour-intensive programmes have always been the strong political will to support the use of labour-based methods and labour-intensive technologies. In Chapter 3 various government policies and strategies to support the development of the Gundo Lashu programme, including among others; the RDP, JIPSA, ASGISA and an EPWP framework, were clearly outlined. Political support for the Gundo Lashu programme has also enjoyed the political support through the presidential State Of Nation Address in 2003. The key challenge is, however, that practical realisation of those commitments at local levels poses a much greater challenge. A first requirement for the Gundo Lashu programme is, therefore, a political commitment by government to a rational maintenance strategy. Such a strategy should relate levels of available maintenance funds to a defined maintainable road network. Within a framework of such strategy, community-based maintenance employing labour-intensive techniques presents itself as a suitable approach.

Lack of appreciation of the labour-intensive infrastructure provision by local people is evident. This requires the government to encourage community participation through an active process where beneficiary groups influence the direction and execution of a labour-intensive project with a view to enhancing their wellbeing in terms of income, personal growth, self-reliance or other values they cherish. The Amadiba experience shows that for labour-intensive programmes to thrive, communities need a rallying point to enlist their continued cooperation, as well as for them to approach any assignment with a

singleness of purpose and commitment. In this regard, in the Amadiba case, a premium was placed on getting both the approval and active support of traditional and political leaders, as well as some influential opinion leaders. Enlisting these community leaders increased the social acceptability of the project and enhanced its “value” to prospective participants from the community (Mashiri et al. 2005). Within the Gundo Lashu programme, these elements were found to be lacking, hence a new approach is required.

Undoubtedly, lack of coordination and strategic leadership vertically between national, provincial and municipal spheres of government and the implementing agency; horizontally across districts and municipalities, was one of the key challenges faced in the successful implementation of the Gundo Lashu programme. This emanated from the fact that the responsible department does not have the necessary authority to insist on participation from other departments. In particular, it is widely recognised that the link between the implementing agency (RAL), the Department of Public Works, the municipalities and the project communes are poor and in some instances does not exist at all.

7 References

African Development Fund (ADF), 2007. Labour based public works appraisal report. [online]. <http://www.afdb.org/fileadmin/uploads/afdb/Documents> (access date 15 March 2008).

Adato, M. and Haddad L. 2002. Targeting Poverty through Community-Based Public Works Programme: Experience from South Africa, *Journal of Development Studies*, 38(3): 1-36.

Adato, M., Haddad L., Horner D., Ravjee N., and Haywood R. 1999. *From Works to Public Works. The Performance of Labour-Intensive Public Works in Western Cape Province, South Africa*. Southern Africa Labour and Development Research Unit and International Food Policy Research Institute. University of Cape Town.

African Union, 1990. African charter for popular participation in development and transformation. [online]. <http://www.iss.co.za> (access date 12 June 2008).

Agingu, J. 2004. *Labour-based Maintenance of Federal Roads in Ethiopia*. ASIST Bulletin Issue no. 17. Harare. ILO/ASIST.

Agunga, R. 1997. *Developing the Third World: A Communication Approach*, Nova Science, Commack, New York.

Ahmed, R. and Donovan, C. 1992. *Issues of Infrastructural Development: A Synthesis of the Literature*, Washington, D.C.: International Food Policy Research Institute.

Atinc, T.A. 2000. Coping with Crises: Social Policy and the Poor. [online]. <http://unpan1.un.org/intradoc/groups/public/documents/apcity/unapan005233.pdf> (access date 15 May 2007).

Atkins, H. and Milne, C. 1996. *Emerging contractor development programme at provincial level*. Construction and Development Series no. 13. Midrand: Development Bank of Southern Africa.

Atkinson, D. Akharwaray N. and Benseler A. 2002. Linking Integrated Development Plans (IDP's) to municipal budgets. Department for Local Government and Housing Northern Cape. [online]. http://www.hsra.ac.za/Research_Publication-3731.phtml (access date 15 March 2008).

Australian AID, 1997. *Non Government Package of Information*, Canberra, Australia.

Banister, D. and Berechman, Y. 2001. Transport investment and the promotion of economic growth. *Journal of Transport Geography*. 9: 209-218.

Barrett, C.B., and Clay, D. 2003. Self-Targeting Accuracy in the Presence of Imperfect Factor Markets: Evidence from Food-for-Work in Ethiopia. *Journal of Development Studies*.

Besley, T. and Kanbur, R. 1993. Principles of Targeting. In M. Lipton, and J. van der Gaag (Eds.), *Including the Poor*. Washington D.C.: World Bank.

Bhaskar, R. 1989. *Reclaiming Reality: A Critical Introduction to Contemporary Philosophy*. Verso, London.

Bhaskar, R. 1998. *The Possibility of Naturalism: A Philosophical Critique of the Contemporary Human Sciences*. Routledge, London.

Bigman, D and Fofack, H (Eds). 2000. *Geographical Targeting for Poverty Alleviation: Methodology and applications*. World Bank, Washington, DC.

Binswanger, H., Shahidur, K. and Rosenzweig, M. 1993. "How Infrastructure and Financial Institutions Affect Agricultural Output and Investment in India," *Journal of Development Economics*, Vol. 41, pp. 337-366.

Black, W.R. 2001. Unpopular essay on transportation. *Journal of Transport Geography* 9: 1-11

Black, W.R. 2003. *Transportation: A Geographical Analysis*, The Guilford Press, New York.

Bloom, M., Schisterman, E. and Hedig, M. 2007. The use and misuse of matching in case control studies: the example of POCS. *Fertility and Sterility*, Volume 88, Issue 3, Pages 707-710.

Brakman, S., Garretsen, H. and Marrewijk, C. V. 2001. *An Introduction to Geographical Economics*, Cambridge University Press, Cambridge, UK.

Brakman, S., Garretsen, H. and Schramm, M. 2000. *The empirical relevance of the new economic geography, testing for a spatial wage structure in Germany*, mimeo, University of Nijmegen, University of Groningen.

Brown, A., Slater G., and Spencer, D. A. 2002. "Driven to Abstraction? Critical Realism and the Search for the 'Inner Connection' of Social Phenomena" *Cambridge Journal of Economics* Vol. 26.

Browne, M., Nemoto, T., Visser, J., Whitening, T. 2003. Urban freight movements and public-private partnerships, *Proceedings of the 3rd International Conference on City Logistics*, Madeira, Portugal.

Bryman, A.E. 2001. *Social Research Methods*. Oxford, UK: Oxford University Press. [online]. <http://www.referenceworld.com/sage/socialscience/mmr.pdf> (access 13 January 2009).

Burkey, S. 1993. *People first. A guide to self-reliant, participatory rural development*. London: Zed Books.

Burns, R.B. 2000. *Introduction to research methods (4th Edition)*. Australia: Pearson Education.

Coady, D., Grosh, M. and Hoddinott, J. 2004. *Targeting of Transfers in Developing Countries: Review of Lessons and Experience*. Washington, DC: World Bank.

Coetzee, K., Graff J., Hendricks, F. and Wood, G. 2002. *Development, theory, policy and practice*. South Africa: Oxford university press.

Cohen, L., Manion, L. and Morrison, K. 2000. *Research methods in education* (5th ed) London, Routledge.

Conning, J, and Kevane, M. 2000. *Community Based Targeting Mechanisms for Social Safety Nets*. [online]. www.worldbank.org/public/CBTFinal.doc (access date 23 January 2008).

Creightney, C.D. 1993. *Transport and economic performance - A survey of developing countries*. World Bank Technical Paper No. 232. Africa Technical Department Series. Washington, DC: World Bank.

Creswell, J. 2003. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, 2nd edition. Thousand Oaks, CA: Sage.

Cyper, J. and Diethz. 1997. *The process of economic development*. Britain: Redwood Books.

Davids, I., Theron, F., and Maphunye, K.J. 2005. *Participatory development in South Africa, a development management perspective*. Pretoria: Van Schaik Publishers.

Davis, D. R. and Weinstein, D. E. 1998. *Does economic geography matter for international specialization?*, School of Business Administration, University of Michigan.

Davis, D.R. and Weinstein, D.E. 1999. Economic geography and regional production structure: An empirical investigation, *European Economic Review* 43(2), pp. 379–407.

Dawson, J. and Barwell, I. 1993. *Roads are not enough: New perspective on rural transport planning in developing countries*. London: Intermediate Technology Publications.

De Beer, F. and Swanepoel, H. 1998. *Community development and beyond*. South Africa: national books printers.

Denzin, N.K. 1970. *The Research Act: A Theoretical Introduction to Sociological Methods*. Aldine, Chicago.

Department for Transport, 1997. Accessibility Planning Guidance: Full Guidance. [online]
<http://www.dft.gov.uk/pdf/pgr/regional/ltp/accessibility/guidance/gap/accessibilityplanningguidanc3633>. (date access 13 August 2008).

Department of Labour. 2003. *Growth and Development Summit*, Pretoria: Chief Directorate of Communication, Department of Labour.

Department of Land Affairs. 1997. *Rural Development Framework*. Compiled by Rural development task team (RDP) and the Department of Land Affairs.

Department of Public Works. 2007. Expanded Public Works Programme. [online]. <http://www.epwp.gov.za/> (access date 3 July 2007).

Department of Transport. 2005. *The First South African National Household Travel Survey*, Pretoria, South Africa.

Department of Water and Forestry. 2001. *Labour Intensive Construction using SMME's: Guideline to Identify Projects*. [online] [www.dwaf.gov.za/.../PDF%5CD4747%20SMME\(8\)%20Doc%201%20Project%20selection](http://www.dwaf.gov.za/.../PDF%5CD4747%20SMME(8)%20Doc%201%20Project%20selection) (access date 02 march 2007).

Development Bank of Southern Africa (DBSA). 1998. *Infrastructure for Development – Development Report*. Midrand, Johannesburg, Republic of South Africa.

Devres, I. 1980. *Socio-economic and environmental impacts of low-volume rural roads, a review of the literature*. AID Program Discussion Paper No.7. Washington D.C: Agency for International Development.

Edmonds, C. 2004. Rice Production, Land Use Dynamics, and Infrastructure Development in Viet Nam's Mekong River Delta. *Asian Development Review*. 21 (2): 57-78.

Edmonds, G. 1998. *Wasted Time: The price of poor access*, Geneva. International Labour Organisation, Development Policies Department

Edmonds, G.A, 1982. Towards more rational rural road transport planning. *International Labour Review*, Vol 121.

Elbers, C., Fujii, T, Lanjouw, P., Ozler, B., and Yin, W. 2003. *Poverty Alleviation Through Geographic Targeting: How Much Does Disaggregation Help?* Washington, DC: World Bank Policy Research Working Paper 3419.

Elbers, C., Lanjouw, P., Mistiaen, J., Ozler, B and Simler, K. 2004. On the Unequal Inequality of Poor Communities. *World Bank Research Observer*, 18 (3), 401-21.

Ellis, S.D. and Hine, J.L 1998. *The provision of rural transport services: Approach paper*. World Bank SSATP Working Paper 37, Washington, DC.

Elsenburg, 2005. A profile of the Limpopo province: Demographics, poverty, inequality and unemployment. Background Paper 2005:1(9), [online]. http://www.elsenburg.com/economics/provide/documents/BP2005_1_9%20Demographics%20LP.pdf. (access date 12 June 2008).

Elsenburg 2009. A profile of the Limpopo Province: Demographics, poverty, income, inequality and unemployment from 2000 till 2007. The Provincial Decision-Making Enabling Project. Limpopo Province. South Africa

Expanded Public Works Programme (EPWP). 2007. Ethekewini Expanded Public Works Programme Policy. [online]. <http://www.durban.gov.za/durban/services/engineering/project-management-unit/policy/Final%20EPWP%20Policy%20April%2007b.pdf> (access date 14 March 2008).

Fan, S. 2008. *Public Expenditures, Growth, and Poverty: Lessons from Developing Countries* Baltimore, MD: John Hopkins University Press

Ferrinho, H. 1980. *Towards the theory of community development*. Juta and company. Ltd.

Fisher, J. 1995. *Geography and Development: A World Regional Approach*, Prentice Hall, New Jersey.

Fofack, H. 2000. *Applying household expenditure survey data to improve poverty targeting: The case of Ghana*. In Bigman, D & Fofack, H (Eds), *Geographical Targeting for Poverty Alleviation: Methodology and applications*. World Bank, Washington, DC.

Frank, A. 1966. The development of underdevelopment. *Monthly Review*. 18: 17-31.

Fujita, M and Krugman, P.R. 2004. The new economic geography: past, present and the future. *Papers in regional science*, 83(1): 139-164.

Fujita, M. and Tomoya, M. 2005. *Frontiers of the New Economic Geography*, Discussion paper No. 27, Institute of Developing Economies, JETRO.

Garnier, P and Majeres, J. 1992. Fighting poverty by promoting employment and socio-economic rights at the grass-roots level," *International Labour Review*, Vol. 131, No. 1.

Gaude, J and Watzlawick, H. 1992. Employment creation and poverty alleviation through labour-intensive public works in least developed countries, *International Labour Review*, Vol. 131, No. 1.

Gelbach, J. and Pritchett, L. 2002. Is More for the Poor Less for the Poor? The Politics of Means-Tested Targeting. *Topics in Economic Analysis and Policy*, 2 (1).

Ghosh, J. 2003. *Exploring Jobs or Watching Them Disappear? Relocation, Employment and Accumulation in the World Economy*, in Ghosh J and Chandrasekhar C.P. *Work and Well-Being in the Age of Finance*, New Delhi: Tulika Books, pp 99-119.

Gibson, J. and Scott, R. 2003. Poverty and Access to Roads in Papua New Guinea. *Economic Development and Cultural Change*. 52(1): 159-185.

- Giles, J. 2006. Is life more risky in the open? Household risk-coping and the opening of China's labour markets. *Journal of Development Economics*. 81: 25-60.
- Glewwe, P., M. Gragnolati, and H. Zaman. 2000. Who Gained from Vietnam's Boom in the 1990s? An Analysis of Poverty and Inequality Trends. World Bank Working Paper 2275, Washington, D.C.
- Goulet, D. 1995. *A Sustainable World*, Earthscan, London.
- Graaf, J and Venter, D. 2001. Understanding the world systems. In Coetzee J.K, Graaf J, Hendricks F and Woods G. *Development Theory, policy and practice*. Cape Town: Oxford University Press.
- Graaff, J., Hendricks, F., and Woods, G. 2001. *Development theory, policy and practice*. South Africa: Oxford University Press.
- Growth and Development Summit (GDS). 2003. Growth and Development Summit Agreement, 7 June 2003. South Africa [online]. http://www.sarpn.org.za/documents/d0000370/P355_Nedlac_Agreement.pdf (access date 13 July 2006).
- Guade, J. and Watzlawick, H. 1992. *Employment Creation and Poverty Alleviation through Labor-intensive Public Works in Least Developed Countries*. *International Labor Review* 131(1):3-18.
- Hammersely, M. and Atkinson, P. 1994. *Ethnography: Principles in Practice* Routledge, London.
- Hansson, L. 2001. *Statistical Considerations in the Analysis of Matched Case-Control Studies*, Acta Universitatis, Upsaliensis.
- Harding, A. 1998. Public-private partnerships in the UK, in Pirre, J. (ed.): *Partnerships in Urban Governance*, London: MacMillan.
- Harmse, A.C. 2004. *Development regions in the South African space-economy: a multivariate approach*. University of South Africa, Pretoria.

Hawkins, E.K. 1960. Investment in Roads in Underdeveloped Countries. *Bulleting of the Oxford University Institute of Statistics* 22 (4), November 1960. p 359.

Hilling, D. 1996. *Transport and Developing Countries*. Routledge. London

Hirsch, A. 2005. *Season of Hope: Economic Reform under Mandela and Mbeki*. Scottsville, SA: University of KwaZulu Natal Press; and Ottawa, Canada: International Development Resource Centre.

Hirschman, A.O. 1961. *The Strategy of Economic Development*. New Haven: Yale University Press.

Hodder, B.W. 1968. *Economic Development in the Tropics*. London: Methuen

Hofmier, R. 1972. *Transport and economic development in Tanzania*, Muncheon, Weltforum Verlag.

Hoyle B.S and Knowles R. 1998. *Modern Transport Geography* (eds) Chichester: John Wiley and Sons.

Hoyle B.S and Knowles R. 2000. *Modern Transport Geography* (2nd edition) Chichester: John Wiley and Sons.

Hoyle, B.S and Smith, J. 2001. "Transport and development: conceptual frameworks" in Hoyle and Knowles (eds) *Modern Transport Geography*. Chichester: John Wiley and Sons (chapter 2, pp. 13-40).

Howe, J. 2003. *Inclusion of Social Benefits in Transport Planning- Overview of Thematic Papers and Unresolved Issues*. IT Publications, London.

Howe, J and Richards P 1984. *Rural Roads and Poverty alleviation*. London. Intermediate Technology publication

Human Development Report. 2003. *Millennium Development Goals: A compact among nations to end human Poverty*, Oxford

IIEC, 1996. *Integrated Transport Planning*. International Institute for Energy Conservation Publication.

International Labour Organization (ILO). 2005. A National Employment Guarantee Programme for Indonesia. [online]. <http://www.ilo.org>. (access date 21 May 2007).

Jacoby, H. C. 2000. Access to markets and the benefits of rural roads. *Economic Journal*, 110(465), 713-737.

Jalan, J. and Ravallion, M. 2002. Geographic poverty traps? A micro econometric model of consumption growth in rural China. *Journal of Applied Econometrics*. 17(4): 329-346.

Johnson, P. and Duberley, J. 2000. *Understanding Management Research*. Sage, London.

Johnson, R. J., Gregory, D., Pratt, G, and Watts, M (Eds.). 2000. *The Dictionary of Human Geography*, Blackwell Publishing, Oxford, UK.

Johnson, R.B. and Onwuegbuzie, A.J. 2004. *Mixed methods research: A research paradigm whose time has come*. Educational Researcher, Vol. 33, No.7, pp.14-26.

Jorgensen, D.L. 1989. *Participant observation: a methodology for human studies*. Applied Social Research Methods Series, No 15. London: Sage Publications.

Joseph, A. 1962. *The theory of economic development*, Cambridge, Mass: department of economics, Harvard University.

Keeble, D.K. 1967. "Models of Economic Development," in *Models in Geography*, edited by Chorley and Haggett. London: Methuen.

Keeling, D.J. 2007. Transportation geography: new directions on well-worn trails *Progress in Human Geography*; 31; 217.

Khosa, M. 1997. *Employment creation, poverty alleviation and asset creation through the national public works programme*. Centre for African Research and Transformation University of Natal.

Knaap, T. 2004. *Models of Economic Geography: Dynamics, Estimation and Policy Evaluation*, Labyrint Publications, The Netherlands.

Knowles, R. and Wareing, J. 2000. *Economic and Social Geography Made Simple*, New Delhi. Rupa and Company.

Krugman, P. 1995. *Development, Geography and Economic Theory*. Cambridge, Massachusetts, London.

Kwon, E. K. 2000. "Infrastructure, Growth, and Poverty Reduction in Indonesia: A Cross-sectional Analysis." Asian Development Bank, Manila.

Lawson, V. and Staeheli, A. 1990. Realism and the Practice of Geography. *The professional Geographer* 42(1):13-19.

Leinbach, T.R. 1995. Transport and third world development: review, issues and prescription. *Transport Research. A policy and practice* 29A(5):337-344

Limpopo Road Agency (RAL), 2003. *Project inception report for Gundo Lashu Programme*. Limpopo province. Polokwane.

Limpopo Road Agency (RAL), 2007. *Administrative datasets for Gundo Lashu Programme*. Limpopo province. Polokwane.

Limpopo Road Agency (RAL), 2009. *Administrative datasets for Gundo Lashu Programme*, Limpopo province. Polokwane.

Little, R. D. 1987. Labour-intensive road construction in peri-urban areas - a case study. *Development Southern Africa*. 4(1): 111 -121.

Lokshin, M. and. Yemtsov, R. 2005. Has Rural Infrastructure Rehabilitation in Georgia Helped the Poor? *World Bank Economic Review* 19(2):311-333.

Mabogunje, A.L. 1980. *The Development process: A spatial perspective*. London: Hutchinson.

Malecki, E.J. 1991. *Technology and economic development: The dynamics of local, regional, and national change*. Essex: Longman Group UK.

Martinussen, J. 1997. *Society, State and Market - A guide to competing theories of development*. New York: Zed Books.

Mashiri, M. Motha, D., and Sarkar, A, 1998. *Towards a rural accessibility planning framework*. Pretoria. CSIR: Transportek.

Mashiri, M. Thevadasan D, and Zukulu, R. 2005. Community-Based labour – Intensive road construction: Findings of an Impact study of the Amadiba Road. *Proceedings of the 24th Southern African transport Conference (SATC)* Pretoria 11-13 July 2005.

Matin, I. and Hulme, D. 2003. Programs for the Poorest: Learning from the IGVGD Program in Bangladesh. *World Development*, 31 (3), 647–65.

McCord, A. 2003. An overview of the performance and potential of public works programmes in South Africa'. *Paper prepared for the DPRU/TIPS Forum 8-10 September 2003*. Johannesburg.

McCord, A. and Van Seventer, D. E. 2004. The economy-wide impacts of the labour intensification of infrastructure expenditure in South Africa. *Paper presented at the DPRU, TIPS & Cornell Conference on African Development and Poverty Reduction, the Macro-Micro Linkages*. Somerset West.

McCutcheon, R. 1989. Labour-intensive road construction in Africa. *Habitat International* 13(4): 109-123.

McCutcheon, R.T. 1993. Interim guidelines for labour-based construction projects. *Construction and Development Series Number 2*. Development Bank of South Africa.

McCutcheon, R.T. 2001. Employment Creation in Public Works: Recent South African Experience'. *Journal of Construction Management and Economics* 19.

McCutcheon, R.T. 2002. *Towards Building Capacity and Accelerating Delivery. 21st Annual South African Transport Conference South Africa, 15 July 2002*

McCutcheon, R.T. 2008. Labour-intensive Construction and Maintenance in Sub-Saharan Africa. A paper for discussion at the World Bank on the 7th April 2008. [online]. <http://siteresources.worldbank.org> (access date 10 December 2008).

McCutcheon, R.T. and Marshall, J. 1996. *Labour-intensive construction and maintenance of rural roads: guidelines for the training of road builders*. Construction and Development Series no. 14. Midrand. South Africa.

McCutcheon, R.T. and Marshall, J. 1998. *Institution, organisation and management for large-scale employment-intensive road construction and maintenance programmes*. Construction and Development Series no. 15. Midrand. South Africa

Melkote, S.R. 1991. *Communication development in the Third World: theory and practice*. New Delhi: Sage.

Mendoza, G.A. and Macoun, P. 1999. *Guidelines for Applying Multi-Criteria Analysis to the Assessment of Criteria and Indicators Center for International Forestry Research (CIFOR)*. Bogor, Indonesia.

Milne, C. 1994. *Guidelines for emerging contractor development*. Construction and Development Series No. 5. Midrand: Development Bank of Southern Africa.

Mitchell-Weaver, C., Manning, B. 1992. "Public-Private Partnerships in Third World Development: A Conceptual Overview", in *Studies in Comparative International Development* Winter, 26 (4), pp. 45-67.

Mock C N, Forjuoh S N, Rivara F P. 1999. Epidemiology of transport related injuries in Ghana. *Accident Analysis and Prevention*, 31: 359-370.

Morse, S. 2004. *Indices and indicators in development. An unhealthy obsession with numbers?* London: Earthscan Publications Ltd.

Moser, C. 1993. *Gender planning and development: Theory, practice and training*. New York: Routledge.

Nel, E.L. 1995. Local Economic Development in South Africa. *A Review of current policy and applied case studies*, 31-36. Johannesburg: Friedrich Ebert Stiftung.

Oakley, P. 1991. Projects with people: *The practice of participation in rural development*. Geneva: International Labour Office.

O'Donoghue, T. and Punch, K. 2003. *Qualitative Research in Action: Doing and Reflecting*, London, Routledge.

OECD, 1997. *Towards Sustainable Transport*. The Vancouver Conference, OECD Publications, Paris.

Oosterhaven, J and Knaap, T. 2000. Spatial economic impacts of Transport infrastructure investments *Paper prepared for the TRANS-TALK Thematic Network, Brussels, November 6-8, 2000*.

Oosterhaven, J. and Ward, E. 2000. Indirect economic effects of new infrastructure: a comparison of Dutch high speed rail variants. *Journal of Economic and social geography* 2003, Vol. 94 Issue 4: 439 September 2003.

Overman, H.G, Redding, S. and Venables, A.J. 2001. The economic geography of trade production and income: a survey of empirics. *Discussion paper 2978*. Centre for economic policy research, London.

Parfitt, J. 1997. Questionnaire design and sampling. In Flowerdew. R. and Martin D (eds) *Methods in Human Geography a guide for students doing research project*. Lonhman, Essex: 76-109.

Patton, M.Q. 1990. *Qualitative evaluation and research methods* (2nd ed.). Newbury Park, CA: Sage Publications.

Peet, R. 1994. *Modern Geographical Thought*. Blackwell, Oxford.

Perret, S., Anseeuw, W. and Mathebula, N. 2005. *Poverty and livelihoods in rural South Africa. Investigating diversity and dynamics of livelihoods. Case studies in Limpopo*. Pretoria, University of Pretoria.

Perret, S., Carstens, J., Randela, R. and Moyo, S. 2000. *Activity systems and livelihoods in the Eastern Cape Province rural areas (Transkei): Household typologies as socio-economic contributions to a Landcare project*. University of Pretoria / CIRAD, working paper 2000/28) October. 2000, 35p

Philips, S. 2004a. *The Expanded Public Works Programme (EPWP): Overcoming underdevelopment in South Africa's second economy*, National Department of Public Works, South Africa.

Philips, S. 2004b. *The Expanded Public Works Program*, typescript. National Department of Public Works, Government of South Africa.

Phillips, S. 2004c. *The Expanded Public Works Programme (EPWP)*. Presentation to the UNDP, HSRC & DBSA Conference on Overcoming Under-development in South Africa.

Pieterse, J.N. 2001. *Development Theory: Deconstructions and Reconstructions*. London: Sage.

Porter, G. 1995. The impact of road construction on women's trade in rural Nigeria. *Journal of Transport Geography* 3(1) 3-14.

Porter, G. 2002. Living in walking world: rural mobility and social equity issues in Sub-Saharan Africa. *World Development* 30(2): 285-300.

Porter, G. 2003. *Spatio-temporal perspectives on the social benefits and costs of roads and road transport: A discussion paper with special reference to women and children*. University of Durham. United Kingdom.

Potter, R.B., Binns T., Jennifer A., Smith D., Addison-Wesley. 1999. *Geographies of Development*. Essex: Addison-Wesley.

Preston, J. 2007. Accessibility, mobility and transport-related social exclusion. *Journal of Transport Geography* Volume 15, Issue 3, May 2007, Pages 151-160

Rao and Woolcock. 2003. Integrating Qualitative and Quantitative Approaches in Program Evaluation. [online]. <http://www.cultureandpublicaction.org/bijupdf/ch08.pdf> (access date 12 August 2006).

Ravallion, M. and Datt, G. 2004. Is Targeting through a Work Requirement Efficient?" In D. van de Walle & K. Nead (Eds.), *Public Spending and the Poor* (pp. 413-44). Baltimore: Johns Hopkins University Press.

Ravallion, M. and Wodon, Q. 1999. Poor Areas or Only Poor People? *Journal of Regional Science*, 39 (4), 689-711.

Ribbens, H. 2006. *Limpopo Province PAVE Strategy: Recommendations for Resource Management*. CSIR Transportec, Pretoria.

Rodrigue, J. Comtois C. and Slack B. (2009). *The Geography of Transport Systems* Second Edition, New York: Routledge.

Rodrik, D. 2003. *Growth strategies*. Havard University, John F Kennedy school of Government.

Rogerson, CM, 2000. Road construction and small enterprise development: the experience of the N4 Maputo corridor. *Development Southern Africa*. 17 (4): 535-566

Roos, M. 2005. How Important is Geography for Agglomeration?. *Journal of Economic Geography*, Vol. 5, No. 5, pp. 605-620.

Rostow, W.W. 1960. *The stages of economic growth: A non communist manifesto*. Cambridge University Press, Cambridge.

Sachs, J.D. 2005. *The end of poverty. Economic possibilities of our time*. New York: Penguin Press.

Sarah, A. 2006. *Evaluating Social Fund Impact: A Toolkit for Task Teams and Social Fund Managers*. Social protection discussion paper. 0611, World Bank.

Sayer, A. 1992. *Method in Social Science: A Realist Approach*. Routledge, London.

Schady, N. 2002. Picking the Poor: Indicators for Geographic Targeting in Peru. *The Review of Income and Wealth*, 48 (3), 417 –33.

Sen, A.K. 1999. *Development as freedom*. New York: Oxford University Press.

Seruma, S.E. 2007. *Promoting sound environmental management in labour intensive road works in Uganda; The process, Achievements and Challenges*. 12th regional seminar for labour Intensive Construction, South Africa.

Simler, K.R and Nhate, V. 2005. *Poverty, inequality, and geographic targeting: Evidence from small-area estimates in Mozambique*. FCND. Discussion Paper 192, IFPRI (International Food Policy Research Institute).

Slater, S. and Tsoka, M.G. 2006. *Social Protection in Malawi: A Status Report*, Report prepared for the National Safety Net Programme.

South Africa. 1994. Reconstruction and Development Programme (RDP), White Paper. [online]. <http://www.anc.org.za/ancdocs/policy/white.html> (access date 12 June 2006).

South Africa. 1995. *White Paper on National Strategy for the development and promotion of small business in South Africa*. Department of Trade and Industry, South Africa.

South Africa. 1996(a). Growth Employment And Redistribution (GEAR) [online]. <http://www.treasury.gov.za/publications/other/gear/chapters.pdf> (access date 12 June 2006).

South Africa. 1996(b). *White Paper on National Transport Policy* Pretoria: South African Department of Transport.

South Africa. 1996(c). Constitution of the Republic of South Africa [No. 108 of 1996] [online] www.info.gov.za/documents/constitution/1996/a108-96.pdf. (access date 15 May 2006)

South Africa. 2000 (a). National Land Transport Transition Act 22. [online]. <http://www.intowebdesign.co.za/transport/www.transport.gov.za/library/legislation/2000/act22.pdf> (access date 12 March 2006).

South Africa. 2000(b). The Integrated Sustainable Rural Development Strategy [online] <http://www.info.gov.za/otherdocs/2000/isrds.pdf> (Accessed date 10 March 2010).

South Africa. 2003. *Rural Transport Strategy for South Africa*. Department of Transport. [online] www.transport.gov.za/RuralTransport20Strategy.pdf. (Access date 12 November 2007).

South Africa 2005(a). Intergovernmental Relations Framework Act [No. 13 of 2005] [online] www.info.gov.za/view/DownloadFileAction?id=67865. (access date 12 June 2006).

South Africa. 2005 (b). *Millennium Development Goal Country (MDG) Report*. Pretoria. South Africa.

South Africa 2006 (a). *Joint Initiative on Priority Skills Acquisition (JIPSA)*. [online]. <http://www.info.gov.za/otherdocs/2007/jipsarep.pdf> (access date 12 February 2008).

South Africa. 2006 (b). *Accelerated and Shared Growth Initiative for South Africa (AsgiSA)*. [online]. <http://www.info.gov.za/asgisa/> (access date 03 March 2007).

South African Human Development Report. 2003. *The Challenge of Sustainable Development in South Africa: Unlocking People's Creativity*. UNDP, Oxford University press.

- Statistics South Africa. 1996. *Population Census results, Census In Brief*. [online]. <http://www.statssa.gov.za/census01/Census96/HTML/default.htm> (access date 12 March 2006).
- Statistics South Africa. 2003. *Census 2001: Census in Brief. Report No. 03-02-03 (2001)*. Pretoria: Statistics South Africa.
- Statistics South Africa. 2007. *Quarterly Labour Force Survey (QLFS), 2nd Quarter 2007*. Pretoria: Statistics South Africa.
- Statistics South Africa. 2008 (a). *Quarterly Labour Force Survey (QLFS), 2nd Quarter 2008*. Pretoria: Statistics South Africa.
- Statistics South Africa. 2008 (b). *Income and expenditure of households 2005/2006: Analysis of results*. Report No. 01-00-01, Pretoria, South Africa.
- Statistics South Africa. 2009. *Midyear population estimates*. Pretoria, South Africa.
- Stephen, L.S, Jean J. Schensul, LeCompte, M.D. 1999. *Essential ethnographic methods: observations, interviews, and questionnaires*. Altamira Press. Rowman and littlefield publishers, inc. United Kingdom
- Stewart-David, D. 1980. *The theory and practice of transport*. Heinemann: London.
- Stohr, W.B. 1990. *Global challenge and local response*. London and New York, Mansell Publishing and Tokyo. The United Nations University.
- Subbarao, K. 1997. Public Works as an Anti-Poverty Program: An Overview of Cross-Country Experience, *American Journal of Agricultural Economics*, 79 (2), 678-683.
- Swanepoel, H. and De Beer, F. 2000. *Development studies*. Cape Town: Oxford University press.
- Tashakkori, A. and Teddlie, C. 2003. *Handbook of Mixed Methods in the Social and Behavioral Sciences*. Thousand Oaks, CA: Sage.

Taylor, G. and Bekabye, M. 1999. *An Opportunity For Employment Creation, Labour-based Technology in Roadworks: The Macro-Economic Dimension*.

The Presidency. 2004. *Launch of Extended Public Works Programme*,. Address by President T Mbeki at the opening of EPWP in Limpopo.

Thwala, W.D. 2001. *A critical evaluation of large scale Development project and programmes in South Africa 1980-1994*. Unpublished MSc thesis, School of Civil and Environment engineering, University of the Witwatersrand, Johannesburg.

Thwala W.D. 2006. Urban renewal through labor-intensive construction technology in South Africa: problems and potentials. *African Studies Quarterly*. 8(4): 36-44.

Thwala W.D. 2007. Challenges facing labour-intensive public works programmes and projects in South Africa. *The International Journal of Construction Management* 1 – 9

United Nations Development Programme (UNDP). 1997. *Human Development Report 1997*. New York: Oxford University Press. <http://hdr.undp.org/reports/global/1997/> (access date 22 June 2009).

United Nations Development Programme (UNDP). 2000. *Overcoming Human Poverty: UNDP Poverty Report 2000*. New York: United Nations Development Programme.

United Nations Development Programme (UNDP). 2005. *Human Development Report 2005*. New York: Oxford University Press. <http://hdr.undp.org/reports/global/2005/> (access date 17 September 2008).

United Nations Development Programme (UNDP). 2006. *About the MDGs: the basics*. UNDP. [online]. <http://www.undp.org/mdg/basics.shtml> (access date 17 September 2008).

Unwin, T. 1994. *The Place of Geography*. Longman Scientific & Technical, Harlow.

Van de Walle, D. 2002. Choosing Rural Road Investments to Help Reduce Poverty. *World Development*. 30(4): 575-589.

Venables, A.J. 2006. *Shifts in economic geography and their causes*, Paper prepared for 2006 Jackson Hole Symposium, London school of economics and department for international development.

Vernon, H.J. and Zmarak, S. 2000. *Geography and Development*. London School of Economics, London.

Wallerstein, I. 1999. *The end of the world as we know it*. Minneapolis: University of Minnesota Press.

Ward, M. 1970. The Rigo road, Canberra. Australia National University, New Guinie Research Unit. Bullet N0 33

Wattam, M. 1998. *Community participation in rural transport infrastructure*, IT Transport Ltd.

Wei-Bin, Z. 2007. Economic geography and transportation conditions with endogenous time distribution amongst; work, travel, and leisure. *Journal of Transport Geography*, Volume 15, Issue 6, November 2007, Pages 476-493.

Weisbrod, G. 2009. *Economic Impact of Public Transportation Investment*. Boston, Economic Development Research Group, Inc.

Weisbrod, G. and Weisbrod, B. 1997. *Measuring Economic Impacts of Projects and programs*. Boston, Economic development Research Group.

White, H. P. and Senior, M. L. 1983. *Transport Geography*. London: Longman.

Williams, H. 1977. On the formation of travel demand models and economic evaluation measures of user benefit, *Environment and Planning A* 9 (1977), pp. 285–344.

Willis, K. 2005. *Theories and practices of development*. Routledge perspectives on development. London: Routledge.

Wilson, G.W. 1965. *Case Studies of the Effect of Roads on Development*. Highway Research Record No. 115.

Wilson, G.W. 1966. *Introduction: the impact of highway investment on Development*. The Brookings Institution, Washington DC, USA.

Wilson, G.W. 1973. *Towards a theory of transport and development (in) Transport and Development (ed.)*. B. S. Hoyle, London: Macmillan.

Wood, G. 2003. 'Staying Secure, Staying Poor: The "Faustian Bargain"', *World Development* 31(3): 455-71.

World Bank. 1994. *Infrastructure for Development*. New York: Oxford University Press.

World Bank. 2004. *Toolkit for economic evaluation of World Bank Transport project*, Institute for Transport Studies, University of Leeds.

World Development Report (WDR). 2001. *Attacking Poverty*. Oxford University press. [online]. <http://go.worldbank.org/l8rgh3wli0> (access date 14 July 2008).

World Development Report. 1994. *Infrastructure for development*. World Development Report. Washington, DC: World Bank.

ANNEXURE A: LETTER OF PERMISSION

Mr Eric Nndavheleseni Musekene
13 General De Wet Street
Thabatswane
0187
Date: 29 January 2008

The Chief Executive Officer
Roads Agency Limpopo (Pty) Ltd
Private Bag X9554
Polokwane
0700

Subject: Requisition for data and information related to the Gundo Lashu Programme and projects for Academic/Study purpose.

1. The above matter has reference.
2. I am currently registered for a PhD with the University of South Africa, under the Supervision of Dr AC Harmse, Geography Department and conducting a research project entitled: "A Geographic perspective of Labour-Intensive Methods in the Development and Maintenance of Transport Infrastructure".
3. The research has adopted a Matched Case Control study design where both project communes and participants will be matched with non project communes and non participants in order to evaluate the impact of these interventions at a broader level.
4. It is therefore anticipated for the study to acquire and make use of various secondary project administrative data sets as well as primary data collected through the use of a questionnaire (refer to the attached questionnaire: ANNEXURE B) and various field visits for analysis. Secondary data from Statistics South Africa, specifically data sets of the 2007 Community Household Survey will also be used.
5. Assistance is therefore required from the CEO to approve this requisition to enable for the acquisition of available project administrative data (Refer to the list of variables: ANNEXURE A), administration of the questionnaire to the project participants and for the CEO to assign a contact person from the agency to assist in further correspondences.
6. Thanking you in advance

Mr. Eric Nndavheleseni Musekene
Contacts (Cell: 082 927 7686) (Tel: 012 400 2464) (Email: ericmu@sassa.gov.za)

ANNEXURE B: RESPONSE LETTER FROM RAL

ROADS AGENCY LIMPOPO (Pty) Ltd



26 Rabe Street
RAL Towers
Private Bag X 9554
Polokwane
0700
Tel +27 15 291 4236
Fax +27 15 297 4151

Enquiries: N. Swarts

Mr. E.N. Musekene
Cell: 082 927 7686
Tel: 012 400 2464
Fax: 086 662 7686
Email: ericmu@sassa.gov.za

**RE: YOUR REQUEST FOR ACQUISITION OF AVAILABLE PROJECT
ADMINISTRATIVE DATA ON SOME OF THE GUNDO LASHU PROJECTS.**

Your letter dated 5/06/2008 has reference.

In principle, RAL does not have a problem with your request and hereby provisionally grant you permission to conduct your studies on the Gundo Lashu Programme as requested.

RAL however request you to make contact with our Mr. Niel Swarts (082 4546 112) in order to have a discussion with our office on your exact needs and the practicalities and arrangements regarding your study. Depending on the level of involvement required from RAL, permission can then be granted to you for your intended studies.

RAL also request that the results of your studies be made available to RAL as a matter of interest.

We trust you find this in order.

Yours faithfully,


.....
CHIEF EXECUTIVE OFFICER

19/06/2008
.....
DATE

Directors: Mr. EM Makwela (Chairperson), Ms. MJ Boshielo, Mr. TA Mokone, Mr. LJ Madisha,
Ms. MM Raganya, Mr. TJ Tshikundamalema, Mr. S Mojapelo, Mr. BR Shibambu (CEO)
Roads Agency Limpopo (Pty) Ltd, Reg no. 2001/025832/07

Dear Participant

This letter is an invitation to consider participating in a study I am conducting as part of my PhD degree in the Department of Geography at the University of South Africa (Unisa) under the supervision of Dr A.C Harmse. I would like to provide you with more information about this project and what your involvement would entail if you decide to take part.

Over the years, community participation within the road construction and maintenance sector has been limited due to the use of conventional methods within the industry. Today with the sector has played a significant role in uplifting the lives of the surrounding communities through Job creation, provision of access to services etc. Research in these areas also suggests that the participation of local people in this sector is rapidly increasing and supported by government initiatives such as EPWP, JIPSA etc. Coincidentally, the public sector is also becoming more able to provide the same level of service due to the impact of changes in the social, economic, political, and technological environments. Hence, even more pressure is being placed on government to support these initiatives. The purpose of this study, therefore, is to evaluate these initiatives in line with the perceived and real impacts generated by these initiatives.

Participation in this study is voluntary. It will involve an interview of approximately 1 Hour in length to take place in a mutually agreed upon location. You may decline to answer any of the interview questions if you so wish. Further, you may decide to withdraw from this study at any time without any negative consequences by advising the researcher. With your permission, your response will be captured in the questionnaire to facilitate collection of information, and analyzed thereafter. Shortly after the interview has been completed, I will read out your responses to give you an opportunity to confirm the accuracy of our conversation and to add or clarify any points that you wish.

All information you provide is considered completely confidential. Your name will not appear in any thesis or report resulting from this study, however, with your permission

anonymous quotations may be used. Data collected during this study will be retained until the completion of the study in a safe storage. Only researchers associated with this project will have access. There are no known or anticipated risks to you as a participant in this study.

I would like to assure you that this study meets all ethical standards set out by the HSRC. However, the final decision about participation is yours. I hope that the results of this study will be of benefit to those individuals and institutions directly involved in the study, other institutions not directly involved in the study, as well as to the broader research community.

Thanking you in advance for your assistance in this project.

Eric Nndavheleseni Musekene

ANNEXURE D: CONSENT FORM

I have read the information presented in the information letter about a study being conducted by Mr. Eric Nndavheleseni Musekene from the Department of Geography at the University of South Africa. I have had the opportunity to ask any questions related to this study, to receive satisfactory answers to my questions, and any additional details I wanted.

I am aware that I have the option of allowing my interview to be recorded into the questionnaire to ensure an accurate recording of my responses.

I am also aware that excerpts from the interview may be included in the thesis and/or publications to come from this research, with the understanding that the quotations will be anonymous.

I was informed that I may withdraw my consent at any time without penalty by advising the researcher.

With full knowledge of all foregoing, I agree, of my own free will, to participate in this study.

YES NO

I agree to be interviewed.

YES NO

I agree to the use of anonymous quotations in any thesis or publication that comes of this research.

YES NO

Participant Name: _____

Participant Signature: _____

Date: _____

ANNEXURE E: QUESTIONNAIRE

1 General Information

1.1 Questionnaire Number		1.2 District Name	
1.3 Province		1.4 Municipal Name	
1.6 Village/Town Name:		1.5 Interviewer Code	<input type="text"/>
1.7 Name of Respondent			
1.8 Address of Respondent	<i>1.8.1 House Number:</i>		
<i>(or physical location)</i>	<i>1.8.2 Street Name:</i>		
	<i>1.8.3 Area:</i>		
1.9 Tel/Cell Numbers	<input type="text"/>	<input type="text"/>	
1.10 Particulars of visits	Date	Time started	Time ended
1.10.1 First visit			
1.10.2 Second visit			
1.11 No. of Refusals		<i>(i.e. selected respondents who refused to participate)</i>	
1.12 No. of Substitutions		<i>(i.e. no. of households visited AFTER original respondent)</i>	

2. Interviewer Declaration

I certify that this interview took place <i>in full</i> with the recorded respondent and that the information contained in this questionnaire is an accurate reflection of his/her views.		
Interviewer name	Signature	Date

3. FIELDWORK CONTROL (FOR OFFICE USE ONLY)

<i>Check backs to be completed on a sample of questionnaires per interviewer</i>			
Check back	Signature	Date	Remarks
Personal			
Telephonic			
<i>Checking to be completed for ALL questionnaires</i>			
Data Quality Checks	Signature	Date	Remarks
Supervisor:			
Office check:			
Data capturer:			
2. Introduction			

Hello, my name is..... and I am administrating questionnaires for a study on the impact of labour based transport projects.

I wish to speak to participants and non participants of the Gundo Lashu labour intensive projects. I will ask questions about education, employment and income in your household as well as questions about your experiences in the project and perceived impacts, both negative and positive that have resulted due to the implementation of the project. I will also ask about your understanding of the procedures to be followed when getting involved in the project. For non participants, I wish to know why they are not participating. The information will help this study to understand how the project has benefited local people, what challenges are encountered in the implementation of the project, and perhaps assist in unpacking what could be done better in future.

3. Screening Questions

4.1 Are you a participant of a Labour Based Road Project? [FOR CONFIRMATION]

4.2. Do you have any experience on previous projects of this nature

Yes	1	Continue interview
<p>4.2.1 Name of the Project: _____</p> <p>4.2.2 Date of first Participation: Date...../ Month...../ Year.....</p> <p>4.2.3 Date of last participation: Date...../ Month...../ Year.....</p> <p>4.2.4 Project key objectives: _____ _____ _____ _____</p> <p>4.2.5 The role of project participants: _____ _____ _____ _____</p>		
No	2	Continue interview

4.3 Under which category of road construction is your project classified

Rural gravelling and re-gravelling	1	New construction (Road tarring)	4
Storm water drainage construction	2	Rehabilitation (Crack sealing, Joint Sealing, cutting, patching, etc.)	5
Road maintenance (Resurfacing, Restoration)	3	Other Specify	20

4.4 For how long have you been participating in the project?

Less than 6 Months	1
6 -12 months	2
12-18 months	3
18-24 Months	4

24-32 months	5
32 – 48 Months	6
Other (Specify)	7

4.5 What is the occupational category of your role in the project?

Project member	1
Foreman	2
Management	3
Committee member	4

Consultant	4
Other: Specify	20

4.6 Have you received any training to enable you to perform your task. Yes/No if yes specify the type of the training and dates provided

Yes	1
-----	---

No	2
----	---

4.7 At what stage of the project cycle did you receive training?

Before project starts	1
Project inception	2
Middle of the project	3

After the project	4
Other (Specify)	20

4.8 Do you have any previous knowledge and/or experience in the same field? Yes/No If Yes specify the type of experience

4.9 Were you issued with any proof of attendance Yes/No; Was training accredited? If Yes specify the SAQA accreditation and level

Level 1	1
Level 2	2
Level 3	3
Level 4	4

Level 5	5
Level 6	6
Other (Specify)	20

4.10 Have you ever applied to participate in labour based road programmes before? [NON PARTICIPANTS ONLY]

Yes	1
No	2

4.11 IF YES: Why were you not successful? [DO NOT READ OUT. MULTIPLE RESPONSE]

[NON PARTICIPANTS ONLY]

Did not have relevant skills required	1
My/our income was too high	2
Not a South African citizen/ perm resident	3

Do not know	4
Other (Specify)	20

4.12 IF NO: What has stopped you from applying for participation on LBTP?

[DO NOT READ OUT. MULTIPLE RESPONSE] **[NON PARTICIPANTS ONLY]**

Don't qualify on selection criteria	1
Don't know how to apply	2
Project office too far away	3
Don't have correct documentation	4
Can't miss work to go to office	5

Travel costs too expensive	6
Participation not worth the effort	7
Am not SA citizen/perm resident	8
Other (Specify)	20

5. Household Profile

I would like to begin by asking you some questions about your household. By 'household' I mean a family or group of people who live and eat together and who sleep here at least 4 nights a week.

5.1 What type of area does the household live in? [CODE BY OBSERVATION]

Urban formal	1
Urban mixed	2
Urban informal	3
Urban RDP-type development	4
Commercial farm (rural)	5

Rural village	6
Rural scattered	7
Other (specify)	20

5.2 What type of dwelling does your household occupy? [CODE BY OBSERVATION. SINGLE MENTION]

<i>Formal</i>	House or formal structure on a separate stand	1
	House/room, in backyard	2
	Apartment/flat	3
	Hostel, dormitory, boarding house	4
<i>Informal</i>	Informal dwelling/shack	5
<i>Traditional</i>	Traditional hut	6
<i>Other</i>	Specify:	20

5.3 How many people live in your household? Remember to include yourself.

5.4 Does your household have access to the following services? [READ OUT EACH OPTION]

Service	Yes	No
Electricity	1	2
Running water in the house	1	2
Landline telephone (Telkom)	1	2
Cellular phone	1	2
Flush toilet in home	1	2
Communal toilet	1	2
Refuse removal	1	2

5.5 Does your household own any of the following? [READ OUT EACH OPTION]

Asset	Yes	No
Land line (Telkom)	1	2
Cell phone	1	2
Livestock	1	2
Land	1	2
Lounge/bedroom furniture	1	2
Personal computer at home	1	2
Microwave oven	1	2

6. Demographics of Primary participants/non participants

Now I will ask some questions specifically about you, such as your age and education.

6.1 Sex of the respondent [CODE BY OBSERVATION]

Female	1	Male	2
--------	---	------	---

6.2 (a) Age of the respondent [AGE AT LAST BIRTHDAY IN COMPLETE YEARS]

Less than 15 Years	1	46-55 Years	5
16 -25 Years	2	56-65 Years	6
26-35 years	3	More that 66 Years	20
36-45 years	4		

6.2 (b) How Old are you _____

6.3 Race of the respondent [CODE BY OBSERVATION OR ASK IF UNSURE]

African	1	White	4
Indian	2	Other (specify below)	20
Coloured	3		

6.4 What is your marital status? [READ OUT. SINGLE MENTION]

Single (never married)	1	Widow/widower	5
Living with partner	2	'Desertion'	6
Married	3	Other (specify below)	20
Divorced or separated	4		

6.5 Does your spouse/partner live with you in the same household...? [READ OUT.

SINGLE MENTION]

Always	1	Hardly ever	4
Most of the time	2	Never	5
Some of the time	3		

6.6 **What is the highest level of education you have achieved?** [Do NOT READ OUT. SINGLE MENTION]

No formal schooling	1
Grade 1/Sub A	2
Grade 2/ Sub B	3
Std 1/ Grade 3	4
Std 2/ Grade 4	5
Std 3/ Grade 5	6
Std 4/ Grade 6	7
Std 5/ Grade 7	8
Std 6/ Grade 8	9

Std 7/ Grade 9	10
Std 8/ NTC 1/ Grade 10	11
Std 9/ NTC 2/ Grade 11	12
Std 10/matric/ Grade 12	13
Diploma after matric	14
Bachelor degree	15
Further studies	17
Other (Specify)	20

7. Employment of the Respondents

7.1 **In the last seven days, did you do any (outside your project activities) of the following activities, even for only an hour?** [SHOW PROMPT CARD. MULTI-MENTION. REMEMBER TO CIRCLE "NO" IF HAVEN'T DONE THE WORK]

7.1.1 **Run or do any kind of business, big or small for yourself or with one or more partners? [Including Family Members]**

Examples: Selling things, making things for sale etc

Yes	1	No	2
-----	---	----	---

If Yes, Provide a full description of the business:

7.1.2 **Do any work for a wage, salary or commission or payment in kind (excl. domestic work)?**

Examples: a regular job, contract, casual or piece work for pay, work in exchange for food or housing.

Yes	1	No	2
-----	---	----	---

7.1.3 Help unpaid in a household business of any kind?

Examples: Help to sell things, make things for sale or exchange, doing the accounts, cleaning up for the business, etc. Don't count normal housework.

Yes	1	No	2
-----	---	----	---

7.1.4 Do any work on your own or the household's plot, farm, food garden, cattle post or kraal or help in growing farm produce or in looking after animals for the household?

Examples: ploughing, harvesting, looking after livestock.

Yes	1	No	2
-----	---	----	---

7.1.5 Do any construction or major repair work, on your own home, plot, cattle post or business or those of the household?

Yes	1	No	2
-----	---	----	---

7.2 How do you support yourself? [READ OUT OPTIONS. MULTI-MENTION]

Did odd jobs during the past 7 days	1	Unemployment insurance fund	5
Supported by persons in the household	2	Savings or money previously earned	6
Supported by persons not in the household	3	Old age or disability pension	7
Supported by charity, church, welfare etc	4	Other sources e.g. bursary, study loan	20

7.3 Why did you not work during the past seven days? [Do NOT READ OUT. SINGLE MENTION]

Found a job but waiting to start	1	Lack of skills/qualifications	8
Scholar/student	2	Cannot find any work	9
Homemaker and prefers not to work	3	Cannot find suitable work (salary, location etc)	10
Retired and prefers not to seek work	4	Contract worker e.g. mine worker resting	11
Disabled	5	Retrenched	12
Unable to work due to illness, etc	6	Other (Specify)	20
Seasonal worker e.g. fruit picker	7		

7.4 Have you been offered any job in the past 6 months and turned it down?

Yes	1	No	2
-----	---	----	---

7.5 Do you know of any available work for which you have the relevant qualifications but are not willing to do?

Yes	1
No	2

7.6 Why are you not willing to do this work? [Do NOT READ OUT. MULTIPLE MENTION]

Wages too low	1	Work not legal	5
Job is not permanent	2	Could jeopardise the CSG	6
Location (work too far)	3	Other (specify below)	20
Working conditions unstable	4		

7.7 If a suitable job is offered, would you accept it?

Yes	1	No	2	Don't know	3
-----	---	----	---	------------	---

7.8 IF NOT: Why would you not accept it? [Do NOT READ OUT. MULTIPLE MENTION]

7.9 During the past four weeks (month), have you taken any action: [READ OUT OPTIONS]

	Yes	No
To actively look for any kind of work	1	2
To start any kind of business	1	2

7.10 How long have you been trying to find work or start a business? [DO NOT READ OUT.]

Less than a month	1
1 month to less than 2 months	2
2 months to less than 3 months	3
3 months to less than 4 months	4
4 months to less than 6 months	5

6 months to less than 1 year	6
1 year to less than 3 years	7
3 years or more	8
Don't know	9

8. Household Income

8.1 How many people in this household are currently employed (both in the formal and informal sector)? [CODE '0' IF NO-ONE IS EMPLOYED]

<i>Income category</i>	<i>No. of people in household</i>
Agriculture	
Construction (Roads, Dams, Infrastructures etc)	
Information technology	
Transport, telecommunication and storage	
Other (Specify)	

8.2 Taking into account all the people living in this household, what would you estimate is the total **regular household income per month?** [READ OUT. ASK FOR ESTIMATED AMOUNT FOR EACH. ASK FOR ASSISTANCE FROM ANOTHER HOUSEHOLD MEMBER AFTER INTERVIEW IF REQUIRED]

	Amount (R)
Salary/wages/earnings from formal sources of income	
Salary/wages/earnings from informal sources of income	
Money (remittances) from family members living outside the household but in South Africa	
Money (remittances) from family members living outside South Africa	
Money from grants/government	
Money from other sources/business activities e.g. child maintenance, private pension, rental	
Total regular monthly income	

8.3 What would you estimate is **YOUR individual or personal total regular income per month?** [READ OUT OPTIONS. ASK FOR ESTIMATED AMOUNT FOR EACH.]

	Amount (R)
Salary/wages/earnings from (self-)employment, informal trading, small-scale agriculture	
Money (remittances) from family members living outside the household but in South Africa	
Money (remittances) from family members living outside South Africa	
Money from grants/government	
Money from other sources/business activities e.g. child maintenance, private pension, rental	
Total regular monthly income (Add to constitute Monthly Household Income)	

	Amount (R)
Salary/wages/earnings from (self-)employment, informal trading, small-scale agriculture	
8.4 What would you estimate is your HUSBAND/WIFE'S individual total regular income per month? [READ OUT OPTIONS. ASK FOR ESTIMATED AMOUNT FOR EACH. ASK FOR ASSISTANCE IF REQUIRED]	Amount (R)
Salary/wages/earnings from (self-)employment, informal trading, small-scale agriculture	
Money (remittances) from family members living outside the household but in South Africa	
Money (remittances) from family members living outside South Africa	
Money from grants/government	
Money from other sources/business activities e.g. child maintenance, private pension, rental	
Total regular monthly income	

9. Expenditure Patterns and Decision-making

9.1 Please estimate the amount of money spent by the household on the following expenses PER MONTH. This information will be kept confidential.

[PLEASE WRITE ANY EXPLANATORY NOTES IN THE SPACE BELOW]

	R		R
Food		Transportation (adults)	
Tobacco		Transportation for school (children)	
Clothing (adults)		Personal care	
Clothing (children)		Holiday	
Housing		Debts (loans etc)	
Furniture		Debt service	
Household expenses		Child care	
Medical care (adults)		School fees	
Medical care (children)		Uniforms, school books etc	
Communication			

Notes:

9.2 ASK PROJECT PARTICIPANTS ONLY: Are there any expenses that the household can pay now that you participate in the project that the household struggled with before participating in the project? [LIST UP TO ALL CATEGORIES]

Food	1	Communication	10
Tobacco	2	Transportation (adults)	11
Clothing (adults)	3	Transportation for school (children)	12
Clothing (children)	4	Personal care	13
Housing	5	Holiday	14
Furniture	6	Debt service	15
Household expenses	7	Child care	16
Medical care (adults)	8	School fees	17
Medical care (children)	9	Uniforms, school books etc	18

9.3 Do you have a bank account?

Yes	1	No	2
-----	---	----	---

9.4 Do you have any savings?

Yes	1	No	2
-----	---	----	---

9.5 ASK project participants ONLY: Using the same list, are there any types of food that you buy more of now than you did before you become a project participant? [DO NOT READ OUT. MULTIPLE RESPONSE]

Red meat e.g. beef	1	Fruit	5
White meat e.g. chicken	2	Milk	6
Grain products	3	Cheese	7
Fresh vegetables	4	Other (specify)	20

9.6 Which of the following statements best describe how important financial decisions are USUALLY made in this household? [READ OUT OPTIONS. SINGLE MENTION]

I make the decisions about how money is spent	1
My parnter/spouse makes the decisions about how money is spent	2
My mother/father makes the decisions about how money is spent	3
We both/all have a say in how the money is spent	4

9.7 Who usually makes the decisions about how much money will be spent on the following expenses? [USE THE CODES GIVEN IN THE TABLE BELOW]

Overall household spending		Clothes for children	
----------------------------	--	----------------------	--

Food and groceries for household	
School costs (not fees) e.g. uniforms, transport	
Utilities e.g. water, electricity	

Entertainment	
Paying off debt/savings	
Medical costs	

<i>Respondent</i>	1
<i>Husband/wife/partner</i>	2

<i>Parent</i>	3
<i>Grandparent</i>	4

<i>Other relative</i>	5
<i>Other non-relative</i>	20

10. Access to Other Services/ Poverty Alleviation Programmes

10.1 Have you worked on a public works programme in the past years?

Yes	1
No	2

Go to q.10.2

Go to q.11

10.2 IF YES: Which one? [DO NOT READ OUT. MULTIPLE RESPONSE]

Road Construction	1
Working for Fire	2
Working for Wetlands	3

Community Development Workers	4
Working for Water	5
Other (specify)	20

10.3 What would you say were the key challenges you have faced in applying for participation into the project, if any? [DO NOT READ OUT. RECORD OTHER CHALLENGES OR ELABORATE IN SPACE BELOW]

Lack of required documentation	1
Travel time to the project office	2
Lack of information/assistance	3

No real challenges	4
Other (specify below)	20

10.4 How much did you earn as salary per month from the project

0-500	1
501-1000	2
1001-1500	3
1501-2000	4

2001-2500	5
2501-3000	6
3001 +	7
No compensation or payment in kind (Specify)	20

10.5 Which statement best fits how you spend this money? [READ OUT. SINGLE MENTION]

The money is spent exclusively on children e.g. food, school fees, child's medical costs etc.	1
A portion of the money is spent exclusively on my personal needs	2
The money is pooled with other household income to cover general household expenses	3
Other, Specify	20

10.6 Has the project money helped you or other household members to do any of the following:

	Yes	No
Pay off debts	1	2
Save money/put money aside for future use	1	2
Buy stock to sell/generate income	1	2
Pay for transport to look for employment/self-employment opportunities	1	2
Pay for 'extras' (treats, entertainment)	1	2

10.7 How can you best describe the general impact of the road [Use this as guidance. Has the road improved your access to socio-economic opportunities, Has it help you start new businesses etc.]

10.8 How many minutes do you travel to the nearest health facility?

10.9 How many Minutes do you travel to the nearest School?

(Primary) _____

(Secondary) _____

11.1 What elements of the program design and implementation do you like most [READ OUT OPTIONS AS GUIDE. MULTIPLE RESPONSE]

Amount of payment	1
Duration of work	2
Method of supervision	3
Selection of participants	4
Scope of work	5
Method of remuneration	6
Other	7

11.2 Specify in line with the choice(s) on 11.1 above:

11.3 What element of the programme would you like to change or redesign and why:

11.4 What is your general feeling about the construction of roads using LIC methods

11.5 If you are given a decision making power, would you recommend this approach in other places (yes or no and provide reason for each choice)

THANK YOU VERY MUCH FOR YOUR TIME AND CO-OPERATION