

# Using the integrated rural mobility and access (IRMA) approach in prospering rural South Africa

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## ABSTRACT

This paper presents an examination and analysis of rural development struggles facing contemporary South Africa. An analytical transportation approach is used to tease out current theory, practice and obstacles to rural development sustainability. A case study and examples from a typical deep, isolated and fragmented rural community are presented, portraying the potential and impact of low-cost transport access and mobility technology interventions in stimulating rural prosperity. Sustainable rural settlements implications of current rural development approaches are outlined. The potential and impact of the integrated rural mobility and access approach (IRMA) in unlocking socio-economic and spatial livelihood opportunities are discussed. In this regard, rural prosperity is viewed as being more than just a simple increase in output or economic growth. The recommendations challenge the principles and values of orthodox rural development approaches. Instead, this paper unravels the uniqueness of rural spaces, places, people and cultures with a view to understanding more meaningfully the context and content of rural development drivers as a precursor to the generation of appropriate and targeted interventions.

## Key Words

*Rural development, sustainability, low-cost technology, transport access and mobility, South Africa, poverty, prosperity*

## 1.0 INTRODUCTION

While not intractable, access and mobility are arguably the most stubborn challenges to improved service delivery in rural South Africa. For example, whereas demand for pedestrian bridges, access roads and services is insatiable in rural areas of KwaZulu-Natal, Limpopo, Mpumalanga and the Eastern Cape, infrastructure and services backlogs still remain massive nationally (Mashiri et al, 2003; DoT, 2007).

Rural service delivery has thus been severely compromised.

Examining, analysing and generating appropriate interventions to engender rural development in contemporary South Africa remains a growing challenge. Clearly, adopting an analytical transportation approach in unpacking current theory and practice relating to sustainable rural development could assist in understanding and teasing out these issues. In this paper, it is argued that rural prosperity is more than just an increase in output or economic growth. An instrument with the potential to unlock sustainable socio-economic and spatial livelihood opportunities - the integrated rural mobility and access approach (IRMA) - is presented (Naude et al, 2005).

## 1.1 Rural Poverty and Deprivation

Affordable and reliable transport is critical in enabling access to basic services and resources. Effective and efficient transport infrastructure and services act as stimuli for growth and development as well as uplifting livelihoods through opening a range of socio-economic opportunities to individuals and communities alike. However, geographical isolation, long distances, poverty levels, poor infrastructure and limited transport services inhibit access to services and resources, particularly for children, youths, disabled people and the aged in rural and peri-urban areas (Mashiri et al, 2008a,b). Between 40% and 55% of South Africa's population can be classified as living in poverty while 25% of the population can be categorised as ultra-poor (May, 2006). The incidence of poverty is closely related to unemployment, underemployment, and unremunerative forms of employment.

In rural development literature, key vehicles in the fight to reduce rural poverty are considered to be agriculture, infrastructure and services, social facilities, institutional regimes, and indigenous knowledge systems. In most developing countries, agriculture, agriculture-related

activities, infrastructure and eco-tourism provide most of the employment in rural areas. This may mean "*that increasing agricultural growth, infrastructure and services programmes and projects may have a large positive impact on poverty*" (Mashiri et al, 2008a). While it is widely assumed that investment in transport infrastructure and services contributes to economic growth, there is a shared concern about the limited knowledge base linking transport infrastructure and services to poverty reduction and rural prosperity.

This paper showcases a rural area where government has intervened proactively. The example is drawn from the Department of Roads and Transport, in Mpumalanga, making references to aspects that reflect the spirit and purpose of the Expanded Public Works Programme.

### **1.2 Definition of Terms**

Rural prosperity has to do with economic growth, increase in individual, household and communal disposable income, reduction of inequalities, appropriate use of local knowledge and content, institutional alignment and strengthening, engagement and dialogue and ultimately pushing back the frontiers of poverty. Achieving rural prosperity is a multidimensional and multidisciplinary activity. It demands approaches that address the whole spectrum of the poverty domain.

The IRMA approach is defined as endeavours to find innovative and sustainable solutions to challenges relating to accessing socio-economic opportunities by communities through the provision of appropriate and integrated rural transportation infrastructure and services, complete with adequate funding streams for maintenance and development (Mashiri et al, 2008a).

Poverty is defined as "the denial of opportunities and choices most basic to human development to lead a long, healthy, creative life and to enjoy a decent standard of living, freedom, dignity, self-esteem and respect from others" (UNDP, 1998).

Rural livelihoods are defined as increasing production, employment and income of the individual, household and community. In addition, it joins the concepts of economic development, reduced vulnerability, and environmental sustainability, whilst building on the strengths of the rural poor (Craney, 1999). This paper considers both perspectives of livelihoods in discussing how access and mobility can be catalytic instruments in advancing rural prosperity.

Having defined key terms and concepts that are used throughout this paper, the next section explains the structure and organisation of the paper.

### **1.3 Organisation of Paper**

*Section one* presented the background information and introduction to the thematic focus of the paper. Key concepts and definitions informing the discussion have been unpacked. The remainder of the paper is organised as follows. The *second section* presents theoretical aspects linking rural access and mobility with poverty alleviation. *Section three* examines the role and potential scope played by the integrated rural access and mobility concept/approach in tackling headline issues in rural development, with a view to increasing access to, and by extension, exploitation of socio-economic opportunities. This is analysed in the context of rural environments and broader national space economy issues including the scope for improving rural livelihoods in South Africa. This section also showcases the case study, providing fillers on how IRMA can be used in contributing towards rural prosperity in developing rural areas in South Africa and elsewhere. *Section four* offers concluding remarks, while *section five* presents the major recommendations of the study.

## **2.0 SITUATING TRANSPORT IN THE RURAL DEVELOPMENT DISCOURSE**

Affordable and reliable transport is critical in enabling access to basic services and resources, including healthcare and education. However, geographical isolation, long distances, poverty levels, poor infrastructure and limited transport services inhibit access to services and resources, particularly for children, youths,

disabled people and the aged in rural and peri-urban areas (Mashiri et al, 2007a,b).

Improved access to infrastructure, services and amenities is of course a major challenge of the post-apartheid government. A substantial amount of information on the extent of people's access is available, including disaggregations by race and place of residence (Stats-SA, 2002); on accessibility improvements since 1994 (Khosa, 2000); on maintenance problems in respect of new infrastructure, e.g. water pumps (Department of Housing, 2002); on the capital costs associated with remedying the delivery backlogs (Jackson & Hlahla, 1999); and on the institutional mechanisms that must be put in place in order to accelerate delivery and ensure sustainability (Jackson & Hlahla, 1999).

An important point however is that, notwithstanding large strides in improving infrastructure and access to services and amenities, even when services are present, lack of access to them may still be experienced by the most marginalized community members. Some community members' ability to access services is hampered by a range of factors, some of which have to do with the design of the services themselves or the ability to pay occasioned by the extremity of people's poverty. For example, even where a clinic does exist in the vicinity, and where it may offer free basic care, travelling costs may still be prohibitive, and people may find it difficult to be at the clinic during the times when it is open (May *et al.*, 1999).

Transportation can be used as one tool in reconstruction, redevelopment and transformation of spaces, places, people and cultures to overcome, for example, fossilized apartheid practices, and to entrench the principles and values shaped by the democratic dispensation ushered in since 1994.

Investment in transport infrastructure has remained a priority area of attention in developing countries, South Africa included. While it is widely assumed that investment in transport infrastructure and services contributes to economic growth, there is a shared concern about the limited knowledge-base linking transport infrastructure and services to poverty reduction and rural prosperity (Mashiri et

al, 2008a, b). Experience shows that the poor disproportionately miss out on the benefits of infrastructure and services projects, with particular reference to deep rural, remote and peripheral communities (Naude et al, 2005). Indeed, the full benefits of transport infrastructure and services investments are often not realized because of inadequate maintenance, poor siting and location of accessibility infrastructure and inappropriate project life-cycle model utilisation.

Consequently, the democratic government in South Africa committed itself to a process of levelling the playing field that involves the redistribution of economic and social opportunities. This witnessed the pronouncement of transformation strategies such as the Reconstruction and Development Programme (RDP), Growth, Employment and Redistribution (GEAR) and Accelerated and Shared Growth Initiative of South Africa (ASGISA), Broad-Based Black Economic Empowerment (BBBEE), New Economic Partnership for African Development (NEPAD) to name but a few. These programmes are expected to achieve spatial and socio-economic transformation, growth and development. In short, perhaps one may argue that the mandate of Government is to deliver a better life for all, but particularly for those so unjustly disadvantaged under apartheid. In the context of transportation and rural development, sharper and tighter policy frameworks, programs and projects were embarked on in an endeavour to concretise the vision and goals of creating a rural environment in which it is indeed a pleasure to work, live, produce and recreate in.

A large number of rural households are still dependent on the natural resource base for a range of basic living requirements. Across all studies to date, the most commonly used resources and the main contributors to total value are indigenous wood for fuel and fencing materials (70 percent of rural households), wild edible fruits (72 percent of households), wild herbs (93 percent of households), medicinal plants (50 percent of households), wood for utility items (90 percent of households), grazing for livestock (30 percent of households), and thatch, clay, sand, poles and other building materials (May, 1998; 2006). Within these

uses, rural dwellers can quite easily list between 150-300 species procured regularly for household use (Shackleton & Mander, 2000). There are very few rural households that do not use at least one of the resources, although the degree of use may vary considerably from region to region based on a range of factors, including resource availability and accessibility, resource productivity, institutional controls, population densities, employment levels, income levels, education levels, availability of alternatives, and personal and cultural preferences (Shackleton & Mander, 2000). There is evidence that poorer households and more deep rural households use a greater diversity of resources, and more of each resource than more well-off or less isolated households (Cater et al, 1999). They are also more dependent on the resource base as a fall-back in times of need.

What binds together the foregoing bundle of human socio-economic activities in space is the quality and quantity of access and mobility infrastructure and services. A high-quality road and transport network and system will entail greater penetration and access to resources of economic trading value, easy exchange and trading of such with local and external markets as well as greater connectivity, linkage and inflows of communication with the environment. It is for this reason that it can be argued that improvements in access and mobility infrastructure are a precondition and predecessor for spatial, socio-economic growth and development.

In recent years, considerable research in developing countries has been conducted on the extent of and the required conditions for road improvement to help reduce poverty (Mashiri et al, 2003, Naude et al 2005, Mashiri et al, 2007a,b, Mashiri et al, 2008, [www.ifrtd.org](http://www.ifrtd.org), [www.worldbank.org](http://www.worldbank.org), [www.sadc.int](http://www.sadc.int)). These studies take stock of the current knowledge on the relationship between transport infrastructure and poverty reduction, review lessons learned and best practices in past and on-going transport, poverty and infrastructure projects, and identify policy and operational implications as well as priorities for future research such as typified by the IRMA approach and project in Mpumalanga Province.

Having established the transportation conceptual framework of analysis to rural poverty and development in South Africa, the next section presents a discussion and analysis of the IRMA case study in Mpumalanga Province.

### 3.0 DISCUSSION AND ANALYSIS

#### 3.1. Rural Access and Mobility

As indicated elsewhere, access and mobility are considered as significant stumbling blocks to service delivery in rural South Africa. It is of interest to note that the demand for pedestrian bridges and access roads is huge, particularly in rural KwaZulu-Natal, Limpopo, Mpumalanga, Eastern and Western Cape provinces (refer to Figure 1 & 2). As an example, in a submission to the Finance and Economic Development Portfolio committee in April 2006, it was put on record that there is a need to be build 146 pedestrian bridges province wide in KwaZulu-Natal. With regards to access roads, it was reported that 2 740 km needed to be constructed at an estimated cost of R687 million. This was despite the construction to successful completion of 14 pedestrian bridges and over 160km of access road projects. However, nationally the access and mobility infrastructure and services backlog still remains huge (DoT, KwaZulu-Natal, 2007)



Figure 1: Suncity-Mayflower Crossing-before intervention

#### 3.2 Rural Development Impact Technology in Practice: The Integrated Rural Mobility and Access (IRMA) Project in Mpumalanga Province – A Case Study

The CSIR mandate specifically recognises the fact that the institution exists, among other things, to support sustainable development through its various research

and development (R&D) activities. This resonates with the National R&D Strategy for South Africa, which emphasizes that science and technology will play a critical role in the process of sustainable development and in particular rural development.



Figure 2: Suncity Mayflower Crossing: Works in Progress

Inherent in South Africa is a dual socio-economic “access divide”, clearly visible between metropolitan/urban and non-metropolitan/rural areas, which has subsequently led to a significant gap between the first and deep rural economy (refer to Figure 1). Rural communities, and particularly those in deep rural areas, lag considerably behind in terms of infrastructure and service delivery due to geographic isolation, low population densities, poor transport and telecom connectivity and legacies of apartheid, especially in the former homelands. In response to the above, the CSIR has undertaken research in pursuit of a better understanding of rural issues and the development of innovative and sustainable solutions. One such approach is the IRMA approach, which is presented in Figure 3.

The asset-based livelihood approach to community infrastructure planning, provision and management focuses attention on the productive, social and locational assets of rural households, with the understanding that the quantity, quality and productivity of their portfolio of assets determine the potential for long-term growth and poverty reduction (Carney, 1999). As such, *household and community assets may be considered the ‘drivers’ of sustainable growth and poverty reduction*. The asset-based livelihoods approach can be used to explore relationships between *assets, context, behaviour, and outcomes*. The *assets* of a household and community are broadly defined to include the productive, social and locational assets that determine the opportunity set of

options for *livelihood strategies*. These actions, in turn, determine *outcomes* in terms of household and community well-being. Of critical importance is the *context*, the policy and institutional milieu and the existence or absence of risks. The welfare-generating potential of assets depends on the interface between assets and the context. The asset-based livelihood approach is thus well-suited for understanding and analyzing rural poverty in deep, segmented, fragmented and isolated rural areas of South Africa.

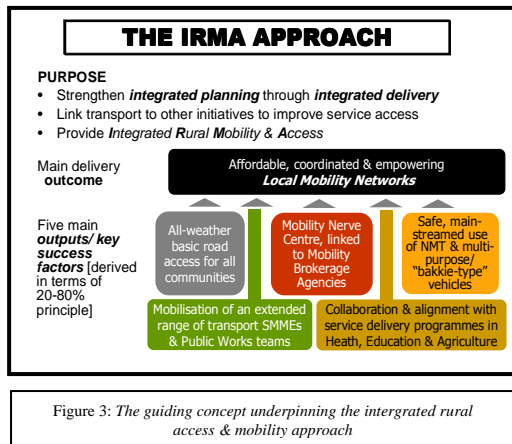
Given that agriculture can not serve as the sole engine of rural growth, a more balanced spatial and multi-sectoral approach to rural development is needed (FAO, 2004). This requires a household-level (microeconomic) and community level (meso-economic) orientation toward identifying drivers of growth, which is provided by the asset-based livelihood conceptual framework. The asset-based approach underlies the livelihoods approach and has increasingly been advocated by numerous development agencies.

The rights-based approach to mobility and access infrastructure provision argues that, constitutionally, every citizen has a right to access a minimum standard of mobility and access infrastructure in order to exploit socio-economic opportunities such as accessing educational and healthcare facilities. This also builds on the basic needs approach of the 1970s which however looked at basic needs with a focus on the “**individual**”, that is, inward looking at the person, but this can be extended to look at the “**enlarged**” individual i.e. the community. An outward looking perspective to basic community needs, for example, would encompass the quantity and quality stock and infrastructure access assets such as footpaths, footbridges and low-level crossing points.

Informed by the deep rural development challenges, the Mpumalanga Department of Roads and Transport (MDORT) developed and published a Rural Transport Strategy for the Province in May 2006, based on the realisation that the key to sustainability is an integrated approach to rural development. The Department, in collaboration with CSIR Built Environment, piloted some components of the IRMA



approach in the Albert Luthuli Municipality in Mpumalanga Province (refer to Figure 3).

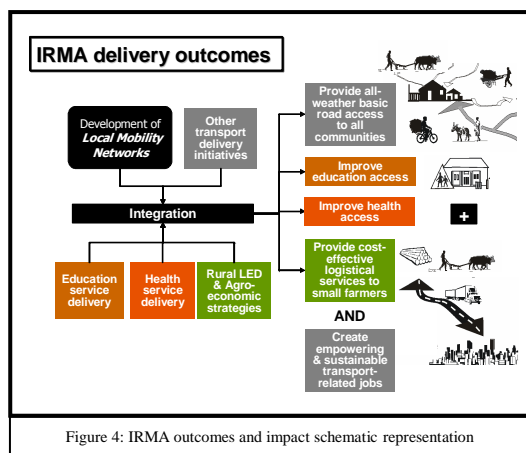


In Mpumalanga, the CSIR has only implemented pillar 1 (one) and part of pillar 2 (two) of the 5 (five) pillars of the IRMA approach. Pillars 1 and 2 address the all-weather basic road access issues for all communities and mobilisation of an extended range of transport small, micro medium enterprises (SMMEs) and public work teams. In terms of pillar 2 the current phase of IRMA did not include the SMMEs but had some component of the public works teams. CSIR is currently in the process of identifying partners to implement the other four pillars of the IRMA project so that the full project impact and potential can be fully demonstrated. Pillar 3 focuses on development and implementation of a mobility nerve centre which is linked to mobility brokerage agencies. This is important in developing rural freight transport, brokerage and logistics. Pillar 4 brings into the fold policy collaboration and alignment with service delivery programmes in health, education and agriculture sectors/spheres. The aim is to situate and use IRMA in complementing and enhancing service delivery in the whole rural development service and supply key intervention levers. Pillar 5 is concerned with the development and implementation of a safe, mainstreamed use of non-motorised transport (NMT) and multi-purpose "bakkie-type vehicles" in rural areas. The sum total of all five pillars is a sustainable rural development trajectory. The ideal would be to implement all the five pillars concurrently for enhanced outcomes and impact. However, in practice budget, time and resource considerations may entail

that this has to be implemented in phases rather than as a complete package.

In the context of IRMA pillar 1, the challenge therefore is to find functional ways to link remote and geographically fragmented communities to each other, to centres such as schools, clinics, government offices and shops. For example, if learners have to cross a river to get to school and the river floods during the rainy season, the learners have no access to school at certain times of the year. The solution in this instance may be a foot bridge to give them year-round access. The IRMA approach recognises that "roads alone are not enough" (Naude et al, 2005). It aims at tackling rural development challenges in a holistic fashion as presented in figure 3.

IRMA is therefore one key approach among many others that can be employed to unlocking rural access and mobility challenges. This is because the concept and project approach underlying the IRMA philosophy addresses mobility and accessibility constraints imposed by the remoteness, spatial dispersion and lack of adequate infrastructure in rural areas. These constraints inhibit development and restrict rural communities' access to services and socio-economic opportunities. A host of socio-economic impacts and benefits flow from implementing a suite of IRMA technology interventions in any rural setting. IRMA phase one component projects have been implemented in almost 30 areas of Albert Luthuli Municipality in Mpumalanga Province (refer to Figure 4).



In executing the current IRMA project in Albert Luthuli Municipality, the CSIR adopted a transparent consultative and participative process. This involved conducting pre-feasibility studies in the target areas wherein problems were identified. The next stage was to prioritise the problem areas with the close involvement of the communities and local leadership. Once the projects were identified, recommendations submitted and approval by Albert Luthuli Municipality Council granted, detailed geo-technical surveys preceded the engineering designs. Thereafter the projects were put out to tender according to a preferential procurement system (track record, cost, locality, etc). Labour-based technologies were used in the construction and implementation of interventions. Local people are employed by the contractors, which gives them the opportunity of learning new skills and earning direct income.

IRMA phase one technology interventions include the provision of appropriate and integrated rural transportation infrastructure such as pedestrian bridges, paths and low-level crossings, and all-weather road and footpath access to socio-economic facilities such as schools, clinics, shops and government offices (refer to Figure 5 & 6).



Figure 5: Footbridge in Nordeen – After Intervention

The current IRMA project benefits deprived, resource-poor rural communities by building local-level intra and inter-mobility and access infrastructure essential for livelihood sustenance. This is one way of laying a foundation for uplifting the standards of living of rural communities. As presented in the “IRMA delivery diagram”, the IRMA approach is a practical, low-cost technology, outcomes-based intervention solution. However, the current phase in Mpumalanga province is

only addressing the need to provide all-weather basic road access to rural communities.



Figure 6: Works in Progress: Esemnteni

Even though only one component of IRMA has been implemented, the general impact on beneficiary communities, including the most vulnerable households, is predictably positive. Phase one has addressed the transport needs of the poor income group and opened opportunities for them. Villagers and community members have testified how such interventions are alleviating their daily transport burden. It is also important to realise that rural people are very innovative and resourceful if cognizance is taken of the fact that they survive in harsh and difficult conditions with very little assistance. Lessening or removing altogether these realities would certainly stimulate their creativity for sustained development. Such improved conditions could lead to heightened local entrepreneurship and enable people to grow rather than just survive at a subsistence level.

Suffice to point out that the current phase of IRMA in Mpumalanga did not for example, try to identify particular enterprises such as timber production, fish farming, tourism development and ventures, beef farming and cattle ranching or sub-sectors that might stimulate further growth and poverty reduction. Instead the adopted approach had at its core unpacking the kind, type and combination of assets that are required by rural communities and households to take advantage of a particular enterprise or development path, and bridging the demand and supply gap through low-cost mobility infrastructure interventions and technologies. For economic growth to reduce poverty in a sustainable manner, it is critical to have a better understanding of access and mobility “household” and “enlarged household” that is community”

infrastructure asset and services portfolios, and how assets interact within the context of influencing the selection of

livelihood strategies which, in turn, determine well-being.

Table 1 presents a sample quantitative preliminary assessment of the impact of IRMA interventions in Albert Luthuli Municipality, Mpumalanga Province.

Table 1: Sample Matrix of IRMA outcomes

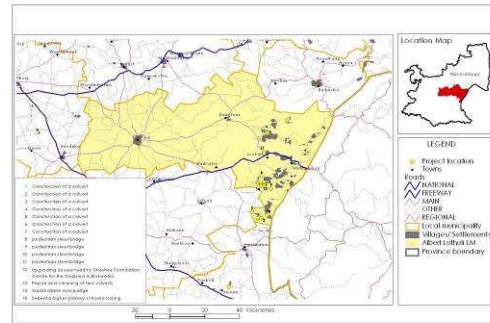
Area	IT	EC (R'000)	MHB	ADSEFBI	ADSEFAI
Ebukhosin (Semendeni)	LLC	342	+50	±8	<5
Mpuluzi (Sebenta)	PSB	1 140	±2 050	≥2 - ≤8	≤800m - ≤2 km
Syde East, Dewet and Nordeen	PFB	285	≤300	≥4 - ≤7.5	≤500 - ≤3 km
Tjakastad	TCW	684	≥650	NA	NA

Key – IT - Intervention Type; EC – Estimated Cost; MHB - Minimum Household Direct Benefactors; ADSEFBI - Average Distance to socio-economic facilities before intervention; ADSEFAI - Average Distance to socio-economic facilities after intervention, LLC - Low Level Crossing; PSB – Pedestrian Steel Bridge; PFB – Pedestrian Footbridge; TCW – Traffic calming Works

Table 1 indicates that learners can access school throughout the year, small farmers can connect better with the market, and there is social cohesion and better socio-economic space integration. Villagers have testified how much such interventions have alleviated their daily access challenges as well as reduced their transport burdens.

*“...Circuitous routes of up to 8 km for example have been reduced to 3 km through the provision of footbridges. Socio-economic opportunities such as schools and hospitals are now accessible in all-weather conditions. The local level travel and transport burden for the learners, youths, elderly and to some extent, persons with disabilities have been reduced significantly, thanks to the collaborative efforts of the CSIR and the Mpumalanga Department of Transport and Albert Luthuli Municipality...”* (extract of an interview with a businessman at Mayflower Multi-Purpose Centre, 18 September 2008).

Map 1, shows the spatial distribution of IRMA low-cost transport infrastructure projects in Albert Luthuli Municipality, Mpumalanga Province.



The next section draws conclusions on the paper.

## 4.0 CONCLUSION

Pushing back the frontiers of poverty in South Africa requires multidimensional and multidisciplinary interventions focusing on issues such as asset redistribution, market reforms, linking growth to development, spatial development and institutional reform. Perhaps the greatest challenge that development practitioners have to contend with in rural South Africa is the development of a critical mass of infrastructure and services that would link communities to one another, thereby enhancing socio-economic and spatial cohesion, integration and transformation of spaces, places, people and cultures. The IRMA concept and approach discussed throughout this presentation is one way towards building that vision – its potential to engender a sustainable development legacy should thus be harnessed widely.

The section on major recommendations that follows presents major rural development interventions emanating from the reviewed case study with a view to outlining practical ways of mitigating rural poverty and providing insurance for rural prosperity in South Africa.

## 5.0 MAJOR RECOMMENDATIONS

A number of recommendations emanate from this discussion. Some of the major recommendations are as follows:

1. Access and mobility interventions alone cannot guarantee prosperity in rural South Africa. For genuine rural prosperity to be entrenched it will take measures, actions and interventions in rural energy and



economic development, water and sanitation for rural development, geo-spatial and information and communication technologies for rural development, gender, empowerment and a generous measure of political will.

2. Inequality and poverty simply cannot be resolved, let alone remedied, without the generation of long-term jobs, rising incomes, and lasting growth that competitive firms can secure. At the same time the 'trickle-down' effect from economic development policies cannot be relied on to stimulate development. Specific policies to alleviate poverty and inequality – for example, measures like public works programmes, micro-finance programmes, land reform, increased expenditure on municipal access and mobility infrastructure and services, and improved and better targeted social spending on education and training, welfare, healthcare and governance issues – are thus essential counterparts to rural economic development policy.
3. Infrastructure provision and rural development is a multidisciplinary field, which requires the private sector, government, civil society, NGOs, to name but a few role players, to pool their collective resources and energies to be successful.
4. An interesting trend and observation in terms of infrastructure and rural development is the need to implement and maintain appropriate information and decision-support systems in all spheres of government to support optimal decision-making processes.
5. The IRMA project and approach as exemplified in Mpumalanga offers great potential in overcoming such limitations. Its scaling up and rolling out in other provinces as well as its full implementation not only in Mpumalanga but nationwide will herald a new chapter in addressing rural deprivation

challenges in a way that has not happened before in South Africa.

Concerns over rural assets go beyond questions of access and also include their use, improvement and protection. In this context, it is not surprising that the role of the rural economy in the future economic and social development of South Africa remains an important issue for government policy and development agencies. The unresolved issues are substantial, but the core issues are concerned with the extent and nature of poverty in South Africa's rural areas, and the policy options that exist for agrarian reform, eco-tourism, road and transport infrastructure and services. However, as this paper illustrates, despite some progress in identifying and launching deep rural economy interventions, it is argued that more can be done and championed through collaborative infrastructure and services interventions by rural development stakeholders.

## 6.0 REFERENCES

- ALIBER, M (2005) Synthesis Report of the 2005 Development Report: Overcoming underdevelopment in South Africa's second economy, Pretoria
- CARNEY, D (1999) Implementing the Sustainable Livelihoods approach. Paper presented for the NRAC, ODI, London
- CATER, M & MAY J (1999) Poverty, livelihood and class in rural South Africa, World Development Volume 27 number 1
- CHAMBERS, R & CONWAY G (1992) Sustainable rural livelihoods: practices and concepts for the 21<sup>st</sup> century. Institute of Development Studies Discussion Paper 296
- DEPARTMENT OF HOUSING (2002) Towards sustainable settlements, Pretoria, STE Publishers
- DOT (2001) Empowering communities for prosperity, Kwazulu-Natal
- DOT (2005) Prosperity through Mobility – KwaZulu Natal, Durban
- FOOD AND AGRICULTURE ORGANISATION (FAO) 2004, Socio-economic analysis and policy implications

of the roles of agriculture in developing countries – summary report, roles of agriculture project, FAO, Rome, Italy

KHOSA, M (ed.) (2000) Infrastructure Mandates for change, Pretoria, Human Sciences Research Council

JACKSON, B M & HLAHLA M (1999) “South Africa’s infrastructure service delivery needs: The role and challenge for public-private partnerships” Development Southern Africa, 16 (4)

LIPTON, M (1997) Editorial: Poverty – are there holes in the consensus? World Development, 25 (7):1003-1006

MASHIRI, M, NAUDE A & NCHABELENG A. (2003). A Rural Transport and Development Strategy for South Africa, DoT. Pretoria

MASHIRI, M. CHAKWIZIRA, J. MADZIKIGWA, B & MAPONYA, G. (2007a). Rapid appraisal of community transport infrastructure & services, Mpumalanga Department of Roads & Transport, Nelspruit

MASHIRI, M, MAPONYA G, NKUNA Z, DUBE S M & CHAKWIZIRA J (2007b) Unpacking the Relationship between healthcare, mobility and access. CSIR PG Report, Pretoria

MASHIRI, M, MADZIKIGWA B, CHAKWIZIRA J, NYONI P & MAKGALEMANE M (2008a). “Integrated Rural Mobility and Access: Mainstreaming Environmental Issues in Community Transport Project Planning and Construction”, SATC, 2008, Pretoria South Africa

MASHIRI, M, MAPONYA G, CHAKWIZIRA J, DUBE S & MARRIAN B (2008b). “Integrated Rural Mobility and Access: Mainstreaming Environmental Issues in Community Transport Project Planning and Construction”, SATC, 2008, Pretoria South Africa

MAY, J (2006) South Africa – Poverty and rural development, OCEN, UK

MAY, J (1998) Poverty and Inequality in South Africa. Report prepared for the office of the executive deputy president

and inter-ministerial committee for poverty and inequality, Praxis publishing, Durban

NATIONAL TREASURY (2003) Intergovernmental review, Pretoria, South Africa

NAUDE A, MASHIRI M & NCHABELENG A. (2005). “New roads are not enough” Planning and Delivering more Integrated, Sustainable Rural Access Systems, SATC, July, 2005.

SCHULTWZ, T W (1981) Investing in people: The Economics of population quality, Berkeley, University of California Press

SSA (2002) Measuring rural development –baseline statistics for the intergrated sustainable rural development strategy

SA-PPA (1998) The experience and perceptions of poverty: The South African participatory poverty Assessment, Durban, Praxis Publishing

SHACKLETON AND MANDER (2000) The value of resources used in woodlands. In Owen D.L. (ed) South African Forestry Handbook 2000, SAIF Pretoria

PACCOUD, T (1998). Poverty: its statistical dimension. Luxembourg :Eurostat.

UNITED NATIONS DEVELOPMENT PROGRAMME (1998). UNDP Poverty Report,1998: Overcoming human poverty, New York

WORLD BANK (2003) *World Development Report 2004: making services working for the poor* (<http://econ.worldbank.org/wdr/wdr2004/>)

WORLD BANK (2003) World Development Indicators, Washington, DC, WB

[www.ifrtd.org](http://www.ifrtd.org)

[www.worldbank.org](http://www.worldbank.org)

[www.sadc.int](http://www.sadc.int)