

RURAL TRANSPORT AND FREIGHT GOVERNANCE CROSSROADS IN SOUTH AFRICA

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ABSTRACT

The paper discusses rural transport and freight governance crossroad issues in South Africa's district municipalities. Making use of case studies, focus groups and reflective learning techniques, critical gaps in the rural transport and freight set-up are discussed. The findings confirm the existence of rural transport and freight challenges in district municipalities. The findings suggest the need to align and coordinate more strongly freight transport and integrated transport plans (ITPs); spatial development frameworks (SDFs); integrated development plans (IDPs); provincial growth and development strategy (PGDS) and provincial land transport framework (PLTF). Recommendations revolve around developing and updating freight databanks, strengthening skills in this sector, building a portfolio of demonstration projects from which lessons can be drawn for up-scaling and ensuring sustainable funding streams.

Key Words

Transport, rural, governance, logistics, interventions, South Africa

1.0 INTRODUCTION

The rural transport logistics industry in most developing countries can be described as rather 'artisanal', with owner-drivers and small independent operators accounting for more than 70% of the industry's fleet. A typical owner's vehicle fleet consists of 1-5 trucks, rigid 2- and 3-axle, for general cargo with 5-10 tonne capacity. Most vehicles are driven for 15-20 years and use antiquated technology, consume a great deal of fuel, and pollute the air (Londoño-Kent 2007).

In rural areas, the rural transport freight situation can be quite daunting. Crop harvests are often head-loaded, back-loaded or front-loaded, from local level production sites to storage areas. Sometimes local level rural freight is ferried by traders using hired vehicles, or by local freight transport operators. Established freight forwarding business and systems rarely operate in the typical rural freight market. In Sub-Saharan Africa (SSA), freight vehicle ownership and use is concentrated in urban areas, while, most rural areas are serviced by a limited variety of largely old second-hand vehicles (over twenty years). Freight transport is by way of light goods vehicles (LGV), very often pickups (Starkey et al 2007). In SSA, transport services are generally provided by individuals operating within the informal sector and the operations appear to have a low profitability. Surveys conducted by Starkey et al (2007) found no evidence of systematic investment in rural freight.

1.1 Purpose of the paper

This paper discusses rural transport logistics and freight governance crossroad issues in South Africa's district municipalities with a view to supporting the further development and expansion of small rural and developmental logistics in South Africa.

1.2 Research Objectives

This paper uses a case study approach to answer the following research questions, namely:

1. What is the existing terrain for small volume logistics in rural South Africa?
2. What challenges are faced by small volume logistics in rural South Africa?

3. What are the constraints relating to implementation and sustainability of transport logistics governance system in rural South Africa, and by extension, South Africa generally? and
4. What are the potential rural transport logistics improvement and intervention levers that can be adopted and deployed in rural South Africa.

2.0 STUDY METHODOLOGY

This paper employed focus groups and the reflective learning technique to unravel critical gaps in the rural transport logistics and freight set-up in South Africa drawing heavily from the case study district of Nkangala in Mpumalanga Province. Secondary data analysis is complemented with primary data results from a district freight review survey conducted as part and parcel of the recently completed Mpumalanga provincial freight databank updating exercise (Mpumalanga Department of Roads and Transport, 2011).

2.1 Case Study Area

NDM is one of three district municipalities in Mpumalanga Province. The N4 Maputo Freight Corridor, stretching from the City of Tshwane and the N12 from the City of Johannesburg in the west to the Maputo harbor in the east, transverses the District. The corridor forms part of a transcontinental freight corridor initiative, aimed at linking Walvis Bay on the west coast of Africa with Maputo on the east coast, thereby creating strategic linkages for trade and tourism between Namibia, Botswana, South Africa and Mozambique.

NDM, which covers approximately 188 118 hectares, is predominantly rural, comprising extensive farming, forestry, nature reserves and mining areas. NDM has about 165 towns and villages spread throughout the area. NDM spatial areas are classified into three main categories, namely **towns, rural villages (mainly residential) and settlements** associated with mining or electricity activities (collieries).

3.0 RURAL TRANSPORT LOGISTICS: CONFIRMATION AND INTERPRETATION OF EXISTING KNOWLEDGE

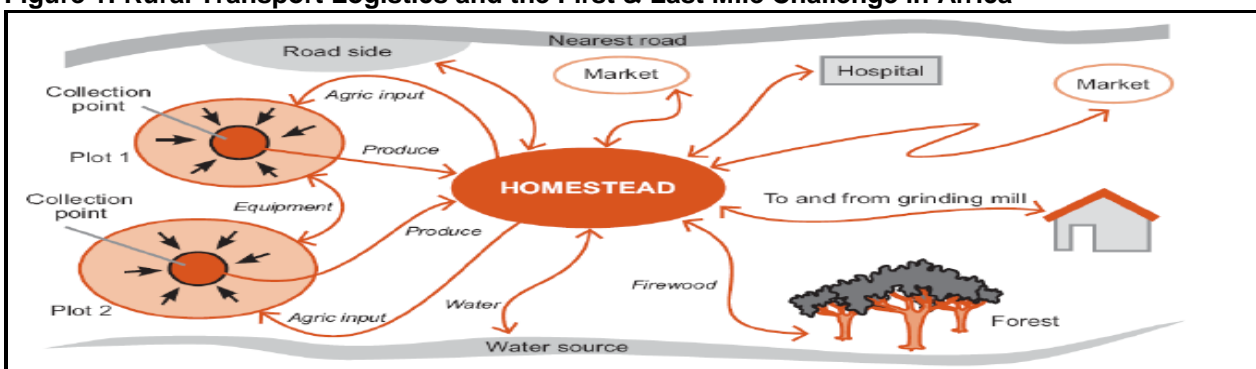
3.1 Role of transport logistics in socio-economic development

Connectivity to international, regional, urban markets and trade centres is crucial for increasing and distributing income while at the same time contributing towards poverty reduction and reversal of spatial socio-economic inequalities (World Bank, 2008; Chakwizira & Mashiri, 2008). In the absence of proper road connectivity, farmers and producers in remote areas often find it difficult to sell raw and processed agricultural goods in bigger markets located far from their village (World Bank, 2009; Mashiri et al, 2008).

3.2 Challenges of rural transport logistics in developing countries/areas

Figure 1 illustrates the “first and last mile” concept employed to elaborate the major rural transport logistics challenge in Africa. From the view of a smallholder farmer, rural freight transport takes place on the first and last mile as depicted in Figure 1, i.e. products are collected from the plots, transported to the homestead or storage facility and from there directly to the road side, to buying points or to local and regional markets. Transport is undertaken on footpaths, tracks, trails and roads by head loading, using intermediate means of transport (IMTs) or by motor vehicles.

Figure 1: Rural Transport Logistics and the First & Last Mile Challenge in Africa



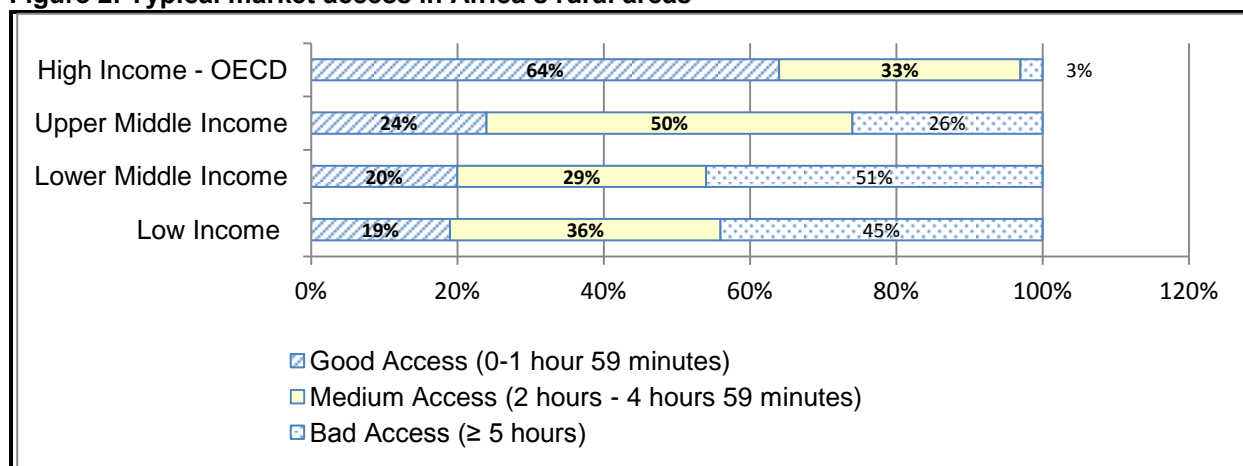
Source: Crossley et al, 2009, p.4

Farmers and producers in such circumstances have to sell their agricultural products to the middlemen and due to large number of intermediaries they often get a low price for their products while consumers have to pay a high price (Sieber, 2011). Also, due to the lack of connectivity they do not have access to farm inputs as and when required (Roberts et al, 2006). Poor connectivity along with lack of cold storage facilities leads to wastage. In India, 5-7% of food grains and 25-30% of the fruits and vegetables get wasted in the supply chain (Crossley et al, 2009).

3.3 Bad access to market increases production logistics costs

If subsistence farmers have no or bad access to markets, they are excluded from the monetary economy and thus will remain in poverty. Access to markets is a *'sine qua non'* condition for rural development. Approximately, 45% of the area in low-income countries (LICs) and 51% in the lower middle income countries (MICs) are located more than five hours away from the next market. This picture changes if the population is considered: 45% of the population in LIC is within one hour from the next market. Remote areas are less populated, agriculture is less intense and transport costs are higher (refer to Figure 2 depicting typical market access issues in rural Africa). It is estimated that about half the agricultural area in remote regions of developing countries has good agricultural potential, but lacks the infrastructure to integrate itself into the wider world economy (WDR 2008).

Figure 2: Typical market access in Africa's rural areas



Source: Sieber, 2011

Modern transport infrastructure increases efficiency and reduces costs of transportation.

3.4 Poor transport logistics retards rural agricultural productivity

Table 1 depicts a cross-section of post-harvest agricultural losses in Africa, which supports the argument that there is need to invest in ways that will assist in reducing post-harvest losses. The development of national highways has reduced travel time by 50% or more. Reduction in travel time has reduced the vehicle operating and maintenance costs, reduced fuel consumption and increased profits. Investigating, mapping and generating a menu of transport logistics intervention is important in enhancing regional and local industry and economy competitiveness.

Table 1: Post-Harvest agricultural losses in developing Countries

Country	Produce	Post-Harvest Losses	Source
India	Fruit, Vegetables	40%	World Development Report 2008, p.126
Tanzania	Cotton, Coffee, Maize, Paddy, Other	13%-80%	Gaviria, 1991, p. 168
Uganda	Cereals	30%-40%	CAIIP, in Lema et al, 2008
Tanzania	Agricultural Produce	30%	VTTP, in Lema et al, 2008

Source: Sieber, 2011

3.5 The existence of a dualistic logistics divide

Rural transport markets are characterized by a dualistic structure that is divided between a traditional and a modern sector. The traditional rural transport logistics sector is dominated by inefficient transport operations of food staples on badly maintained roads, while the modern transport logistics sector requires sophisticated supply chains and multimodal logistic transport services (Mashiri & Naude, 2006; Sieber, 2011). Recent developments, generated by the proliferation of supermarkets and high value export products, provide an opportunity for farmers to escape the rural poverty trap (World Bank, 2009). Options for transforming the rural transport logistics can be approached from a regional planning position. Regional transport planning can improve both the traditional and the modern transport logistics sector, through the provision of multimodal infrastructures, development of Central Locations that function as Rural Hubs and their related services (Sieber, 2009). Overall, governments can support the marketing of high value products by building '**country brand images**' and national quality seals that promote the export of products. In addition, three quarters of the poor live in rural areas of developing countries and 70 percent of the population in least developing countries is engaged in agriculture (UNECA, 2007). Therefore, the one important question that this paper seeks to address is how rural freight transport can contribute to the alleviation of rural poverty through fostering rural growth and development .

3.6 Imperfect rural freight markets

One of the major constraints is the size of the rural transport market, which largely depends on population densities. In general, Africa has low rural population densities and a less intensive form of agriculture than Asian countries. Additionally, markets are generally more distant and less accessible in Africa. This has important implications for vehicle choice. In comparison to Asia, loads in Africa will generally be smaller, and distances longer (Ellis and Hine 1995, p. 11).

3.7 Intermediate Means of Transport widen modal choice

The most common mode used for transporting agricultural produce is head loading, which entails transporting a load of 20kg at 3 km/h. If larger quantities have to be removed, motorized means or intermediate means of transport (IMT) are more suitable.

Farmers with access to transport find it easier to purchase farm inputs, such as fertilizer. Thus, farmers with carts increase crop production through greater use of manure, they increase animal production by transporting and stocking crop residues and they avoid losses by timely transport of their harvests (Starkey 2002). IMTs and motorized transport services are used to transport larger volumes to the market. In Makete, Tanzania, studies indicate that bicycles and donkeys generated larger benefits than the construction of rural roads and tracks, mainly through increased marketing and time savings (Sieber 1996).

3.8 Rural Transport Logistics Conceptual Framework

Typically, rural transport logistics in Africa (including South Africa) is poor (CSIR: State of Annual Logistics, 2008). An option to address the urban-rural transport logistics divide lies in employing the Integrated Rural Accessibility Planning (IRAP) to unravel rural freight demand (Department of Transport, 2007). However, the extent of the full value of the IRAP tool to addressing the full spectrum of rural transport logistics matters is questionable given that IRAP first and foremost is a general rural transport development focused tool. The IRAP tool treats rural freight transport as a minor component of rural transport development. Nevertheless, the strong participative involvement of local transport logistics actors is a key lesson to be learned from IRAP. In addition, the 'Road Costing Knowledge System' (ROCKS) is a databank and tool which can help transport planners in estimating cost of design and implementation of rural road investments (World Bank, 2009).

Since rural road investments can often not be justified through conventional transport investment appraisals, the Producer Surplus approach (Carnemark et al 1976), which assumes an agricultural production increase, might be considered. However in practice, the estimation of producer surplus

is related to high uncertainties. For example, it is particularly difficult to predict how agricultural output will alter, or how traffic levels will develop, given how many factors can begin to change all at once (Van de Walle 2002).

3.8.1 Rural transport logistics costs in Africa

Sieber (2011) argues that simple transport logistics cost-effectiveness calculations might serve as better rural transport planning tools in the fight against high costs of logistics – regarding time, money and distance. Ratios such as the cost of road investment per farmstead served, or per hectare agricultural area opened up, can help when prioritizing investments. For this purpose large scale GIS access maps, depicting the transport time from the farms to the next roads, combined with the agro-ecological potential, will enable planners to identify new rural transport logistics investment opportunities. Table 2 depicts access to rural transport measured by total population and Rural Access Index (RAI).

Table 2: Access to rural transport measured by total population and Rural Access Index (RAI)

Country	People without access to rural transport in millions	Rural Access Index
India	301	61
China	23.5	97
South Africa	14.8	21
Brazil	14.2	53
Mexico	9.7	61
USA	8.2	86
Russia	7.4	81
Germany	2.3	89
Saudi Arabia	1.1	75
Japan	0.5	99
France	0.2	99
United Kingdom	0.2	99

Source: World Bank, 2009

Flexible logistics planning will be key to logistics service providers, supply chain players, transport infrastructure operators, users and owners since transport infrastructure systems in developing countries will remain imperfect for some time to come. A stop gap measure may be the adoption of innovative supply methods based on local adaptability and simplicity so as to compensate for the lack of transport infrastructure in rural areas and guarantee access of goods to markets and inputs to production areas.

3.8.2 Rural Transport Hubs as a development concept in Africa and South Africa

For transport purposes, central locations serve as rural hubs that connect to other locations through spokes, as depicted in Figure 3, below. Starkey (2007) provides more insight into the functioning of Rural Hubs in Sub Saharan Africa. He classifies the rural hubs into village, market town and regional towns. The specific functions of rural hubs may be best explained by using the example of the South African Master Plan for rural areas (Department of Transport, 2007 as presented in Table 2).

Table 3 gives an overview on the function and possible endowment of rural transport logistics central locations as foreseen in the Master Plan for South Africa.

Table 3: Transport logistics functions and endowment of rural areas in South African Master Plan

Central Location	Function	Facilities for Traditional Supply Chains	Facilities for Modern Supply Chains	Communication facilities
Satellite Centre	Buying point Transshipment hub	Short storage facilities Loading facilities	Pre-cooling facilities	Telephone Fax
Multi-purpose rural service centre	Local market transshipment hub	Storage facilities Loading facilities Agricultural extension services Logistics procurement agency	Processed units Cooling and refrigeration facilities Packaging houses Container handling	Telephone Fax Internet
Major Rural Service Centre	District Market Transshipment hub	Additional to the above: Transport brokering service		

Source: Department of Transport, 2007; Sieber, 2011

4.0 STUDY RESULTS AND DISCUSSION

4.1 Market access in rural areas

Only 56% of the rural population in IDA countries had access to an all season road in 2006 (World Bank, 2009). It is estimated that nearly one billion of the world's poor remain marginalized without direct access to an all-weather road. Accessibility is 57% in South Asia, 34% in Sub Saharan Africa and may reach values such as 17% in Ethiopia and 15% in Nepal. Figure 3 presents typical market access issues in rural South Africa.

Figure 3: Market access in rural areas

	Farm	Household/ Sub-village	Village	Market Center	District Headquarters	Regional Headquarters	Capital/ Port
Typical Transport Infrastructure		Path	Path/Track	Track/ Earth Road	Earth Road/ Gravel Road	1-2 lane Gravel/ SD* Road	2 lane AC** Road
Typical Traffic		Porterage	NMT 0-5VPD	NMT 5-50VPD	NMT 20-200VPD	>100VPD	>1500VPD
Typical Distance		1-5 km	1-10 km	5-20 km	10-50 km	20-100 km	50-200 km
Share of Asset Value							
Share of Network Length							
Typical Ownership/ Responsibility			Community Local Government			Provincial/Central Government	
Type of Network		Rural Transport Infrastructure			***	National and/or Provincial Road Network	

* Surface
 ** Asphalt Concrete
 *** Part of either RTI or the Provincial Network

Lebo and Schelling, 2001,

Source: Lebo and Schelling, 2001 in Sieber, 2011

In rural South Africa, improved access to markets will open up new areas, reduce transport costs and thus increase agricultural production. Improving access to markets encourages rural farmers to modernize with fertilizers, mechanized equipment, and new seed varieties, which, in turn, raises yields, lowers unit costs, and increases demand for inputs and credit. Minten and Barrett (2008, p.817) found that in rural areas of Madagascar with good access, fewer people live in extreme poverty.

4.2 Rural Transport and Freight Challenges in Nkangala District Municipality

The findings confirm the existence of rural transport and freight challenges in district municipalities. The findings suggest the need to align and coordinate more strongly freight transport and integrated transport plans (ITPs), spatial development framework (SDFs), integrated development plans (IDPs), provincial growth and development strategy (PGDS) and provincial land transport framework (PLTF). The lack of a freight transport integrative framework was given as one reason why freight transport issues are found as either a paragraph or section of the IDP, ITP or SDF by 23% of the respondents. Freight issues are therefore raised in an ad-hoc manner, in scattered documents and and dealt with through fragmented local level institutions. In this situation, the district municipality either waits for provincial government to assist in charting the way forward through for example the development of a provincial freight transport strategy and databank or continue with the business as usual approach. Yet at the local level there is no dedicated freight staff, as well as active freight forums, district freight strategy or databank. 36% of the respondents indicated that district freight forums had to be re-activated including exploring scope for establishing feeder small rural volumes committees to discuss rural freight developmental logistics with greater focus. 41% of the respondents indicated that one major component that is missing has to do with generating a dedicated budget for rural transport and freight interventions (refer to Table 4). This will address infrastructure development needs such as quickening the pace of establishing multi and intermodal freight transport facilities.

Table 4: Potential ways of improving rural transport and freight issues in district municipalities of Mpumalanga

Sample size N=22

Indicator	Frequency	Percentage
Revive and strengthen transport Forums	8	36%
Establish dedicated & ring fenced budget for rural transport and freight interventions	9	41%
Foster make more innovative , explicit, deeper and wider coverage of rural freight transport issues in SDF, ITF & PLTF including the cascading of district and municipal freight strategies and databanks initiatives to local level	5	23%

4.2.1 Establishment of the GSDM Development Agency as a Catalyst for Enhancing Transport Logistics Service Delivery

The District noted that in order to enhance its local economic development, improve freight logistics, it is essential that an implementation agency / entity be created with the sole mandate of strategically focusing on delivering the following outcomes:

- Coordinate and manage the identified economic and freight development initiatives (projects).
- Coordinate and manage key economic and freight stakeholders.
- Facilitate marketing and investment initiatives.
- Solicit funding and technical support for the identified economic and freight anchor projects and the identified beneficiaries.

Through the establishment and support of cooperatives the District in partnership with the agency envisages achieving the following objectives:

- Broaden and diversify the economic base and footprint of the freight industry in the District.
- Facilitate, support the development, capacity building and skills development of SMME's in the freight industry including emerging entrepreneurs.
- Facilitate, promote and support agriculture, mining, manufacturing, and tourism development, down streaming and local beneficiations in the full freight industry life cycle.
- Facilitate and support programmes aimed at reducing unemployment, and
- Facilitate, support and address initiatives that are aimed at addressing economic inequalities in the economy and freight industry with particular emphasis on women, youth and the disabled.

This would alleviate the problem created by not having a freight transport specialist or a freight unit in the district. Freight issues are treated as an appendage to existing issues.

4.2.2 Freight Transport Flagship Projects

NDM embarked on a process to formulate a Local Economic Development (LED Strategy that will through implementation place the District on a higher economic development trajectory. Currently NDM has identified nine anchor projects. The identified anchor projects are: Delmas Cargo International Airport, Highlands Gate & Estate Development; Multi-purpose Community Centres; Catalytic Converter; Agro- Processing; Moloto Rail Development System; Truck Port/Logistics Hub; International Convention Centre; and Loskop Zithabiseni Tourism Corridor. Clearly, the need to improve freight transport to enable these initiatives to take root in the district cannot be over-emphasized.

4.2.3 Roads and Freight Transportation

The District roads are in a bad state due to high volumes of coal freight haulage trucks that transport coal to the four power stations within its jurisdictional area. This has the ultimate outcome of inflating the maintenance expenditure of all three spheres of government on roads across the District. Because these problems are inter-district, there is indeed a window of opportunity for collaboration between Gert Sibande District Municipality (GSDM) and NDM on road development and maintenance, as well as law enforcement.

GSDM has begun to think creatively around the infrastructure challenges it faces. The District intends establishing a District Rural Roads Strategic Betterment Unit and in doing so, the following elements will be considered:

- Establishment of the Rural Roads Betterment Strategy Unit is to benefit the entire community.
- Principles of the National Spatial Development Perspective will be taken into consideration in this regard, and
- Conditions of the entire District Rural and Urban roads network will to be considered.

Road investment is important in improving market access and stimulates agricultural growth. However there are limits on the role of road investment. The availability of transport services and different forms of transport are also crucial.

4.2.4 GSDM District Mining Freight Connection

While GSDM is a mining district, there are limited benefits and economic empowerment from the mining activities for the surrounding communities. Through careful planning, GSDM is seeking to promote coordination of all stakeholders' interest partnership, resources and efforts to contribute to downstream economic beneficiation, implementation of BBBEE, community development, economic empowerment and freight infrastructure investment.

4.2.5 Regional Fresh Produce Market

GSDM is a rich agricultural hub, with different agricultural products being exported from the district in raw form and brought back as finished products. The District can benefit from establishing a fresh produce market within its jurisdiction – taking advantage of the opportunities that emanate in the value chain of agriculture e.g. storage, warehousing, packaging, transportation et cetera. The District has realized that the whole agricultural value chain and the benefits emanating from agriculture are not benefiting communities within its jurisdictional area. In order to turn that around, it is important to derive methods to retain most of the economic benefits therein. The viability study relating to the Fresh Produce Market will go a long way in establishing the potential that exist in this area.

Even though the rural transport market is rather unregulated and market access is mostly virtually free, the frequencies of the services in rural areas are rather low and service quality is often poor. Especially where roads are in a bad condition and population densities low, the market generates too little returns to give incentives for an improved service. As a consequence, all inputs of the vehicle owners are kept to a minimum, including fuel, repairs and replacements and most operators feel they have to cover their costs on each and every journey. This need to cover all costs prevents operators from keeping to fixed timetables and exacerbates the vicious circle of low transport demand and unreliable transport markets (Starkey, 2007).

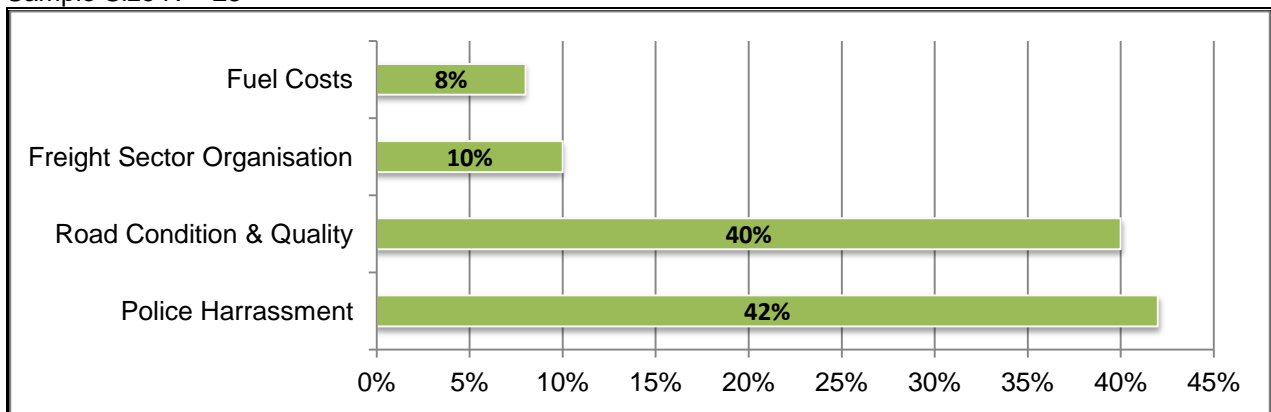
Additionally, often in Africa, a “queuing system” is practiced, that lets the client wait for their transport service until the vehicle is fully loaded. Ellis (2001) reports that operators in Mali use truck parks where they must wait for loads on a first come, first served basis. This means that sometimes operators will wait for many days to secure a load. The result is a very old fleet which “only survives since it can afford to because of the system” (Starkey, 2007). This system entails inefficiencies and keeps prices high. It would be important to take account of this realization in the planning process.

4.3 Expensive rural freight operations

Since “it is very difficult to present reliable quantitative data for transportation costs” (Ibid), a cost assessment in rural areas is even more problematic. Tariffs vary according to the distance travelled, capacity utilization, type of cargo, road condition, and are dependent upon agricultural production cycles. It is difficult to obtain accurate estimates of running costs and income, partly because many costs are informal and unrecorded (Starkey 2007 p.100).

A recent comparison of rural transport tariffs by Ahmed et al (2007) corroborates these findings. If the tariffs are adjusted for the purchasing power, costs in Bangladesh are significantly lower than in Ghana and Kenya. High transport costs explain why African farmers get only 30-50% of the final price of products, compared to 70-85% in Asia (Ahmed et al 1987). Trader surveys in Benin, Madagascar, and Malawi find that transport costs account for 50-60% of total marketing costs (WDR 2008, p. 119). In Sub Saharan Africa, farmers receive only 30-50% of the final price of products, compared to 70-85% in Asia (Ellis & Hine 1995). Other reports (Raballand in Sieber, 2011) found that freight rates are not even covering operating costs in Mali, which led to the demise of a number of vehicle operators. Figure 4 presents an opinion survey results from truck drivers interviewed at various trucks stops in NDM, Mpumalanga.

Figure 4: Opinion Survey Truck Drivers along N4 Stop at Middelburg in Nkangala District Municipality Results: Major Freight Transport Obstacles
Sample Size N = 25



When truck drivers in Mpumalanga N4 truck stop at Middleburg were asked about the main obstacles of freight transport, 42% complained about police harassments, 40% about road quality and condition (damage owing to coal haulage in NDM) and while 10% mentioned freight logistics sector organization, with fuel costs, being surprisingly of relatively little importance, only around 8% (refer to Figure 4). Corruption is one of the main impediments to efficiency in rural freight transport. Starkey (2007, p 104) observed, that operators considered that 'bribe' barriers accounted for up to one third of their operating costs, a figure comparable to their fuel costs. Identifying and fighting corruption in the freight industry is important such as institution corruption watches and barometers, hotlines as well as anti-corruption centres.

Another issue identified as a major issue of concern was safety of rural freight transport operations, which poses an enormous risk in many developing countries, if the number of accidents is compared to industrialized countries. Some measures could help, such as those indicated in Figure 5.

Figure 5: Opinion Survey Truck Drivers along N4 Stop at Middelburg in Nkangala District Municipality Results: Major Safety Interventions
Sample Size N = 25

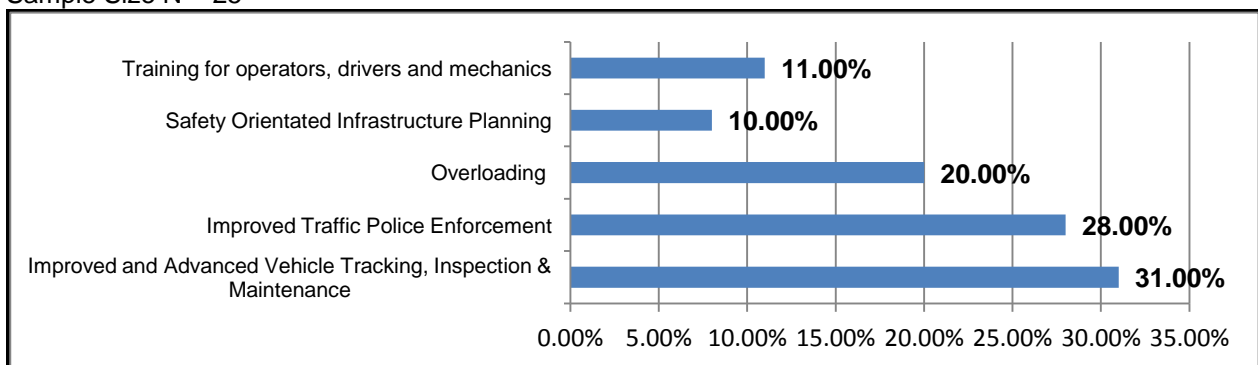


Figure 5 indicates that 31% of freight transport logistics drivers felt that efforts to improve safety through advanced truck security tracking systems installation, regular inspection and maintenance were an essential component in the fight for improved security. 28% of the truck drivers further expressed the view that improved police enforcement to address freight movement certification and compliance will assist in improving safety. Overloading, at 20%, is one factor identified as contributing towards compromised road safety. This is despite the existence of overloading weighbridges in Mpumalanga. Overloading in Mpumalanga is reported at approximately 20% in 2009 (Mpumalanga Department of Roads and Transport, 2011)

4.4 Policies to include smallholder farmers in modern supply chains

Modern supply chains favor medium-sized or larger farmers and tend to exclude smallholders. In provinces with a dualistic farm structure such as Mpumalanga, buyers seek out large suppliers and also seek out areas that are already favored by agribusiness, for example those already engaged in export production. This might entail the exclusion of whole regions from modern supply chains (Vorley and Proctor 2008, p. 29). Figure 6 presents expert opinion survey results for the study area.

Figure 6: Opinion Survey Truck Drivers along N4 Stop at Middelburg in Nkangala District Municipality Results: Mainstreaming small holders in modern logistics supply chain

Sample Size N = 25

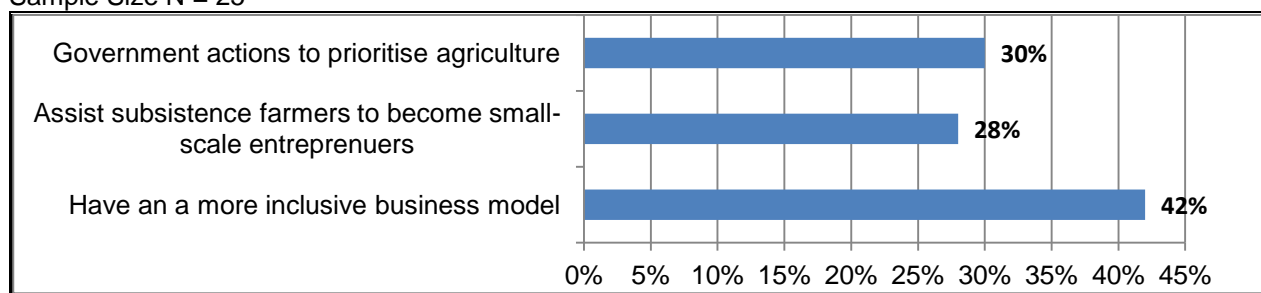


Figure 6 indicates some steps that can be adopted in growing the freight transport databank to inform the entire value chain. 42% indicated that adopting a more inclusive business model, especially one that emphasizes deployment of procurement systems which buy from small-scale farmers as very important. 28% of the respondents indicated that implementing and sustaining actions meant to help subsistence farmers become small-scale entrepreneurs is a dimension that should not be forgotten. Lastly, 30% from the freight industry hypothesized that recent and future expected actions by the South African government which gives higher priority to agriculture and rural development, including putting in place measures and programs to help small-scale farmers organize themselves better in the market, is also equally vital (Vorley and Proctor 2008, p23). Additionally, “necessary transport freight-orientated policy reforms include both improving the ability of wholesale markets to meet the new demands of supermarkets and modern agribusiness, and allowing farmers, processors and retailers to trade directly without an obligation to trade through local government-controlled wholesale market monopolies” (Vorley & Proctor, 2008).

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Concluding Remarks

Clearly, for most of the developing world, a much higher quality of transport is required to meet the needs of modern supply chain logistics than is presently provided by conventional rural transport services. The main requirement for transport is to complement an almost seamless logistical interface between the producer, the processing unit, the warehouse and the market. This certainly requires high reliability of transport services ensuring on-time delivery, which is currently happening largely in developed rural areas of Mpumalanga. However, developing rural areas are currently cutoff from the main supply chains. This is where developmental local government comes into the fore by way of planned interventions.

5.2 Recommendations

Recommendations revolve around the need to *firstly*, build and maintain functional, reliable and up-to-date freight databank systems at all spheres of government. *Secondly*, it is important to build and up-scale the skills levels of existing staff with a view to developing a critical mass of skills in the freight transport sector especially at district and local municipal level. *Thirdly*, it is critical that high impact and catalytic freight transport projects (covering the full range of the freight value chain) are identified, and developed as demonstration/pilot projects. *Fourthly*, funding streams to the transport sector need to be increased prioritizing rural transport incorporating freight matters with specific reference to district and local municipalities. Evidently, overall transport freight development in district and local municipalities must be framed by the need to strike a healthy balance between meeting the need of the established freight transport industry as well as the needs of the emerging and small freight logistics sub-stream.

5.2.1 Promotion of intermediate means of transport

Given that a significant measure of rural freight is moved through IMTs on paths, trails, tracks, footbridges, pontoons, earth and sealed roads, it is imperative to promote this transportation mode. The promotion of IMTs especially draught animal power and tractor-trailer combinations could be done through agricultural extension services.. Even though IMT are relatively cheap, their affordability is low compared to income, especially in subsistence dominated rural areas. Thus, the availability of credit using various operational models, is an important factor in encouraging uptake and fostering demand for IMTs (IT Transport, 2006). To ensure and sustain the rural financial system, there is a need for adequate government legislation and regulation relating to small-scale credit systems (Lema 2008, p.30).

5.2.2 Basic access through multimodal transport

The most important question in rural transport is how rural access may be provided at a minimum of public and private costs. This can be achieved through multimodal transport, which increases cost efficiency by using the comparative advantages of various transport modes. It implies an intelligent combination of transport modes and their respective infrastructure. For the first and last mile goods may be transported by IMT, which, for small volumes, have cost efficiency comparable to motorized means, but have far lower requirements for infrastructure. From the fields and plantations produce can be transported to buying points, to village storage facilities, to local markets or directly to rural hubs, using infrastructure that is inexpensive to introduce and may be maintained by local manpower. From the buying points or rural hubs, the goods can be transshipped onto conventional goods vehicles, which operate on superior rural roads allowing higher speeds at lower costs. Thus, the main idea is a combination of low cost infrastructure that provide access by IMT to rural areas and rural roads that efficiently link rural buying points and hubs with the rest of the mainstream supply chains.

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