

Rural Roads and Agricultural Development in Swaziland

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ABSTRACT The objective of this study was to examine the importance of managing and maintaining the quality of rural roads to support agricultural development and rural development in the Kingdom of Swaziland, to facilitate the distribution of agricultural products to be more accessible to the population. Both secondary and primary data sources were used following a document methods of research. The findings suggest that rural roads in the country are impassable and needed urgent attention for improvement. The study concludes that rural roads are critical in supporting both rural and agricultural development for improved socio economic conditions of the people.

INTRODUCTION

The importance of rural roads for agricultural development has been emphasised in the literature by various authors (Buys et al. 2006; Donngos et al. 2007; DFID 2008). A country's rural road network is often made up of tracks, trails, footpaths and earth roads that link rural villages and towns. In many cases they connect to secondary roads by allowing the residents to access products, factor markets, and social services that are not provided by their own communities. These components of rural roads allow the movement of people and animals over typically steep terrain and are characterised by low quality standards and limited transit. Rural roads (access roads) are key determinants of poverty in rural areas. Without physical access, rural communities face obstacles in social services delivery such as health, education, and related social services (Escobal and Ponce 2002). Evidence suggests that rural communities can be mobilised to manage and maintain their access roads if some financial incentives and an appropriate legal framework are made available by the government (IFRTD 2006). Poverty, isolation, mobility and accessibility have been considered to be overriding objective of donors, with great emphasis on maximising economic growth, as the difference between rich and poor often increase rather than decrease. Poverty is at the same time a simple reality and a complicated concept, we often know it when we see it, but

when we try to define it, the precision becomes more and more elusive (Dercon et al. 2009). Mobility defines the way (easy or difficulty) with which people, products and information can move around. Various places are accessible when people are mobile. The need for mobility becomes easy when services are moved closer to the consumers. One of the ways to make services more accessible is by making people more mobile through roads. Accessibility defines how easy or difficult is it to get to a place. A place is accessible when people can reach there in an acceptable time, and the risk of not getting there on time would be heavy (Tighe 2006).

Rural community's ability to take advantage of surplus crop production and employment opportunities is severely reduced. Rural roads play a role in the provision of physical access. Physical access further plays an important role in reaching a number of the Millennium Development Goals (Barret et al. 2001). The benefits of improved access can be short lived if the rural roads are not managed and maintained. In most instances rural roads are defined as those roads with less than 50 vehicles a day, ranging from engineered roads and bridge that link to towns and villages, to motorable tracks, trails and paths. In general these roads serve dispersed households and populations, often with an agricultural or natural resource based land use structure (Donngos et al. 2007). Rural road networks also tend to be large and complex; they are often 2 to 3 times the size of the main and

regional networks, but carry only 10% of the traffic in vehicle kilometres (IFRTD 2006). Foot, animal and bicycle paths also feed into rural roads; in turn rural roads link markets and peri-urban hubs (Fouracre and Dyson 2006). Rural roads include secondary roads and any other roads used by communities in urban and rural areas than main roads, and are managed by various municipalities. They are generally managed by local governments and communities. They account for about 80% of the total road network lengths but carry only 20% of the total motorized traffic. They provide access to the majority of population in most rural areas in the country. Traffic in these roads often consists of a majority of non-motorized or intermediate means of transport and pedestrians. Management and financing arrangements for these roads are often scarce and sometimes are not in existence (Buys et al. 2006).

Often the term rural transport infrastructure is used to ensure that tracks, paths and foot-bridges are included in the considerations. To understand issues with rural road management it is necessary to understand the decentralisation context in the various countries. Also, to assist decision making on improved management arrangements for rural roads it is necessary to get to know the extent and condition of the rural road network. Furthermore, it will be important that transport policies take into account rural transport issues in general, and that the legal context for the management and financing of rural roads is clearly defined in the country's road legislation or Roads Act (Buys et al. 2006). Rural roads and transport are essential for sustaining agricultural development. Despite considerable past investments, the burden of managing and maintaining African roads is still high as many roads remain rough and impassable throughout the years (Donngos et al. 2007).

Many rural Africans still suffer from poor access to markets, health, schooling, and high transport costs (World Bank 2000). Inadequate rural roads make it hard for farmers to produce more and to transport any surpluses after harvest. Traffic on most rural roads still consists mainly of pedestrians often carrying head loads. African governments have relied on private truck fleets for crop transport (DFID 2008). Rural infrastructure cannot be created by peasants themselves, because most villages have no businesses or enterprises and have no money to spend

on infrastructure. As most villages contribute to urban and industrial development by selling cheap agricultural goods, it is time for the urban economy and industrial sector to give something back to rural villages (Zhao and Kanamori 2007; Easterly 2001).

The Problem

Agricultural production by small-scale farmers in Swaziland has its final destination to main centres of the country, where it is distributed to various local markets. About 3/4 of the rural roads in the study area are in poor conditions and need to be repaired. The lack of adequate rural infrastructure in the country has affected food production and distribution drastically. This in return can create food shortages in the main centres, where food demand is very high. Poor and inadequate rural roads have been the main concern by both small producers and consumers. Urgent response to this problem would be: (i) to improve the state of the existing rural roads, and (ii) to construct new rural roads in places where basic infrastructure is desperately needed. That is, to construct rural roads between farms and markets to increase connections between producers and consumers (BIDS 2004). According to AFDB (2010), rural Africa has only 34% of road access covered as compared to 90% in the rest of the world.

The state of the existing infrastructure is generally very poor because many governments are unwilling to spend the amount of money required to keep roads in basic repair. This compounds the high poverty and low food security levels in most Sub-Saharan Africa, impairing the distribution of food, farmer connections to market, information exchange, and intra-trade. Many areas in the country are poor, a condition which fosters inadequate infrastructure, construction, maintenance and management (Deborah et al. 2008). In turn, poverty in these areas is increased because of isolation caused by lack of infrastructure (Corral and Reardon 2001; Easterly 2001; Deichmann et al. 2006). A regional network upgrading would help bring Swaziland out of poverty trap, expanding overland trade by about \$250 billion over 15 years, with "major direct and indirect benefits for the rural population" (Buys et al. 2006).

The country should first examine the quality of rural roads, quantified by quality index that

takes into account the percent of roads that are paved and the country's GDP. After the quality of the road has been assessed, the minimum quality road index of up to 45 will be required, to improve road quality in the country. This would increase trade and thus GDP, as well as making food distribution easier and more effective. The improvement should apply to main roads, connecting all major centres. Furthermore, with the expected increase in trade and GDP that will result in this process, the country will be able to start upgrading secondary and smaller rural roads. After initial upgrades, it is also important that roads are kept up with yearly maintenance. Not only will this make transportation easier, but it will also save a significant amount of money (Jacoby 2000; Javier and Ponce 2004).

Rural roads are often seen as key to raising living standards in poor rural areas. Yet despite the consensus on their importance and much anecdotal evidence, there is surprisingly little hard evidence on the size and nature of their benefits (World Bank 2005). This study aims to assess the impact of rural roads in contributing to agricultural development in the Kingdom of Swaziland. It also contributes to policy discussions on how best to allocate scarce public resources to meet the people's need. This study is organized as follows: section 2 presents methodology, section 3 focuses on rural roads and food distribution in Swaziland (rural mobility), section 4 presents improving, managing and constructing new rural roads, and section 5 provides conclusion and recommendations.

Objective

The main objective of this study was to examine the importance of maintaining the quality of rural roads to support agricultural development, by making food distribution easier and more effective.

MATERIAL AND METHODS

The Study Area

Swaziland, officially the Kingdom of Swaziland, and sometimes called Ngwane or Swatini, is a landlocked country in Southern Africa, bordered to the north, south, west and east by South Africa, and to the north by Mozambique. The nation, as well as its people, are named after the

19th century king Mswati II. The country is situated approximately between latitudes 26° and 28° South and longitude 31° and 32° East. It covers an area of about 17,000 km² and it has a population of approximately 1,200,000 inhabitants (Swaziland 2011). It is a country of rolling grassy hills and pine forests covering mountains reaching up to 4,500 feet above sea level. It is the home of the Swazi, a group-oriented, Bantu-speaking people of Nguni descent who settled in the region of what is today Maputo in Mozambique around 1600 (Simanga 2009). The study areas consist of Manzini, Siteki and Big Bend where the main agricultural activities are concentrated. Main crops include maize, sugar cane and beans. Chickens, ducks, goats, sheep and cattle are raised for meat and the diet is also supplemented by wild game and fish (Sossou et al. 2011). Small-scale farmers dominate the production of the staple food crops. Women generally handle food production, transport to markets, and sale. Although the production of crops by women is inadequate, the state of rural infrastructure makes it more easier for trucks to get stuck in poor, dirty and unmanaged rural roads in the country, making the lives of these farmers very miserable (Sossou et al. 2011). Rural areas continue to provide much of needed food to urban areas, although food imports have been increasingly playing an important role for the swelling urban population. Women continue to play a critical role in agricultural development, hence, understanding their transport patterns would be the first step to reduce their onerous task (Shahidur et al. 2009).

Sources of Data

This was a desk research review of the available literature on rural roads management and maintenance. Both primary and secondary sources of information were obtained through a document methods study. Although it might be argued that the primary-secondary distinction is blurred, the difference is clear in so far as primary sources are considered to be the original written materials of the author's own experiences and observations. Secondary sources are the materials derived from someone else as the original source. This paper investigates the importance of rural roads in supporting agricultural development in the Kingdom of Swaziland based on both primary secondary sources (Berg and

Lune 2011; Bryman 2012). The examination of these various sources assisted to look into the various issues on rural roads in Swaziland holistically.

OBSERVATIONS AND DISCUSSION

Rural Roads and Food Distribution in Swaziland

According to FAO (2000), the available data on food supply and requirements in Swaziland estimated to be in deficit. Food aid currently being provided targets the most vulnerable groups such as children and the elderly, while the hungry poor must fend for themselves. The coping mechanisms such as eating less food, having fewer meals and growing vegetables in household compounds have been stretched to the limit. The main factors constraining food supply include the extreme state of roads linking to main centres and other such as traders and farmers as well as the cost of fuel (Limao and Venable 2000; Longo and Sekkat 2004).

While revamping the whole transport infrastructure is a long term endeavour, donors could assist the Government to urgently repair critical sections of main roads leading to main centres, with priority given to the Mbabane, Manzini, Nhlengano, Big Bend and Siteki. This will be a major step towards restoring the normal flow of foodstuffs to the major centres. In addition, assistance to regional authorities and local communities for feeder road management and maintenance should be substantially increased (FAO 2000). The agricultural sector in Swaziland needs to change by tackling road infrastructures. The government should try to reform this sector through mechanization, new market opportunities for small-scale farmers and land expansion, because they are the majority in the country. It should improve a competitiveness of the national agriculture by creating self-sufficiency in food production. Thirty years ago, very few African countries were dependent on food imports. Presently, even though some African countries celebrated their 50 years of independence, it is true that no one of them is independent from food self-sufficiency and nutritional standpoint. Swaziland should strategise on farm mechanization, create new market opportunities for small-scale farmers and restructure its national tradition through innovation and improved yields for self-

sufficiency in food (Africa Avenir 2010). The current road network in Swaziland is divided into four broad categories of roads (Table 1).

Table 1: Road network in Swaziland

<i>Category of road</i>	<i>Paved km</i>	<i>Unpaved km</i>	<i>Total km</i>
Main roads	852	539	1392
District roads	62	1534	1596
Urban roads	200	188	388
Feeder roads	-	1500	1500
Total	1114	3761	4876

Source: Swaziland Road Reform study (2010)

Road network management responsibilities lie with the Local authorities, that is, municipalities, Town Road Boards and town councils, and the Roads Department in the Ministry of works manage the road network in Swaziland. The Roads Department is responsible for the main and district roads as well as the feeder roads, in other words they are responsible for the bulk of the road network as shown in the Table 1. Well managed and maintained road network can enhancing the country's trade competitiveness through spillover effects of road network.

Focus on Rural Mobility

Development partners should focus on rural mobility to learn and understand how to achieve better aid effectiveness in rural transport. So far, most development partners and governments in Africa have relied on two overarching assumptions, which have led to massive road investments by being ineffective:

(i) most households in rural areas of Africa are not connected to markets and therefore need passable roads for a truck because they are remote, (ii) roads with a high level of service are crucial to achieve high economic impact. These roads should be for trucks including others secondary road networks, which link to cities. As such, they should be in good conditions (paved or unpaved) to enable truck fleet efficiency and competition. Donor coordination is very important to avoid the rehabilitation of rural roads not connected to passable secondary roads (Raballand 2010). In terms of how both men and women access goods and services, it is important to fill in the gaps in our knowledge about how they are being affected in accessing these

goods and services, which influence the provision of transport infrastructure (Porter 2002). Rural road networks should aim to maximise the participation of both men and women in development of rural communities, create development opportunities by involving those working on rural transport (IFRTD 2005).

Improving, Managing, Maintaining and Construction of New Roads

Road access of low percentage (34%) reflects the lack of infrastructure in African countries, especially in Sub-Saharan Africa. Only about 25% of the people in rural areas have access to market within two hours (WFP 2009). Despite this, national programs and organization still tend to focus mainly on the construction of major roads, because small rural roads have a smaller economic impact. This can be addressed by employing cheap local labour to construct rural roads connecting farms and markets. The strategy will require that local labour or farmers working on these road projects receive incentives in return for their labor as part of the project. Local labour (women in the majority) can be used because it solves the problem of delivering equipment due to the lack of infrastructure in many rural areas, as it is almost impossible to move in big machines to these areas (Lokshin and Yemts-ov 2005). Given that building roads requires mainly physical work, it is important to know how women could also contribute to this type of work. Johannessen (2008) argues that this is an effective method in which the local people can build rural roads, but the only issue in this will be the experts who plan the construction and teach people how to construct the roads. The construction of roads can begin with local materials/resources at the local villages, as the delivery of the necessary materials will depend on how fast roads can be built in a most cost-effective way (Johannessen 2008). Another problem which is dominant in most rural areas of Africa is the lack of cheap transportation. Evidence shows that even in places where roads exist with little access to bus, taxi or *matatu* systems, people still have to walk a long distance to get access to those means since the systems are often not developed enough (Jacoby 2000).

Walking is the most important form of non-motorised transportation. Other forms of non-motorised include bicycle, human portage,

wheelbarrow, and animal drawn cart. Generally, non-motorised transport includes any form of transportation that provides personal or goods mobility by methods other than the combustion motor (Ren Mu and van de Walle 2009). Time and energy involved in off-road transport are major constraints to any efforts by rural communities to move from one place to another. Based on experience from other African countries such as Burkina Faso, Ghana, Uganda, Rwanda, Kenya, and Malawi, this study provides an alternative low-cost intermediate means of transport which can provide a level of improvement in rural transport. It is expected that it will affect travel for social and economic purposes that is rarely achieved through road improvements alone. According to Riverson and Carapetis (1991). In this way, farmers can be provided with adequate means of transportation, such as a bicycle with a trailer and others to improve the efficiency on directly productive tasks.

In agricultural production, rural people rarely uses any kind of motor vehicle, they relies mainly on household labour, with time and energy-consuming in moving small loads over relatively short distances. The movement of the load consignments could suitably be undertaken using intermediate means of transport. They have high load capacities than head-loading, including high travel speeds than walking, and they significantly reduce the amount of time and energy spent walking and head loading (Shahidur et al. 2009). This type of cheap means of transportation can assist farmers carry more products and does not require political or social infrastructure to implement, like in the case of vehicles or trains. However, the obvious limitation to this suggestion is that it can be only implemented in areas with appropriate roads (Stefan et al. 2006). The estimate cost of constructing rural roads in the country would be much more than the cost of providing bicycles with trailers small farmers, including the cost of purchase, shipping and maintenance tools such as oil. In order to meet these cost, it is expected the regional/provincial government to also contribute toward the financial requirements, because it is the main beneficiary in economic and social aspects of rural roads. The regional/provincial government backed by donor community's task will be to ensure that farmers' contribution for building rural roads would not be high and also that they have not to suffer from hunger and

poverty. This can be seen as a short-term solution until the regional/provincial government will improve, manage and maintain rural roads for higher GDP. Such action can raise regional GDP by more margin (Buys et al. 2006).

CONCLUSION

The main objective of this study was to examine the importance of managing and maintaining the quality of rural roads to support agricultural development and related socio-economic activities, and to make food distribution easier and more efficient in the Kingdom of Swaziland. Many studies have shown that rural roads are critical in increasing economic activities that increase rural income. They are often treated as the least link of the transport network, and often form the most important link in terms of providing access for rural population. The lack of management impacts negatively on access of rural communities to basic services. Whether one looks at agriculture or rural migration to urban, rural roads still play an important and a useful role. Constructing a road in rural area would be more expensive than managing and maintaining the existing ones. Constructing a road alone does not help much rural communities, because transportation costs and economic conditions of the communities matter most.

Transportation costs will need to be subsidised by government, consequently without a subsidized motorised transport in rural areas, communities will prefer to still walk or either use cycle or both. Reducing the transport burden for rural women can release time and energy for productive and socially beneficial activities. The magnitude of the transport burden incurred by rural women to obtain access to domestic facilities is huge. The only way is to improve access to these facilities in order to alleviate the burden of social activities on women. This study considered rural roads as catalyst which aims at better crops, increased rural income, job creation and improvements in standard of life. The study argues that improving rural roads increases welfare of the people, develop better facilities for rural way of life, creates values by improving marketing and storage facilities.

Overall, in this thoughtful study, the economic development was in focus, and in order to get the people out of poverty, it requires mul-

tiples solutions and multiple approaches. Finally, the lessons learned from the literature on rural roads studies in Africa have shown systematic shortcomings due to insufficient focus on road management, maintenance and community involvement.

RECOMMENDATIONS

Management and regular maintenance of rural roads is a critical pre-condition for sustaining the positive impact that rural roads can bring to rural communities. Minor maintenance should not often be neglected because of lack of funds or little political willingness. Instead, politicians should strategise to authorise small and major rehabilitation of roads or reconstruction should take place after the road has deteriorated. Problems with rural roads management and maintenance, which generally stem from lack of funds, are exacerbated when the institutional responsibility for rural roads is not clear, because the budget source for maintenance has not been properly established. In practice this type of lack of clarity should be often avoided. Full community participation and management should be recognised as important for long-term sustainability of infrastructure investment. When community management means cash or labour contributions, the burden should not fall only on the poor by being forced to contribute free labour.

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