THE DEVELOPMENT OF THE RURAL ROADS NETWORK FOR SUSTAINABLE LIVELIHOODS IN SOUTH AFRICAN LOCAL MUNICIPALITIES

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Abstract - Rural roads infrastructure is an indispensable asset for the rural communities. It is the backbone of their livelihoods. In South Africa, the conditions of the rural roads have been deteriorating and seem to be receiving less attention that it deserves. This study investigated the role of rural roads infrastructure on rural development and sustainable livelihoods. Furthermore, the study sought to establish the impact of poor road networks on the livelihoods of rural communities. It also investigated the challenges associated with poor road networks and how they become a barrier to socio-economic development within rural areas. Using literature survey and visual observations, the findings of the study indicate that thepoor roads in the rural areasare contributing factor to poverty as the community members are deprived of the basic goods and services due to lack of infrastructure. The municipal area boasts a lot of potential in terms of economic development, but the lack of good access to quality roads hinders such development. The rural communities finds it difficult to transport their foods and non-foods produce to the market due to poor road access. The roads are characterized by moderate distresses, which make it difficult for vehicles to navigate the roads and makes the rural areas unattractive to the potential investors. As part of the recommendations, it is suggested that the rural communities be engaged in participating in maintaining their own roads for their own benefit. Policy makers and the government should also treat rural road development as a priority, given the problems associated with poor roads infrastructure. The findings of this study clearly shows that the impassability of access to the roads by rural people does not onlyimpedes the delivery of basic services such as education, information and education information but the bad state of rural areas also affect sustainability and growth of local enterprises.

Key words - Rural communities, Roads, Infrastructure, Rural development, Sustainable livelihoods.

I. INTRODUCTION

Rural roads have been described as the access roads from the main paved roads to the rural areas where the communities reside. In South Africa, these roads are mostly gravel with poormaintenance and therefore, adversely affect the rural economy as they make it difficult to transport fresh farm produce and other commercial goods (Jari, 2009). The importance of rural roads infrastructure for the rural communities cannot be underestimated, as they serve to enhance their socio-economic lives in various ways (Bhattacharya et al. 2015). Studies have indicated that economic opportunities and the sustainable livelihoods of rural communities can be enhanced by improving the rural roads networks (Faiz; 2012; Porter, 2014). In the same way, an investment in the rural roads could often results in an improved local growth since good roads infrastructure allows for commercial opportunities and better performance for the businesses (Hettige, 2006; Mwabu & Thorbecke, 2004). Furthermore, Chambers (2014) found that in developed countries, the improved rural road networks allowed for urban-rural migration, as a result of people seeing the potential for socio-economic development on the basis of the sound road infrastructure. Faiz (2012) has shown that the improvement on the rural roads infrastructure also positively contributes to the country's agricultural productivity. It is therefore a fact that an improvement in the rural roads is an attraction for development opportunities, thereby improving the sustainable livelihoods of the rural folks. During the 2013/2014 financial year, the provincial and local government sector in South Africa received 40% (R18 billion) of the total of R42.3 billion that was allocated to the Department of Transport (DoT) for road maintenance (Statistics South Africa, 2014). In spite of this amount being allocated to the provincial and local government for roads maintenance purposes, it has not been established how much has been spent on the roads infrastructure and how does the well-being of the citizens have changed thereafter.Zhang and Elaksher (2012) noted that the effect of unpaved (gravel) rural roads on the livelihoods of rural communities has not been fully researched. In South Africa, the research has been focusing on the potential economic benefits of improving the conditions of the already paved roads, while the poor rural road infrastructure deny the communities access to basic services (Nkomo, 2014). In the rural areas like Eastern Cape, the communities travel long distances (+/- ten kilometres) before they reaches the main roads which would link them to major cities (Porter et al. 2010). The result of poor rural road networks is that the communities often remain in poverty because of the limited opportunities provided by these poor roads, while the improved road systems allow communities to develop themselves economically, thereby improving their livelihoods (Chamberlin & Jayne, 2013). The poor rural road infrastructure of South Africa has seen

10% of the rural people migrating to urban areas from the period of 1990 to 2011 (Potts, 2013). It is, therefore, a fact that poor rural infrastructure is one of the reasons for the rural-urban migration (Miheretu, 2011). Hence, there is relationship between the conditions of rural roads and the related economic implications within the areas in which the citizens reside. Through a visual observation of the road networksand reviewing literature on roads systems, the study seek to assess the conditions of rural communities, and how this affects socio-economic growth of the rural communities.

The overall aim of the study is to assess the effect of rural roads development for sustainable livelihoods of South Africa rural communities. Thus, the specific objectives of the study are to:

- Assess the conditions of rural roads in the South African local municipalities.
- Determine the impact of poor roads infrastructure for the development and the sustainable livelihoods of the rural communities in South Africa.
- Evaluate the challenges associated with poor road networks in South African local municipalities.
- Explore the development opportunities presented by improved road networks in South African local municipalities.

Before providing the methodology as well as the discussion of the findings, the following issues received attention when the researcher conducted the literature review: Rural road infrastructure, rural development & sustainable livelihood, and local economic development.

II. LITERATURE REVIEW

a) Rural road infrastructure

Infrastructural bottlenecks, poverty, unemployment and inequalities are amongst the numerous developmental challenges that South Africa faces. Proper roads systems play a crucial role in the economic development of the country.In South Africa, roads are "considered the most vital mode of transportation" (Mamabolo, 2013:2). Lack of proper roads in the rural areas has an effect on the service delivery, investments, local businesses profitability and growth, and tourism. It is therefore vital for a country to properly distribute enough budgets for construction, upgrading and maintenance of roads system. The physical features of the road play a crucial part in defining the levels of movability and safety, particularly for rural roads.

The developments in the infrastructure have the potential to produce a safer travel environment, particularly a more 'crashworthy' environment (Oxley et al., 2004). The three spheres of government which are national, provincial and local are responsible for roads provision in South Africa. At the national level, the South African National Roads Agency Limited is responsible for planning, designing, constructing, operating, controlling, maintaining, and rehabilitating of national roads for the country. The state of the South Africa's road network 2015 is given in the table 1 below. The table (i) below indicated that more than 79 per cent of roads in South Africa are gravel roads, and only 21 per cent are paved, with 131919 that are not known. This means that out of 131919 that is not known, then it is not easy to measure the maintenance backlogs, because these unknown roads are either in a poor or very poor condition. Issues such as limited resources and shrinking infrastructure budgets continues to worsen the situation in rural areas for proper roads systems.

Table (i): SA road network, by type and authority

Authority	Paved	Gravel	Total
SANRAL	21403	0	21403
Provinces-9	47348	226273	273621
Metros municipalities-8	51682	14461	66143
Local municipalities	37691	219223	256914
Total	158124	459957	618081
Un-proclaimed (Estimate)		131919	131919
Estimated Total	158124	591876	750000

Source: National Treasury, 2016

According to Muradzikwa(2004: 106), roads have a huge impact upon the physical and socio-economic development of any area, be it urban or rural. Furthermore, Muradzikwa (2004) stipulates that if a road is built (or improved) some form of development is widely observed (or expected) to follow it, and by comparison if it is not built, or not improved, then development takes place more slowly. As many rural households depends on the agricultural sector for their living so lack of connectivity in rural roads seriously constrains the smallholder producers to access the markets for their produce. Hence, "properly planned rural road that links to the formal road network can create new markets and opportunities for isolated communities" (African Monitor, 2012: 5).

According to Faiz (2012:9), accessibility, whether it is to markets, schools, health clinics, water points, places of worship, and community centers in rural areas or to the nearest town or city, is a precondition for the satisfaction of almost any economic or social need.South Africa government develop its policies in an attempt to rectify the imbalances and injustices of the past during the apartheid government. In correcting this historical imbalances and injustices, the transportation sector is one of the areas, if government invest more on developing rural roads

infrastructure, can have a significant change to the society. The government has created numerous policies and strategies that has given rise to significant transport sector investment. The fig. (i) below highlights policies that have gave the strategic direction to roads delivery in South Africa. The following summaries some of the policies on the road delivery systems in South Africa:

a. Constitution of the Republic of South Africa (1996)Schedule 3 Part A & B define:

- Provincial roads as exclusive competency of Provincial Administration.
- Municipal roads as exclusive competency of local government (metro, district or local).
- National roads as exclusive competency of Minister of Transport
- b. White Paper on National Transport Policy (1996)
- Mandated the creation of national forum to improve the "co-operation of infrastructure planning for all modes of transport" and encouraged the creation of provincial co-ordination structures.
- Identified fragmentation of responsibility and co-ordination of infrastructure across government levels and with parastatals
- Enabled creation of SANRAL to plan, develop, maintain South Africa National Road network.
- c. Road Infrastructure Strategic Framework for South Africa (RISFSA) & Rural Transport Strategy
- Provided framework for intergovernmental co-operation on the management and maintenance of national, provincial and local road network.
- Establishment of national norms for information and decision support systems to manage roads as a network (including functional road reclassification).
- Sustainable roads funding.
- Development of human capacity for roads development and maintenance.
- d. S'hamba Sonke Programme
- Investment on key arterial routes to support the rural economy.
- Cost efficient use of labour absorptive methodologies.
- Know your network.
- Access to schools, clinics and public facilities.
- Delivering a safe road environment.

Although these policies exist but people who reside in the remote rural areas continue to have difficulties in accessing basic services, products and markets situated outside their jurisdiction areas. Furthermore, people staying within the previously-disadvantaged communities spend huge amounts of resources (money and time) travelling to cities in order to access vital services and employment opportunities.

b) Rural development and sustainable livelihood

In most developing countries or contemporary world, the quest for the attainment of desired rural development has continued to be crucial concern. This is of the fact that there is still many people who stays in the remote rural areas, and in most cases they do not benefit from the"over-dramatized rural transformation agenda acclaimed by most countries particularly in the third world social formations" (Nwagboso & Otu Duke, 2012: 27). There are many reasons why greater attention should be shifted to the development of rural areas. First, majority of the "population lives and finds their means of livelihood in the rural areas (Nwagboso & Otu Duke, 2012: 27)". Secondly, the migration of people from rural–urban continues to be a matter of serious concern to governments. This is because of the rising level of urban unemployment, housing problems, food scarcity, space problems, health, sanitation challenges and other attendant social-economic difficulties. Thirdly, in most developing countries, the majority of the impoverished and underprivileged people mostly reside in the rural areas. Fourthly, "many scholars have persuasively argued that priority should be accorded to issues germane to rural and agricultural development implicit in their significant roles in a country's economic growth and development (Nwagboso & Otu Duke, 2012: 27)".

In South Africa, the rural areas are characterised by deep levels of poverty and at one dimension of poverty are the poorest and most remote from programs of poverty alleviation. The backlog of basic services such as sanitation, water, education (both primary & high schools), and health services is very largely located in rural areas. In addition, the lack of infrastructure within the rural areas is very huge. Hence, the population in the remote rural areas finds it most challenging to find any form of employment and the transportation costs are very to the nearest urban centre (Hemson et al., 2004). Rural development and poverty mitigation are closely related. On other hand, proper infrastructure has numerous links to poverty reduction. Firstly, Value-added infrastructure can assist in job creation and also increase the productivity of the worker. Secondly, improved infrastructure can save time and human effort in transporting water, crops, wood, and other commodities. Thirdly, it can also advance health (by providing clean piped water to the people) and education (by increasing access to schools, computers, and lighting). Hence, infrastructure could meaningfully improve the quality of lives for people in the rural areas. The construction and maintenance of rural roads remain the crucial component for rural development. As highlighted earlier, an access to proper roads by the rural communities is central to the mitigation poverty. This has also the close interaction with rural livelihood outcomes such as improved incomes, increased social well-being, reduced vulnerability, improved food security, and a

more sustainable use of natural resources (Faiz, 2012: 30). The sustainable livelihoods is seen as a broad goal for poverty eradication. Thus, the sustainable livelihoods could serve as an incorporating factor that permits strategies and policies to address development, sustainable resource management, and poverty eradication simultaneously. Sustainable livelihoods could be seen as an approach that associates sustainability, poverty reduction and empowerment processes.The livelihoods of people residing in the rural settings entail of all activities/ or options existing to rural people that caters their living and well-being. In sub-Saharan Africa, "rural people typically cultivate land, produce crops, or are generally dependent on land-based livelihood activities for their subsistence" (Chigbu, 2013: 817). On other hand, taking into account the current global circumstances, livelihood choices accessible to rural communities extend far beyond farming activities. Furthermore, the author () stipulates that the "place-based cultures, more human interaction and slowmoving organisations characterise non-farm activities in rural areas. All of these (and many more) affect rural livelihood activities and processes" (Chigbu, 2013: 817).

c) Local economic development

Internationally, there is a high interconnection of societies at local, national, and/or global levels (Fritsche et al., 2015). At the local level, "rural and urban areas are linked together through the flow of people, production, commodities, capital, income, and market information, among other elements, and this makes rural-urban linkages important for LED and poverty reduction" (Walo, 2016: 126). The ability of government to create a robust rural-urban linkages would, therefore, inspire new "forms of livelihood through diversification and agro-processing" (Steinberg, 2014). The rural-urban linkages has been debated by numerous authors. The development approaches and policies have been shifted from urban industrial growth in the 1970s to the integration of infrastructure in the rural areas in the 1980s (Nemes, 2005; Sani & Far, 2015). Due to the failure of such approaches to bring about the intended development outcomes, and therefore, "rural-urban linkages have emerged as a development approach in regional planning" (Walo, 2016: 126). According to Akkoyunlu (2013: 4), robust rural-urban connections improve viable local economic development as the "linkages channel resources from producers to consumers, creating economic benefits for the residents". In the North, the local economic development emphasis more on the issues such as responses to "globalization, entrepreneurial and human capital interventions, business support and property-led development"; while in the South the focus of local economic development tends to be on issues relating to "community-based development, small enterprise development and locality development" (Rogerson, 2006: 38). Local economic development seeks to unleash the developmental potential of localities which utilises the "bottom-up" development approach. The main aim of local economic development, particularly in the developing countries, is progressively "targeted at creating decent jobs and stimulating local economies" (Walo, 2016: 2). According to Ramukumba (2014: 898), local economic development is an "approach directed at local or regional development, with the main aims of stimulating the growth of the local economy, encouraging competition, and creating more job opportunities through better use of local available resources". Furthermore, the author (Ramukumba, 2014: 898) states that local economic development is a holistic community approach, through which the local societies uninterruptedly "work together with other external stakeholders to achieve sustainable economic growth and development". Based on the above overview of LED, it can be said that it is an approach which aim to shape up the "economic capacity of a local area in order to improve its economic future and the quality of life for all" (Helmsing, 2003: 67). Since the 1994 democratic transition, South Africa continue to experience central challenges on sustainable development prospects. This challenges includes, amongst others, poverty eradication and high income inequalities; the provision of basic quality and reasonable services to all citizens; reducing high level of unemployment; and the attainment of sustainable high economic growth rates.Before 1994 democratic transition, the local economic development practices were inadequate (Marais, 2010: 519). In South Africa, local economic development began as one of the more crucial post-apartheid development options and is now being pursued by significantly empowered localities. The South African government conceptualised local economic development as a form of partnership between the government, key players in a locality, private sector and civil society. In order to ensure that the implementation of LED strategies takes place, the local government have been given the responsibility to facilitate it with the support from the national and provincial spheres of government. One of the factor that affect local government's ability to successfully facilitate LED is it inability to properly understand the business sector. The local economic development strategies have different outcomes which have been achieved in different areas in South Africa. For instance, the larger urban areas have achieved significant outcomes while the rural areas and smaller urban areas have mostly realized few remarkable outcomes (Marais, 2010).

III. METHODOLOGY AND OBJECTIVES OF THE STUDY

This study only focused on visual observation of the road surfaces as well as secondary data, in order to be

able to determine how such conditions affect the livelihoods of rural communities. In other words, this is a desktop research but the researcher supplemented the secondary data by conducting the visual observation of the rural roads on some of the South African local municipalities. Literature survey was done to draw as much information as possible regarding the roads networks and livelihoods in the rural areas.

IV. FINDINGS& DISCUSSION

With the advent to democracy since 1994, the South African government has engaged on numerous strategies and plans in ensuring the promotion and development of economy for the betterment of the citizens, particularly the disadvantaged and marginalised poor people. However, with such progress, "it is becoming increasingly challenging for the government to accelerate development" (Madumo, 2015: 154) owing to the difficulties associated with common challenges such as poor governance, corruption, mismanagement and maladministration, lack of proper skills, lack of funding amongst others. In South Africa, the local sphere of government play a critical role in driving the developmental agenda of both national and provincial spheres of government, and safeguarding the deepening of the democratic culture within municipalities (Madumo, 2015). However, the local sphere of government is faced with numerous challenges. The main challenge that exits within the local sphere of government is its failure to facilitate and improve development in the areas under their jurisdictions. The summary of the key challenges with South African local municipalities can be classified as follows:

a. Basic service delivery (sanitation, water, roads, electricity & roads)

The existing infrastructure is aging and there is little or no maintenance, and the roads are old and needs major repairs. Furthermore, there is a need for an upgrade of sanitation system.

b. Local Economic Development (unemployment, skills, job creation& lack of skills)

The unemployment rate still remains the highest and the majority of the people are depending on grants. In addition, there is no training centre provided for skills development, and the failure to attract suitable skills, & loss of skilled employees (institutional memory)

c. Good Governance and Public participation (facilities, crime, clinics& poverty)

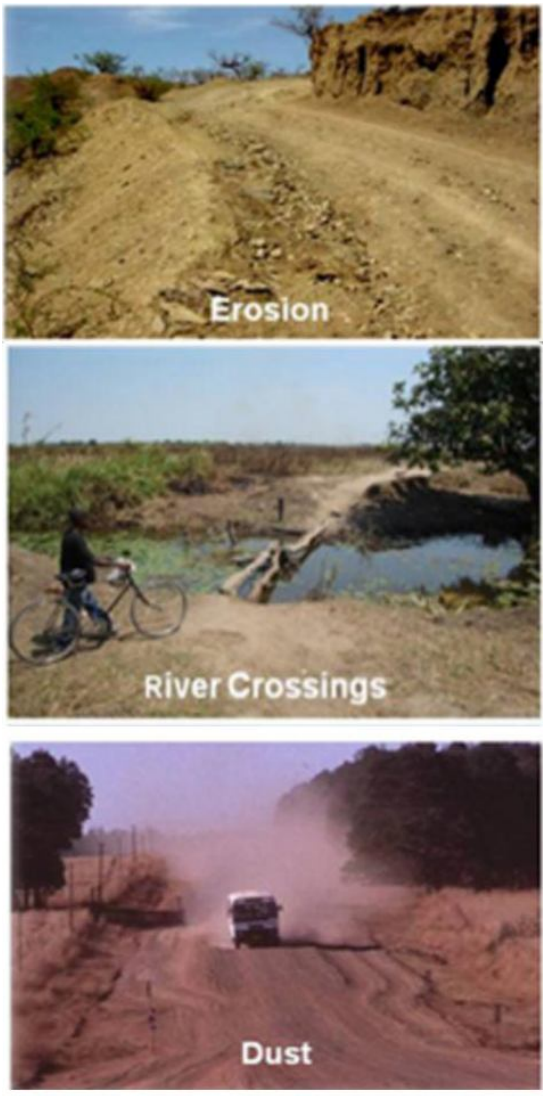
Lack of a community participation strategy and dedicated personnel to deal with community participation and community facilities. On other hand, the vastness of most wards prevents Councilors from reaching all their constituency.

d) Municipal financial Viability and management (lack of revenue, non-payment for services, reliance on grants& debt collection)

The low rate of debt collection hinders the delivery of other services within the municipal competency.

According to the Local Government White Paper (RSA, 1998), development approaches at the local government level should include four aspects, which are: Integrated Development Planning, service delivery, local economic development and democratisation. As highlighted earlier, South Africa consist of numerous the rural areas where people still remains poor and high level of poverty and unemployment exist. The condition of roads systems within this areas affect the well-being of the communities in many ways. Like in manyrural communities in the developing countries, there are gradient of the roads which tended to be uneven and dangerous for vehicles as the drivers need to be careful when navigating on those roads. The bad state of the roads in this areas normally results in most vehicles being broken down, losing their shock absorbers and other related parts. The ability of government to proper develop rural roads and link it with cities is crucial for the economic growth and poverty reduction. Poor roads infrastructure put the rural communities out of business and eventually, people's livelihoods become compromised because their main source of income would have been forcibly discontinued by the poor infrastructure. Hence, having the good roads in the rural areas have both direct and indirect benefits. For instance, better-quality roads provide chances for those individuals or entrepreneur who want to start the businesses. In other words, better improved and expanded rural roads improves the economic opportunities (Van de walle, 2002, Faiz, 2012 and Porter 2014). Furthermore, it also "save people time, allowing those with skills and/or savings to invest in other small businesses" (Hettige, 2006: 22). The diagrams below clearly shows the types of roads that are normally found in the rural areas.





During the road surface observations, the researcher noted that the traffic intensity on the roads was low, and with some of the roads without even a sign of traffic. Due to bad condition of those roads, the majority of the car owners avoids travelling on it. This situation affects the local communities as they have to walk long distances in order for them to access the limited services, which are being provided by government, such as health facilities, and education services. In terms of their maintenance and drainage conditions, the researcher observed that the roads were poorly constructed, if ever they get some kind of maintenance. The most visible distresses on the roads were the potholes that end up as ditches. The ditches make it difficult for vehicles to pass through. This condition of the roads seem to be a barrier to economic development and the worst thing is that the responsible authorities rarely visit or inspect the roads to assess their state. Furthermore, in cases of emergencies, community members struggle to get their sick relatives to the nearby healthcare facilities due to shortage of the transportation, and the available private transportation is too expensive for the local communities to hire during emergencies.On other hand, during the rainy/ wet season, the gravel roads often deteriorate quickly which ends up disturbing transport services, and the ability of the local communities to access health facilities and cities or markets when it is most necessary. According to Alzubaidi and Magnusson(2002), there are several processes influencing the deterioration of the gravel roads such as climate change (rainfall, moisture & temperature), drainage (incorrect cross-fall, insufficient ditches, high shoulders, failed culverts &overgrowth of vegetation), traffic (number of cars, type of cars & speed), and material (material type, particle size distribution, % uncrushed material & thickness). Such factors causes the distress such as ruts, potholes, dust, corrugation, loose gravel, frost damage & erosion channels. Numerous factors causes the distresses and processes connected with the deterioration of gravel roads. As illustrated in this diagram, it can be noted that the traffic and climate circumstances has a directly influence on the behavior of road material and the drainage capacity of gravel roads. Furthermore, there noticeable features of surface deterioration which could be seen as some of the distresses on gravel roads. Government officials who own their private cars;especially teachers, doctors and nurses, sometimes cannot sacrifice their vehicles in the bad roads, especially after heavy rains. Most of this officials stays in town due to lack of infrastructure (water & sanitation, electricity, roads, proper, renting houses) where they work in the rural settings. Thus, the gravel roads that normally lead to the rural communities are usually bad and not well-maintained. During the rainy season, teaching and learning at schools becomes affected (teachers don't go to work) as the "condition of roads reaching the schools further accentuates their isolation" (Legotlo, 2014: 14). The development and prioritisation of roads networks in the rural areas is crucial especially in developing countries in order to uplift the socio-economic conditions experienced by communities" (Nkomo et al., 2016: 42).South Africa has got one of the best urban road networks in the continent, yet its rural areas seem to be far from this recognition. Most of the rural roads of the country seem to have been neglected, making the rural dwellers feeling marginalised. It is therefore crucial that for the government working together with the policy makers and all relevant key actors to prioritise rural infrastructure development. From the discussion, it is clear how the poor state of the rural roads infrastructure affects the well-being or standard of living lives of the rural communities. As government emphasis on rural development, it is therefore crucial that there is more investments on the rural roads networks and infrastructure in order to stimulate the local economy of rural areas. Despite the potential of an economy, being measured against its ability to provide access to basic services to its citizens, but the rural population is still deprived access to such basic services, which culminate into

several challenges like lack of access to education, health, markets and high rates of unemployment.

CONCLUSION

This study aimed at assessing the ddevelopment of the rural roads network for sustainable livelihoods of rural communities within KwaZulu-Natal Province. It was noted that the rural areas of South Africa are still lagging behind in terms of development, with poor or lack of quality roads network being a main factor. It has been shown that improved and well-maintained rural roads network directly and indirectly benefit the communities for a balance standard of living. In other words, this study has shown the importance of the rural roads infrastructure on the socio-economic development of the rural communities. Therefore, the study recommended that the government sector, especially local government, should consider public-private-partnership in developing, maintaining and improving rural roads networks. Moreover, an integrated development strategy is recommended for sustainable development. The focus of the strategy should be on developing rural economy sectors and effectively link them with those in the urban areas. As the local government is heavily dependent on the municipal infrastructure grant which comes from national and provincial government, thus future research should focus on assessing the strategies in which local government can employ to raise funding for rural roads network development purposes.

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