



Economic Growth through Effective Road Asset Management

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ABSTRACT

Following the advent of the Road Management Initiative (RMI) in the 1990s significant progress has been made in the maintenance of main roads in a number of countries in Africa. The improvements are a result of the establishment of road funds and semi-autonomous road authorities. However, relatively less progress has been made with the maintenance of local roads providing access to rural communities. These roads are under the responsibility of regional or local authorities.

The Africa Community Access Programme (AFCAP) is therefore funding a research and capacity building project on asset management for rural roads. The purpose of the project is to achieve economic and social benefits for local communities in rural areas as a result of improved performance in road asset management.

Three countries from sub-Saharan Africa will participate in the project. A fourth country, with established rural road asset management systems, will provide a benchmark for best practice. If the project is successful it is expected that there will be subsequent phases which will enable the participation of additional countries.

The project will provide technical assistance to achieve improvements in asset management performance on a selected network of rural roads within each participating country. The performance will be measured against a new framework for rural road asset management that is being developed as part of the study. Measurements will also be taken of the road network condition and the impact of the road condition on the rural economy. These data will be discussed with road sector stakeholders in the project areas and in regional meetings of the participating countries. They will be used as part of an influencing strategy to achieve improvements to the management of rural roads and build a maintenance culture.

The purpose of the conference paper is to inform stakeholders in the region of this strategically important research project. Feedback will be obtained from stakeholders on the innovative approaches that will be adopted. This will strengthen

the project methodology, ensuring that it achieves meaningful and sustainable change.

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1 Introduction

The Africa Community Access Programme (AFCAP) is supporting a research and capacity building project on asset management for rural roads. The purpose of the project is to achieve economic and social benefits for local communities in rural areas as a result of improved performance in road asset management. The project is being implemented in response to an ongoing deficiency in effective maintenance of rural roads in Africa. Significant investments in rural roads are being lost due to failure of the responsible roads agencies to maintain these important assets.

The project will provide technical assistance to achieve improvements in asset management performance on selected networks of rural roads. The performance will be measured against a new framework for rural road asset management. The participating regions will monitor changes in the condition of their road network and will make assessments of the road network asset value. The regions will monitor the impact of the road conditions on the social and economic conditions of communities in the project areas.

The data collected through the monitoring will be discussed with road sector stakeholders in the project areas and in regional meetings of the participating countries. Through this process it is expected to raise awareness in the project areas and nationally in the participating countries of the importance of road maintenance and effective management of rural road networks. It is expected that this will lead to higher priority being given to the funding of maintenance and greater accountability amongst road network managers.

Three countries from sub-Saharan Africa will participate in the project. A fourth country, with established rural asset management systems, will provide a benchmark for best practice. If the project is successful it is expected that there will be subsequent phases which will enable the participation of additional countries. The roll out of the project methodology could have a significant long term impact on

the management of rural roads in Africa and therefore on local economic development and the livelihoods of the rural population.

The purpose of this paper is to inform stakeholders in the region of this research project and to raise the profile of the project. It is expected that the high profile of the project will provide additional encouragement to the participating regions to improve their performance in rural road asset management and will increase the project's prospects for success.

2 Historical Perspective

Many African countries gained independence in the late 1950s and 1960s. This resulted in a shift in policy from the provision of roads mainly for strategic and military reasons to the provision of roads for national development. There was a marked increase in road construction and by the end of 1980 over 2 million kilometres of roads has been constructed in Sub Saharan Africa with an estimated asset value of US\$150 billion (World Bank, 1995). Unfortunately this expansion of the network did not take into account the limitation of national governments to sustain the recurrent maintenance requirements. The World Bank estimated that by 2000 over 33% of the asset value had been lost due to lack of routine and periodic maintenance.

Institutional reforms implemented under the Road Management Initiative (RMI), which started in the mid-1990s, resulted in the establishment of road maintenance funds in many countries and semi-autonomous roads authorities. This resulted in improved maintenance of national roads but had less impact at a regional and local government level on rural road networks. Funding for maintenance continued to be inadequate, particularly at the local level, and countries continued to experience severe capacity constraints in local roads agencies and the private sector.

3 Existing Arrangements for Rural Road Maintenance

3.1 Case Studies

Several case studies have been conducted to assess current arrangements for road maintenance in different parts of sub-Sahara Africa. The purpose of the case studies

is to identify any common themes including “what works” and “what is less successful” in rural road asset management. The case studies are not meant to provide a comprehensive description of rural road maintenance arrangements in each country or to be critical of the country authorities. The case studies were necessary to inform the development of the methodology for the implementation of the research project and the selection process for the participating countries. The case studies reported here include Ethiopia, Malawi, Mozambique, Tanzania, Uganda, Zimbabwe and the Western Cape Province of South Africa.

3.2 Ethiopia

Rural accessibility in Ethiopia is low. In 2010 it was estimated that only 10% of the rural population lived within 2 kilometres of an all-weather road (Vivien et al, 2010).). The Ethiopian government, through the Growth and Transformation Plan (2010 -2015), directed that all the villages (kebeles) should be connected by an all-weather road. The government launched the Universal Rural Road Access Programme (URRAP) which aimed to construct more than 70,000 km of gravel access roads over a five year period. The cost of the programme exceeds US\$1 billion. The programme of road works is being managed by the regional roads authorities under the coordination of the Ethiopia Roads Authority (ERA) and has achieved an impressive output of new roads.

The dramatic expansion of the rural road network in Ethiopia has, however, not been matched by development of a corresponding system for maintenance of the roads. The responsibility for rural roads falls under the wereda administrations but the weredas lack capacity to manage the expanded road networks. They currently receive no funding allocations from either the federal government, regional government or the Ethiopia Road Fund. It is expected that a national strategic plan for a viable road maintenance system with sustainable long term funding will be developed for the longer term, but this is not yet in place. Given the difficult terrain and climatic conditions in much of Ethiopia, the lack of maintenance in the short term may lead to an accelerated decline in the condition of the new URRAP network and loss of its asset value (Gongera, 2015).

3.3 Malawi

The Malawi economy is strongly dependent on agriculture and therefore on reliable access to rural areas. Several rural road initiatives have been made in support of agriculture from the 1970s. These include the District Road Improvement and Maintenance Programme (DRIMP-World Bank), Village Access Roads and Bridges Assistance Unit (VARBAU-World Bank), Malawi Social Action Fund road works (MASAF-World Bank, UK Aid), Public Works Programme (PWP-European Union), Income Generating Public Works Programme (IGPWP-EU), Agriculture Sector Wide Support road component (ASWAp-World Bank) and the Rural Infrastructure Development Programme (RIDP-EU). All these programmes tended to be led by international development partners and several relied on parallel management arrangements (Project Management Units). This constrained the development of local capacity and resulted in limited local ownership and a consequent lack of maintenance of the completed roads.

The district councils in Malawi are responsible for district roads under the government's decentralisation policy. However their revenue streams are very small and they do not receive direct allocations for road maintenance from the Malawi Road Fund (Human Dynamics, 2015). Maintenance initiatives were established under projects such as IGPWP and RIDP as part of their exit strategies and have received some support from the government and Road Fund. However there is still no national strategy for rural road maintenance. Most of the maintenance of district rural roads is organised by the Malawi Road Authority, with ad hoc interventions when funds permit.

3.4 Mozambique

Road maintenance in Mozambique is organised at provincial level by provincial "delegations" of National Road Administration (ANE). The ANE delegations are supported by private consulting firms who assist with the management of the annual work programmes. The annual programme is coordinated by the Directorate for Maintenance (DIMAN) at ANE Head Office and is funded by the Road Fund. All of the works are contracted to the private sector following the disbanding of the

government force account operation (ECMEP) in the early 2000s. ANE is responsible for the maintenance of all classified roads.

The provincial maintenance programme is relatively well funded (approximately US\$10 million per province per annum) (ANE, 2015) and there have been significant improvements in the standard of maintenance in the past decade. However, the current strategy to let multiple short duration (mainly one year) maintenance contracts to a large number of small contractors is inefficient and is not contributing to long term development of capacity in the sector. The management of a large number of small maintenance contracts requires a full procurement department within ANE at provincial level; this may not be necessary if there were only a few maintenance contracts in the province and the contracts had longer durations. ANE also maintains a substantial complement of technical staff at provincial level, notwithstanding the services of the provincial consultants. The Road Fund has its own provincial delegations. All of these staff need offices and vehicles, field allowances etc. Funds spent on management are not available for maintaining roads (Mott MacDonald, 2015).

3.5 Tanzania

The maintenance of higher level rural roads in Tanzania is the responsibility of the Tanzania National Roads Agency (TANROADS), which was established in 1997 as part of institutional reform in the road sector. TANROADS is an implementing agency reporting to the ministry responsible for roads. TANROADS is responsible for a network of trunk roads and regional roads comprising about 35,000 km of which about 4,000 km is paved. All maintenance works are contracted out and managed by the TANROADS Regional Managers.

The district road network in Tanzania comprises about 108,000 km and is the responsibility of district councils. The district councils are required to adhere to uniform procedures for planning their maintenance programmes and funding applications. This process is coordinated by an infrastructure unit in the President's Office- Regional and Local Government (PO-RALG). PO-RALG uses information

from the districts to prepare the annual work programme and enters into a performance agreement with the Road Fund Board on behalf of the districts.

The district engineers are required to carry out a condition survey of the district road network using the Annual District Roads Inventory and Condition Survey (ADRICS) system. The data from ADRICS is used to prepare the annual workplan and budget proposal that is submitted to PO-RALG. A computer-based planning tool, the District Road Maintenance System (DROMAS) was developed for Tanzania in the early 2000s and rolled out to all districts. However, the development process was not completed and the system is generally not in use.

The management of road maintenance at the district level is constrained by several factors. An institutional assessment carried out in 2010 identified the following constraints from the perspective of the district engineers (IT Transport, 2010):

- Limited budget and unsteady flow of funds
- Political interference
- Lack of motivated staff (low salary, lack of accommodation)
- Lack of equipment for road maintenance
- Erosion problems on unpaved roads
- Lack of gravel material.

Between 2010 and 2012 PO-RALG conducted a research project on alternative and improved district road maintenance systems. The project was supported by AFCAP. The methodology included implementing different forms of contract for maintenance in three different districts. The results and key findings were as follows (IT Transport, 2013):

- Community contracts for routine maintenance in Mpwapwa District were the most successful of the alternative road maintenance systems tested.
- Longer term maintenance contracts would provide more continuous attention to the maintenance of roads than the short duration contracts currently used.

- The procurement process for the maintenance contracts was affected by bureaucratic delays and staffing problems. This resulted in significant delays. Any potential gains achieved through improved forms of contract were small compared with gains that could be made through improved efficiency and reducing the bureaucratic delays in the responsible institutions, primarily the district councils.

3.6 Uganda

Uganda received significant funding from the Africa Development Bank (AfDB) and the Arab Bank for Economic Development in Africa (BADEA) in the 1990s under the Uganda Strategy for Rural Feeder Roads Rehabilitation and Maintenance Programme. This was aimed at improving rural access as a catalyst to agricultural production. The programme was managed centrally by the Ministry of Works and Transport (MOWT). By 2004 the rural feeder roads had improved significantly from 15% to 60% in good condition. Following this major investment in rural roads a Strategy for Sustainable Maintenance of District, Urban and Community Roads (DUCAR) was launched.

The DUCAR strategy envisaged a reliance on private contractors for maintenance of the DUCAR network with the contractors engaged by the local authorities. This strategy was supported by development partners, in particular DANIDA, who made considerable investments in capacity development in the MOWT, district local government and the training of small contractors. The DUCAR strategy was, however, constrained by inadequate budget allocations to support the maintenance works. The policy of the government to create new districts through sub-division further reduced revenue for individual councils, and reduced their capacity to support a basic establishment for road maintenance.

In 2008 the government decided to change its approach to the maintenance of district roads through the reintroduction of force account. This included the establishment in each district of a unit for light road maintenance works and zonal roads regravelling units, which would act as plant hire organisations for the districts. The

government also decided to reintroduce direct labour road gangs for routine maintenance of district roads.

The government's decision to strengthen district force account was in response to the continued poor condition of district roads and demonstrated a lack of confidence in the private sector to implement the works efficiently and at cost effective rates. It also reflected a lack of confidence in the capacity of district road agencies to act as the client for road maintenance works under commercial contracting arrangements. However the new policy tended to undermine gains that had been made with the training and establishment of local contracting firms and the promotion of labour based techniques for district road construction and regravelling. It failed to recognise that some districts already operated road construction equipment, yet their roads were in poor condition. This was a result of insufficient funds for purchase of fuel, lubricants and spare parts, lack of capacity to maintain construction equipment, abuse of the equipment and illegal hiring to the private sector (Parsons Brinckerhoff, 2010).

By 2015 district local government councils continued to manage the classified rural road network (and some non-classified roads), with the remainder of the non-classified road network under sub-county local government. However the government is discussing the formation of new authority called DUCA – District, Urban, Community and Access Roads Authority, which would centralise the management of the non-national roads. This policy discussion reveals an ongoing concern at central level concerning the standard of district road maintenance and the difficulty of finding a viable long term solution.

3.7 Zimbabwe

A major rural roads construction project was carried out in Zimbabwe following Independence in 1980. The construction programme was co-funded by the governments of Zimbabwe and Germany. The construction work was carried out using plant hired from the private sector and government equipment through force account. The programme started in 1985. A core rural road network of 25,000 km was identified and prioritized using a socio economic planning procedure linked

mainly to agricultural outputs. A national road network planning and economic evaluation exercise was carried out involving all of the 60 district councils, but it was decided that the identified road network would be managed centrally.

The investment project included the establishment of a Road Engineering Division to carry out the construction works and the development of a road maintenance system.

The road maintenance system divided the road network into small manageable units of between 150 -200 km. These units were provided with a dedicated allocation of funds from the state budget based on the length of roads to be maintained. Each unit received a full complement of equipment comprising a tractor, towed grader, trailer and a water bowser. The units were allocated personnel specific to the network under its geographic boundary and a road unit supervisor. A total of 204 units were formed and the programme recorded significant success during the 15 years of implementation (1985 -1999). This was primarily due to the following reasons:

- Rural roads were managed by a separate entity from the one responsible for the national trunk roads; this organisation was a semi-autonomous government department which enjoyed relative independence.
- The road construction funded by the donor had a number of conditions:
 - The Government of Zimbabwe had to pre-finance 100% of the cost of the construction works, and then upon producing proof of expenditure and related progress, the donor refunded 80% of the funds. The up-front funding and 20% government net contribution encouraged the government to take ownership of the programme.
 - The provision of funds for construction in the following year was based on the condition that adequate maintenance funding for the roads constructed in the previous year were provided through the government recurrent budget.
- A comprehensive staff development exercise was conducted during the inception phase to “qualify” personnel for their roles.

- The use of low cost intermediate equipment made road maintenance affordable and efficient.
- The parcelling out of roads into small units with a full complement of equipment, funding and personnel assisted with the overall management of the scheme.

At the end of 2000 the Zimbabwe currency started to lose value against major currencies. This coincided with the end of the programme. The roads had reached the end of their design life of 15 years and periodic maintenance work was required across the network. The equipment was reaching the end of its life: the tractors had clocked more than 10,000 hours, and the donor funding ceased. Declining government salaries resulted in high staff turnover and the organisation lost its institutional memory. Roads started to deteriorate due to lack of maintenance. The government abandoned the tractor based maintenance approach and ordered motorized graders to carry out road maintenance. By 2010 the tractor based maintenance system was no longer effective and was replaced by expensive heavy graders. The administration perceived that motorized graders were more efficient and faster than the tractor drawn graders, but the allocations from the Road Fund were not sufficient to sustain the operations and system collapsed.

3.8 Western Cape Province of South Africa¹

The Western Cape province of South Africa offers an example of good practice in management of rural roads in Africa. Situated in the south western corner of the continent, it is the fourth largest province in South Africa both in size and population. The province has a gravel road network of some 10,500 km. The management of these roads is under the responsibility the Department of Transport and Public Works in the Government of the Western Cape. The provincial government recognises the importance of roads to support local economic development and the maintenance of roads receives high-level political support. The Department is well funded by regular allocations from the provincial treasury (annual budget about R3.1 billion). It has managed to retain a cadre of experienced

¹ This section is based on discussions held with representatives of the Department of Transport and Public Works in the Government of the Western Cape.

and dedicated staff who operate in a business-like manner and share a vision to provide a world-class service to the public.

Road maintenance is guided by a strategic plan and programme of works for an annual and five year programme. A relatively sophisticated asset management system has been installed as a key tool for the road network managers. Road condition and traffic counts are collected routinely and stored in a computer information management system with GIS referencing. Sources for gravel wearing course material are closely managed. Economic analysis is used to prioritise works in accordance with the available budget. The system is managed by a team of project managers, district engineers and technicians each with a well-defined set of roles and responsibilities. Regular checks and evaluations of the programme are carried out including independent performance assessments.

The bulk of maintenance on the gravel road network is carried out by in-house force account units. It has been found that prices submitted by private contractors are not competitive for routine maintenance works. The in-house units are also seen as an important training ground for staff. Capacity development of staff is an ongoing priority for the Department with technical staff encouraged to spend time on the roads.

3.9 Summary of Findings

The case studies of country programmes for rural road maintenance is not exhaustive but provides a picture of the current situation prevailing in sub-Saharan Africa. The conclusions are as follows:

- There are very few examples of sustainable management systems for rural roads in sub-Saharan Africa; network management systems tend to be focussed on preparing and implementing an annual work programme rather than any longer term strategic plan.
- Governments still tend to pay more attention to construction of roads than maintenance; many countries have not yet developed a culture for maintenance.

- Funding for maintenance has improved in recent years with the establishment of road funds, but priority tends to be given to maintenance of the national trunk road networks. Lack of confidence in the long term security of road funds means that road agencies are unable to let multi-year maintenance contracts. There is still a general lack of political will to provide funding for road maintenance.
- The improvement of funding is not always reflected in improved maintenance due to inefficiencies in the organisations responsible for organising maintenance. These organisations often fail to utilise available resources in the most effective way and in some cases there is a lack of accountability.
- Political interference is common and invariably undermines the efficiency and effectiveness of sector organisations. Corruption is a significant factor affecting performance in the sector.
- Governments are grappling with their policies on decentralisation of road maintenance. Most countries are now following a policy of decentralisation of service delivery in key sectors, but the most effective rural roads maintenance programmes have been those that are managed centrally. The lack of clear policy on decentralisation results in unclear roles and responsibilities for sector institutions.
- Contracting out of road maintenance has not led to capacity development in the private sector. The short duration and small size of contracts is not attractive to bigger players and small firms cannot invest in staff development. The most effective rural roads maintenance programmes have been those that are implemented through force account.
- Where examples of good practice exist they tend to be on donor-funded programmes with high levels of technical assistance, but these initiatives tend to flounder when the donor support is withdrawn.

4 Project Purpose and Objectives

The purpose of the research project has been modified from that originally set out to incorporate a more strategic approach to achieving meaningful change in rural road asset management. It was evident at the commencement of the project that testing improved approaches to asset management in the participating countries would not be sufficient. It would be necessary to introduce incentives for road agencies to improve their performance, yet allowing flexibility for these agencies to achieve improvements on their own terms.

The purpose and objectives of the project are set out as follows:

Purpose

The project will support a process towards achieving economic and social benefits for local communities as a result of improved performance in road asset management.

The purpose statement links the objectives of the project to the ultimate beneficiaries, which are rural communities in sub-Saharan Africa.

Objectives

The objectives of the project are summarised as follows:

1. Review literature and reports on existing and recent road management and maintenance programmes in order to identify 'what works' and 'what doesn't work' in the type of environment likely to be encountered in the project areas;
2. Develop a specification for road asset management appropriate to sub-national rural road networks and apply it in selected project areas;
3. Develop simple and appropriate tools for monitoring road condition and apply them in the project areas;
4. Develop simple indicators of economic and social impact of rural roads and monitor them in the project areas;
5. Achieve incremental (and measurable) improvements to asset management performance in the project areas.

Objective 1 (Desk Study) will be achieved during the initial 5-month Formulation Phase. Objectives 2 to 4 will be partially achieved during the Formulation Phase. Targets for the fifth objective, 'to achieve incremental (and measurable) improvements to asset management performance in the project areas', will be developed during the Formulation Phase and realised during implementation.

5 Project Approach and Methodology

5.1 Approach

The approach to the project seeks to foster self-reliance in road agencies in the project areas and encourage greater accountability to road users and other sector stakeholders. It provides flexibility and space for the participating road agencies and their stakeholders to determine their own destinies. The approach focuses more on improved performance in road asset management than on any specific or pre-conceived road asset management systems or institutional, management and funding arrangements. Support to this process will be provided through demand-led technical assistance funded by UK Aid through AFCAP.

5.2 Methodology

The consultancy contract signed by Roughton International Ltd is for a five month period. It comprises the Formulation Phase. The implementation and ultimate expansion and roll-out of the project will depend on development of a viable project design. In particular the project can only proceed to implementation if there is a clear demand and commitment to participate by at least three AFCAP member states.

The following is a summary of activities to be carried out under the assignment. The activities for the Implementation Phase are being further developed under the Formulation Phase.

Formulation Phase (5 months from signing contract)

- Conduct a review of literature and reports on existing and recent road management and maintenance programmes. Visit a sample of project sites to verify data provided in the literature.

- Develop a performance framework for rural road asset management which is appropriate to sub-national road agencies in Africa.
- Establish detailed methodologies for the measurement of rural road condition and road asset value.
- Establish appropriate indicators for economic impacts of rural roads and agree the method of collecting the required data.
- Establish a process for the selection of the participating countries and project areas.

Implementation Phase (a)

The start of implementation of the project activities in the field will first depend on three countries agreeing to participate and making the required commitments. The selection of each country will also depend on identification within each country of a suitable sub-national rural road network (the Project Area) for implementation of the research activities.

Baseline studies will be conducted in each project area including:

- Self-assessment by the responsible road agency of their performance in road asset management against the new performance framework; the self-assessments will be reviewed by independent asset management experts;
- Collect road condition data on the target network including roughness and average travel speed; identify any 'rupture points' on the target road networks; measure road asset value through, for example, gravel thickness, inventory of drainage structures etc., where appropriate; develop a GIS database of the target road networks and simple condition indices and asset valuation;
- Collect social and economic data from each project area that is directly linked to road condition; for example traffic counts, availability of public transport, fares on public transport, vehicle operating costs, extent of damage to goods being transported on the roads , etc.

The baseline data will be discussed in the project area with sector stakeholders including local community leaders, road users and local authorities. The outcome of the baseline surveys will also be discussed in a meeting of the Project Implementation Team (PIT), which will comprise representatives from each participating country. A key aspect of the project will be the willingness of the participating countries to disseminate the outcome of the baseline studies and their relative performance in the maintenance of their roads.

Implementation Phase (b)

Following the baseline studies technical assistance will be provided to each of the participating roads agencies to improve their performance in road asset management. This will include assisting each participating area to analyse the strengths and weaknesses of their road asset management systems and propose modifications and improvements at all levels. This includes policy, funding, technical standards, forms of contract, choice of technology etc. The technical assistance will assist in the preparation of any guidelines or manuals for road maintenance required by each participating area and conduct training courses.

Implementation Phase (c)

After one year the data collection process will be repeated in the participating project areas including the asset management self-assessment, road condition monitoring, and assessment of economic costs/benefits associated with the road condition. The findings of the second round of data collection will be discussed with sector stakeholders locally and in the PIT and the agreed outcomes and relative performance measurements will be disseminated.

The second round of monitoring will be followed by further technical assistance and further monitoring for as long as countries are willing to participate in the process and funding is available for the project. It is not expected that significant change will be recorded in the first or even second or third years. Effective maintenance of rural roads presents a significant challenge that will require long term commitment and support.

Roll Out

If the Implementation Phase is successful it is expected that there will be opportunities to roll out the approach to additional countries in Africa and also in Asia. It will also be possible to reinforce the gains made in the first participating countries with further technical assistance and periodic monitoring of performance.

It is expected that improved performance in rural road asset management in the project areas will lead to a demand for improved performance in other areas within the same country.

Dissemination

The project will use all available means to disseminate information concerning the project and outcomes of the research process. This will include innovative use of public media, government announcements, community radio stations, university curriculum, regional and international conferences, journal papers, etc.

6 Project Areas

The project areas will typically be administrative regions (province, state or district) with a clearly defined rural road network and administrative structure. Three project areas will be selected in three different countries representing different environments and different road maintenance approaches and capacities. A fourth project area, with a well-established rural road asset management system, will participate in the project to provide a benchmark for best practice.

The key criteria for participation in the project are:

1. Commitment to provide the required resources and data in the project area;
2. Willingness to be open and transparent with the dissemination of the outcome of the periodic reviews of road agency performance.

The road agencies in the project areas will be responsible for most of the data collection for the baseline and subsequent monitoring. They will require a vehicle and technicians and funds for fuel and allowances. This includes allowances for attending meetings in the project area. The local road agency staff will be required

to attend project meetings including for their self-assessment of road asset management performance.

The project will provide training and technical support to the road maintenance managers and technicians employed in the project area. It will also support regional trips for PIT meetings and the procurement of specialist equipment including GPSs, mobile phones, computers, software.

7 Conclusion

The challenge of maintenance of rural roads has not yet been addressed in most countries in sub-Saharan Africa. National governments are unclear about whether to centralise road network management or to decentralise in accordance with national policy. Funding for road maintenance is inadequate and national trunk roads networks receive priority. There are capacity constraints at the local level which mean that available funding is not always used effectively. Political interference and corruption can undermine the initiatives of road network managers.

An innovative approach is required to break the cycle of road investments being lost due to poor maintenance and then requiring further investment. This approach should focus attention on those responsible for maintaining roads. They require support from political leaders and road users, the tools to fulfil their responsibilities, and clear incentives to succeed. There is no one-size-fits-all solution to rural road maintenance and flexibility is required to allow the responsible authorities to develop their own solutions that are appropriate to the environment within which they work. The authorities need to be more accountable to those who provide the funding for road maintenance, the users of the roads, and communities that they serve.

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