



AfCAP
Africa Community Access Partnership



Economic Growth through Effective Road Asset Management

Progress Report No. 3 (final)



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Cover Photo: Masanga Trading Centre in Sierra Leone

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Abstract

The Africa Community Access Partnership (AFCAP) is providing technical assistance to achieve improvements in asset management performance on selected rural roads networks. The participating countries are Sierra Leone, Uganda and Zambia, with the Western Cape of South Africa providing an example of good practice in rural road asset management.

This report provides a summary of project activities and progress in the period August to October 2017. During the reporting period, GEM¹ Advisory Team members visited Zambia, Uganda and Sierra Leone to assist the participating agencies to prepare for the next round of data collection and to update their Asset Management Action Plans. A visit was made to Kilindi district in Tanzania to verify its independent self-assessment of asset management performance. A meeting was held with officials of the new Tanzania Rural Roads Authority (TARURA) in Dodoma.

The GEM project work on a new composite index of road asset management performance continued following the team meeting in Johannesburg in August 2017. Further developments were carried out on the method of analysis of road condition data and calculation of road network asset value.

The Asset Management (AM) performance assessments show significant gaps in the pre-requisites for sustainable road preservation in the three project countries. Major weaknesses have been identified in the external, institutional and funding building blocks. Progress with the implementation of agreed action plans is generally slow and very little road maintenance has been carried out in the GEM project road networks in 2017.

During the next quarter, the GEM Advisory Team will assist with the planning and conduct of the Project Implementation Team (PIT) meeting to be held in Uganda on 21st November and follow-up activities. A visit will be made to two further districts in Tanzania: Mufindi and Mbinga, which have submitted AM performance self-assessments. The first visit to Zambia of the Communications Expert is planned pending approval of the activity by RDA management.

¹ Economic **Growth** through **Effective** Road Asset **Management**

Acronyms, Units and Currencies

\$	United States Dollars
AFCAP	Africa Community Access Partnership
AM	Asset Management
ARMFA	African Road Maintenance Fund Association
ASCAP	Asia Community Access Partnership
BADEA	Arab Bank for Economic Development in Africa.
CDS	Civil Design Solutions
CMC	Chongwe Municipal Council
DFID	Department for Further International Development
DM	District Municipality
GAT	GEM Advisory Team
GDP	Gross Domestic Product
GPS	Global positioning system
HDM	Highway Design and Maintenance (Model)
IAMM	Infrastructure Asset Management Manual
ILO	International Labour Organization
IQL	Information Quality Level
IRF	International Road Federation
IRI	International Roughness Index
LVR	Low Volume Road
MLG	Ministry of Local Government
NRFA	National Road Fund Administration
PIARC	Permanent International Association of Road Congresses
PMU	Project Management Unit
PO-RALG	President’s Office – Regional and Local Government
RAI	Rural Access Index
RAPI	Road Asset Preservation Index
RAMMI	Road Asset Management Maturity Index
RDA	Road Development Authority (Zambia)
ReCAP	Research for Community Access Partnership
RED	Road Economic Decision (Model)
RI	Roughton International
RSA	Republic of South Africa
SARF	South Africa Road Federation
SDG	Strategic Development Goal
SDG	Sustainable Development Goal
SLRA	Sierra Leone Roads Authority
SuM4All	Sustainable Mobility for All
TARURA	Tanzania Rural Roads Authority
UK	United Kingdom (of Great Britain and Northern Ireland)
UKAid	United Kingdom Aid (Department for International Development, UK)
UoB	University of Birmingham
UNRA	Uganda National Road Authority

Key Words

Asset Management, Rural Roads, Maintenance

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1 Introduction

1.1 Background to the Project

Cardno Emerging Markets is managing a programme of Research for Community Access (ReCAP) on behalf of the Department for International Development (DFID). The programme includes research and capacity building activities in Africa (Africa Community Access Partnership – AfCAP) and Asia (Asia Community Access Partnership – AsCAP). Cardno has signed a contract with Civil Design Solutions to provide consultancy services for the delivery of a regional research project on improved management of rural roads.

The project is known as ‘Economic Growth through Effective Road Asset Management – GEM’ and is initially being implemented in sub-Saharan Africa as part of AfCAP. Sierra Leone, Uganda, Zambia and the Western Cape are participating in the project, but the research process and outcomes are being shared with other AfCAP-participating countries. Some AsCAP countries have also benefited from outputs of the project through their attendance at the Project Implementation Team (PIT) meeting in November 2016. Due to the success of the project, there are discussions underway on rolling out the research process on a wider basis in Africa and Asia.

The African Road Maintenance Fund Association (ARMFA) is expected to provide an oversight role and a possible longer term institutional home in Africa. The Implementation Phase of the current project commenced in July 2016 and will run until the end of 2018.

1.2 Purpose of the Project

The purpose of the project is to achieve economic and social benefits for local communities as a result of improved performance in road asset management.

The ultimate beneficiaries of the project are rural communities in sub-Saharan Africa and Asia.

1.3 Objectives of the Project

The objectives of the project are as follows:

1. Review literature and reports on existing and recent road management and maintenance programmes and identify ‘what works’ and ‘what doesn’t work’ in the type of environment likely to be encountered in the project area.
2. Develop a framework for measuring performance in 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.

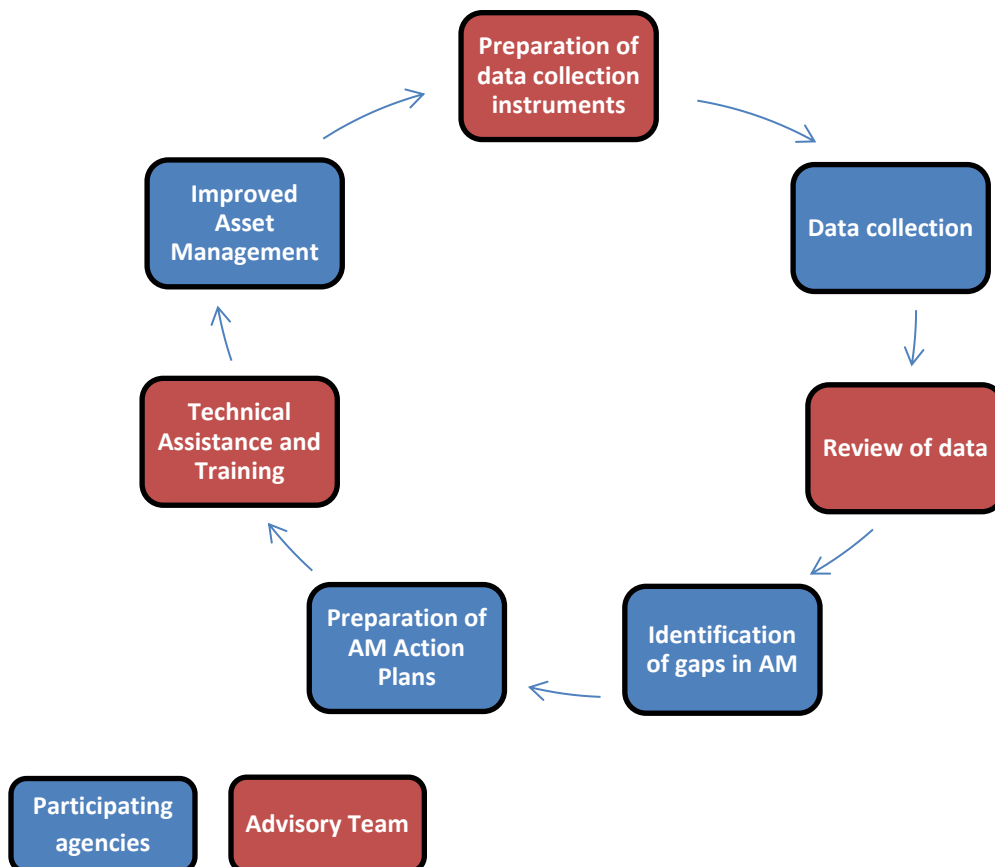
5. Achieve incremental (and measurable) improvements to asset management performance in the project areas.

1.4 Approach

The approach to the project is intended to foster self-reliance in road agencies 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 is being provided through demand-led technical assistance funded by UK Aid through AfCAP.

1.5 Project Process

The development process adopted by the project is summarised in the diagram below.



1.6 Participating Agencies

The roads agencies that are participating in the project are:

- Tonkolili District of Sierra Leone
- Chongwe District of Zambia
- Kamuli District of Uganda
- The Uganda National Roads Authority
- The Department of Transport and Public Works of the Western Cape (RSA).

Three districts in Tanzania have submitted AM performance self-assessments and are receiving support from the GEM Advisory Team to start developing their road asset management systems.

The project representatives of the participating countries are as follows:

Uganda:

- Uganda National Roads Authority: Dr Mark Henry Rubarenzya and UNRA Research Fellow, Emma Mbabazi
- Kamuli District: Eng Grace Mulondo

Zambia:

- Roads Development Agency: Eng Presley Chilonda and Eng Victor Miti
- Chongwe District: Eng Peter Banda

Sierra Leone:

- Sierra Leone Roads Authority: Eng Tamba Amara and Eng Mahomed Lahayi
- Tonkolili District: Eng Sallieu Konneh

Western Cape:

- Eng. Hein Uys.

1.7 Advisory Team

The CDS team that is supporting the implementation of the project is as follows:

- Team Leader: Robert Geddes
- Road Maintenance Expert: Kingstone Gongera
- Road Condition Monitoring Expert: Charles Bopoto
- Rural Transport Economist: Camilla Lema
- Institutional and Financing Expert: Mike Pinard
- Communications Expert: Grace Muhia

- Other Technical Experts including Gerrie van Zyl (Road Asset Management).

The University of Birmingham (UoB) is providing expert support to the project under the guidance of Dr Michael Burrow. Two UoB PhD candidates are using the GEM project for their research projects, namely Robert Kakiiza (Uganda) and Peter Kome (Sierra Leone).

1.8 Purpose of this Report

This report presents a summary of activities undertaken and progress achieved in the period August to October 2017. It follows the Second Quarterly Progress Report (to 31 July 2017) and monthly reports for August and September.

The activities completed during the quarter included:

- Team Meeting in Johannesburg on 1st and 2nd August 2017
- Visit by the Rural Transport Economist to Zambia and Sierra Leone
- Visit by the Road Condition Monitoring Expert to Zambia, Uganda and Sierra Leone
- Visit by the Road Maintenance Expert to Zambia and Uganda.
- Approval by AfCAP Management of External Communications component.
- Preparations for the PIT Meeting in Uganda in November.

The report also includes a progress report by two University of Birmingham (UoB) PhD candidates who are using the GEM project for their research projects. They are Robert Kakiiza from Uganda and Peter Kome from Sierra Leone. They are both currently in the first year of the three-year PhD programme.

2 GEM Advisory Team Meeting in Johannesburg 1st and 2nd August 2017

2.1 Attendance

The meeting was attended by the following:

- Camilla Lema
- Charles Bopoto
- Gerrie van Zyl
- Grace Muhia
- Kingstone Gongera
- Les Sampson
- Mike Pinard
- Nkululeko Leta (part)
- Robert Geddes

2.2 Main Discussion Points and Actions

The agreed actions arising from the meeting are summarised in the table below, with an update at the end of October 2017.

Table 2-1: Team Meeting Discussion Points and Actions

Action	Responsibility	Update October 2017
1 Contact Melanie Hofmeyr in W. Cape about continued involvement in the project.	RG	Mr Hein Uys appointed as contact point for GEM in the W Cape government
2 Political interference: Is this issue adequately covered in the self-assessment questionnaire?	CB	Two new questions added to External Building Block to increase focus on sector policy
3 Progress reports on UoB student research to be included in GEM quarterly progress reports.	RG/UOB	UoB reports included in current Progress Report.
4 A meeting will be arranged between the team leaders of GEM and the AfCAP climate resilience and satellite imagery projects to look for increased synergies.	LS	Meeting scheduled for November 2017 in Uganda.
5 Final Baseline Study Report to be submitted.	RG	Submitted on 18 th August 2017
6 Socio-economic study and external communications: this provides a link between local communities / road users and decision makers at district and central levels. Input and feedback from communities is important for decision making by the roads agencies. Ask the enumerators for the socio-economic study to collect a few “stories” that illustrate the importance of roads to the communities.	CL	The participating road agencies have been asked to prepare case studies for presentation at PIT meeting.

Action		Responsibility	Update October 2017
7	All of the social and economic indicators will be collected in the second round of data collection. However, it is expected that these will be narrowed down to about 10 indicators that can be regularly monitored.	CL	Some modifications to socio-economic questionnaire have been agreed with the roads agencies.
8	The progress reports should include a summary of any inconsistencies in the social data.	CL	To be included in the reporting to follow the next round of data collection.
9	A UNRA researcher managed to determine the theme of her MSc degree dissertation on 'transport pricing' based on the GEM socio-economic indicators - this should be reported.	CL	To be included in Progress Report No. 3
10	The External Communications Component will only be possible if there is someone in the roads agency that Grace can work with and if the roads agency has a budget for the communications activities.	GM	The External Communication Component has been approved by Zambia RDA, Chongwe District and ReCAP management.
11	Self-assessment questionnaire: new questions are needed, particularly for the External building block. Existing questions may be re-ordered but should not be changed or it will affect the baseline.	CB	Two new questions added to External Building Block to increase focus on sector policy.
12	The roads agencies should be encouraged to adopt a robust method for measuring road condition, including gravel layer thickness.	CB	The roads agencies are estimating the remaining gravel thickness through a visual assessment process. The advisory team has encouraged the agencies to physically measure the thickness, but there is resistance to do this. The Western Cape systematically measures gravel thickness.
13	Prepare a list of comments on the VCI and asset value spreadsheet	GvZ	GvZ liaising with CB on asset valuation.
14	The next PIT meeting will be part of a larger ReCAP meeting to be held in Uganda in the week of 20 th November 2017. A proposal is required for the GEM PIT meeting (timing, attendance etc).	RG	Proposal for structure of meeting submitted on 27 th September.
15	Any abstracts that are to be submitted for conferences (e.g. PIARC October 2018 Durban) must be cleared by the PMU.	RG	Abstracts for Durban conference cleared by PMU on 30 th August 2017.
16	The PMGSY project in India has a lot of lessons that are relevant to GEM.	CL	Review of lessons from PMGSY to be included in this Progress Report.
17	Suggested name for the “pyramid” index: Rural Roads Preservation Index (RRPI), which is defined as a measure of the adequacy of policies, institutions and systems for the preservation of rural roads (to an agreed standard). [Another option subsequently	Team	“Rural Road Preservation Index” currently in use.

Action		Responsibility	Update October 2017
	suggested by Mike: Rural Roads Preservation – Sustainability Index].		
18	A flow diagram is required to show how the different indices are linked (RRPI, condition index, road asset value) and the linkages to communities.	RG	Flow diagram included in this Progress Report.
19	Weightings for building blocks: GEM team to make an initial proposal which will be discussed with the roads agencies.	CB	Weightings agreed during the August team meeting are currently in use.
20	UoB students: their three-monthly progress reports should be submitted to the PMU.	UoB	UoB reports in included in this Progress Report.
21	Socio-economic report prepared by Robert and Dr Burrow – to be shared with the GEM team.	RG	Report shared with team on 5 th August.
22	The roads agencies have generally expressed need for more contact with the team to fully benefit from GEM project. For example, the data being collected can be used to introduce Whole Life Costing principles in the agencies, among other aspects. If the team's contact with the countries is not increased there is a danger that the high expectations that have been built will not be met.	ReCAP PMU	The participating agencies are being encouraged to submit requests for support for additional training direct to ReCAP PMU.

3 Country Visit to Zambia by Camilla Lema

3.1 Purpose of this Report

This report summarizes the issues covered in the visit made to Zambia from 3rd to 4th August 2017 by the GEM Advisory Team member, Camilla Lema – Rural Transport Economist.

Details of the programme of the visit and the persons met are given in Annex A.

3.2 Objectives of the Visit

Chongwe Municipal Council (CMC) conducted socio-economic baseline data collection in the period between October and November 2016. Compilation of data summary and final corrections were done in February 2017 following review by the GEM advisory team during the visit in January 2017. The data summary including preliminary analysis results have been included in the GEM Baseline Study Report submitted in April 2017.

Main purpose of the visit was to launch preparation for repeat survey planned in September 2017. Specific objectives were as follows:

- *To update on socio-economic baseline data.* Discussion of results, preliminary analysis and implications for repeat survey.
- *Preparation for repeat survey.* In-depth discussion of indicators to ensure thorough understanding by enumerators, and planning for the repeat survey.
- *Field visit* to trading centres and associated project road to inform repeat surveys.

Acknowledgement: Overall the objectives of the country visit for socio-economic component of the GEM project were accomplished. Our sincere appreciation to RDA and CMC for facilitating the visit.

3.3 Programme of Activities

The GEM advisory country visit covered the following activities aimed to improve understanding of how improved rural roads asset management and subsequent road condition may influence socio-economic wellbeing of the local communities in Chongwe Municipal Council.

- Introductory meeting with the Road Development Agency (RDA) in Lusaka – Research and Development Manager in the Directorate of Planning, and Principal Engineer, also the GEM project country coordinator.
- Meeting with the Director of Engineering in CMC plus workshop with enumerators to discuss indicators and data requirements, as well as progress in maintenance of roads identified under the GEM project that link to ten trading centres.
- Meeting with CMC Town Clerk – briefing on GEM project socio-economic component and progress to date.

- Meeting with Public Relations Officer for CMC regarding communications component under the GEM project.
- Field visit to one trading centre and connecting road link.

3.4 Key issues from working sessions with Chongwe Municipal Council team

3.4.1 General transport situation in Chongwe

- All roads under the GEM project connecting to ten trading centres are classified as secondary feeder roads under the local authorities, which are under the Ministry of Local Government. These roads are qualified to receive maintenance funds from the Road Fund.
- The dominant mode of passenger and freight transport in CMC are light vehicles – including vans and pick-ups. However, transport services are either scarce or not available in the rural part of the municipality. Unlike in East Africa, people in Chongwe are not used to boda bodas as an alternative form of passenger transport. They are normally used by owners for private transportation.

3.4.2 Progress in road maintenance connecting to ten trading centres

Road condition as a result of improved road asset management is a key determinant of the socio-economic impact of the GEM project. Thus, progress in (or lack of) road maintenance will have direct implication on the results of planned repeat survey for socio-economic impact assessment in September/October 2017.

By the time of GEM advisory visit in Chongwe municipality no maintenance or improvement work had been done on any of the roads linking to ten trading centres identified under the GEM project. As a result, all ten road links are either in fair or poorer condition as compared prevailing conditions during the time of the baseline survey in November 2017.

Main reason for the lack of progress in maintenance of some rural roads is due to change of priorities as a result of the former Chongwe District Council being upgraded to Municipality in February 2017. The drawback is that the upgrading was not accompanied by increase of resources as should have been expected. Thus, resources initially intended for maintenance and development activities (including roads under the GEM project) were reallocated and spread thinly to cover mainly recurrent budget, e.g. to accommodate new senior personnel for CMC. However, it is expected that priorities will be reset by the Full Council meeting sitting in August 2017 whereby funds can be reallocated for maintenance of the GEM project network as a priority. One thing is clear that there is political support to all GEM project roads. The Director of Engineering will relay information to the GEM advisory team on the final decision by Council

meeting². It is evident that stronger policies are needed at the district level to ensure that funds are available for road maintenance.

3.4.3 GEM Communications component: Meeting with Public Relations Officer (PRO) for CMC

The PRO was introduced to the background and purpose of the GEM project by the country coordinator for GEM project in Zambia. The discussions focussed on socio-economic and communications components and how they relate to policies for rural roads development, status of rural roads condition and the wellbeing of local communities. It was clear from the discussions that the PRO has so far been least involved (if at all) in road related matters under the CMC mandate. She mentioned that the GEM project has prompted her to start getting involved in issues related to roads improvement and use. She reiterated the need for her to be informed on roads affairs in order to be able to communicate the messages in the right way, as also necessary to handle expectations of various categories of people affected. Going forward the following steps were agreed.

- ✓ CMC Engineer to share the socio-economic questionnaire and matrix of indicators with PRO.
- ✓ CMC Engineer to inform the PRO on the dates of the repeat survey and other milestones as appropriate.
- ✓ PRO to be proactive in soliciting the necessary information from the GEM project.
- ✓ The GEM Communications expert to initiate communication with PRO on the GEM project.

3.5 Planning for repeat survey – Chongwe Municipal Council

The questionnaire for the socio-economic baseline survey was discussed in detail during the working session in CMC, with the participation of RDA Principal Engineer, Director of Engineering - CMC, and three enumerators who were new to the GEM project. Notably, out of the three enumerators who participated in the socio-economic baseline survey in 2016, one has left CMC, and one was on leave during the time of GEM visit. Thus, it was necessary to discuss the indicators one-by-one to ensure clarity and thorough understanding of each indicator and the implication for onward data collection in the repeat survey. The discussion was also aimed to create or improve the understanding of the purpose of the GEM project on the socio-economic impact at community level and the link with policies and strategies for rural roads development.

At the end of the working session, enumerators confirmed that they understood the questionnaire and indicators, with a better perception of the importance of roads for socio-economic development. That said, one of the enumerators commented that the subject of roads

² The AM policy draft was presented to full council as planned but was not formally adopted. By the end of October, the council had still not received any funding for road maintenance for 2017 and is unlikely to receive any this close to the end of the financial year with bids for 2018 under preparation.

development should be dealt with as a cross-cutting issue since a road (or basic access) is of necessity to everybody, of all ages and status in the community. This should relay a message on the effect of maintaining roads to appropriate standards to enable them to contribute meaningfully to socio-economic wellbeing of local communities.

The following points summarise the outcome of discussions:

- ✓ The same questionnaire as used in the socio-economic baseline survey will be used in the repeat survey, with adjustments in three areas.
- ✓ The ten trading centres will remain the focal point of observation for the repeat survey.
- ✓ One more enumerator has been added to the initial team of three to make four enumerators for the repeat survey. They will spend about fifteen working days to complete survey in all ten TCs. The aim is to avail adequate capacity and time for administering one questionnaire per TC.
- ✓ The team will start by performing jointly a test survey in one TC in order to ensure that they are at the same page in terms of understanding of the questionnaire and also on time management.
- ✓ The team confirmed that they will pay attention to details during the repeat survey., In addition to data collection they will be able to document short stories to illustrate transport situation in Chongwe area.
- ✓ The Director of Engineering will do a refresher session on the questionnaire just before the repeat survey in liaison with the GEM advisory team.
- ✓ Road condition survey will be done prior to the repeat survey – possibly in the last week of August 2017. This will allow the agency to link the road condition data to the socio-economic data. The road condition index will be recorded in an appropriate field in the socio-economic questionnaire.
- ✓ Timing for the repeat survey will be from mid-end September 2017³. The CMC Engineer will communicate the exact dates for the repeat surveys to the GEM Advisory team.

³ The survey for Chongwe was complete by the end of October and the data sent to the GEM adviser.

4 Country Visit to Sierra Leone by Camilla Lama

4.1 Background

The GEM Advisory Team member, Camilla Lama – Rural Transport Economist visited Sierra Leone - Tonkolili District from 6th to 8th August 2017. This report summarizes the issues covered in the visit, with details of the programme and the persons met outlined in Annex B.

4.2 Objectives of the Visit

Tonkolili District Council (TDC) conducted socio-economic baseline data collection facilitated by the Sierra Leone Roads Authority (SLRA) in the period between December 2016 and January 2017. The data was reviewed by the GEM advisory team during the visit in January 2017 onwards, gaps identified and discussed with TDC/SLRA team. However, finalisation of the data summary was delayed due to a lengthy process in correcting the data and filling the gaps, which were substantially completed in July 2017. The data summary has been included in the Consolidated GEM Baseline Study Report submitted in August 2017.

The main purpose of the visit was to launch preparations for a repeat survey planned for October 2017. Working sessions were held with the TDC team with full participation of the SLRA project team that also facilitated the visit. Discussions were held on socio-economic baseline indicators and data summaries. These discussions were instrumental in setting the basis for subsequent repeat surveys, as well as refreshing the survey team on the purpose of socio-economic study in relation to rural roads asset management and the link to policy development. In addition, field visits were conducted to complement the information gathered from the team working session.

Specific objectives were as follows:

- *To update the socio-economic baseline results.* In-depth discussion of the results, the remaining gaps in the data and the effect on the preliminary analysis. The aim was to enhance clarity of the indicators and the underlying data requirements, data collection principles, data presentation and analysis and implications for repeat surveys.
- *Preparation for the repeat survey.* In-depth discussion of indicators to ensure a thorough understanding by enumerators, confirmation of indicators for the repeat survey and subsequent planning of timing and resources.
- *Field visit* to Magburaka town market and one trading centre linked to a road project under rehabilitation.

Overall the meetings and field visits provided useful information enabling a deeper understanding of the indicators, principles and process for administering the socio-economic questionnaire for the repeat survey.

Acknowledgement: The objectives of country visit for the socio-economic component of the GEM project were largely accomplished. Our sincere appreciation to SLRA team for facilitating the visit, and to TDC for their support.

4.3 Program of Activities

The visit covered the following activities aimed to improve the understanding of how improved rural roads asset management and subsequent road condition may influence socio-economic wellbeing of the local communities in Tonkolili District.

- Introductory meeting with Sierra Leone Roads Authority (SLRA) in Freetown – Senior Environmental Officer (also in charge of socio-economic affairs) and Environmental Engineer to confirm the program of visit.
- Meeting with the SLRA District Engineer for Tonkolili District, followed by a workshop with the GEM project team in TDC comprising four members from SLRA (led by Senior Environmental Officer) and four members from TDC out of which three were enumerators for the baseline survey. The workshop discussed the rural transport context and dynamics in Tonkolili District, the status of indicators and data requirements, progress with the maintenance of roads identified under the GEM project that link to ten trading centres, and the plan for the repeat survey in 2017.
- The TDC Information, Education and Communication Officer (IECO) (previously the Public Relations Office (PRO) in TDC) participated in the working session. . Responsibilities of the IECO go beyond those of the PRO and focus on bridging the gap between the district and general public through effective education and sensitization on development issues. The IECO was introduced to the background and purpose of the GEM project focussing on the socio-economic and external communications components.



Figure 4-1: Workshop in Tonkolili District Council

- Meeting with the Bike Riders Union Chairman as a key transport stakeholder in Tonkolili District to discuss mobility issues and challenges in the perspective of transport operators and users.
- Meeting /courtesy call with TDC Chairman and the Chief Administrator to update on the GEM project socio-economic component and progress to date.
- Field visit to Magburaka Town market and Masanga trading centre, where the road connecting Mathan and Masanga (6.9 km) is currently under rehabilitation.



Figure 4-2: Masanga Trading Centre

4.4 Issues from working session in Tonkolili District Council

4.4.1 General transport situation in Tonkolili District

The issues outlined below were raised in relation to the discussion on socio-economic indicators for the baseline survey and their relevance for the planned repeat survey.

- The most common means of transport in Tonkolili District is ‘okada’ (motorcycle). Commercial transportation by okada started after the civil war in Sierra Leone in 2002. Bicycles were more used before. One okada can transport as much as 200 liters of palm oil, or 200 kg of rice; and dangerously up to six passengers (3 at the back and 2 children in front). The Bike Riders Union (BRU) is able to regulate the number of passengers within towns but have no control of those transporting in rural areas. The BRU provide education on safety control, overload control, basic traffic information and okada maintenance, but they have no means to enforce adherence.
- There are no taxis serving the areas around the ten trading centres because of poor roads. It is also rare to find privately owned vehicles that are resident in these areas. Head-loading involving men, women and children is common around the villages but not for relatively long distance transportation.
- Due to the varying terrain in Tonkolili, transport costs vary from one area to another for comparatively the same distances. With regard to transport pricing, the Government provides indicative prices that apply in Freetown, but do not apply to bikes in rural areas. This is discretionary depending also on whether the operator will carry passengers or goods on return trips.
- Commodity prices depend mainly on supply and demand and not necessarily on the availability of transport. In smaller markets in the district and townships, some of which are seasonal or mobile markets, the local traders determine prices, e.g. for palm oil, ground nuts, etc. during the low supply season. During the high supply season, the larger markets in towns and city centres tend to dictate prices applied in the villages where crops are produced. Traders also come from as far as Guinea to purchase goods from the local communities in Tonkolili and other districts. The country has no price control system.
- Some traders go to the farm-gate with exchange goods for barter trading (e.g. rice for palm-oil). This system is more common in wet season due to scarcity of food. To some extent farmers in the district are able to negotiate prices at farm gate, partly due to non-perishability of crops they produce, e.g. palm oil can be stored for three years as can groundnuts, rice, etc.
- During the discussion of whether improved road condition will influence increased supply of transport services around the ten trading centres, it was observed that traffic attraction or change in the modes of transport will depend on the importance of the road and economic opportunities in the area. Thus, road condition alone is not sufficient as a key determinant of transport supply or change in transport modes in the area. However, one participant

reiterated that good roads are necessary to allow the local communities to benefit from/and effectively participate in the development process, regardless of perceived potential to attract more transport services.

4.4.2 Progress in road maintenance connecting to ten trading centres

Road condition as a result of improved road asset management is a key determinant of socio-economic impact of the GEM project. Thus, progress in (or lack of) road maintenance will have a direct effect on the results of the planned repeat survey for socio-economic impact assessment in October 2017.

Progress to date in Tonkolili District indicates that one road (Matam – Masanga - 6.9 km) out of selected road links to ten trading centres is under rehabilitation by SLRA. This is an important road leading to Masanga Hospital and the work is funded by the European Union. The main reason for the lack of progress in maintenance is budget constraints at district level with no immediate solution to address the problem. Thus, the rest of road links are either in fair or poorer condition as compared to prevailing conditions during the end of baseline survey in January 2017.

4.5 Planning for repeat survey – Tonkolili District Council

The questionnaire for the socio-economic baseline survey was discussed in detail during the working session in TDC. Despite the TDC/SLRA teams' familiarity with the socio-economic questionnaire it was still necessary to discuss the indicators one-by-one, including associated data to ensure clarity and a thorough understanding of each indicator, and the implication for onward data collection in the repeat survey. It was also observed that some enumerators were not so diligent in the data collection exercise for the baseline survey, consequently necessitating a lengthy process to cross-check and rectify the data. This should be avoided in future. The discussion was also aimed to create or improve the understanding of the purpose of the GEM project on socio-economic impact at community level and the link with policies and strategies for rural roads development.

At the end of working sessions all participants confirmed that they understood the questionnaire and indicators. The following points summarize the outcome of discussions:

- ✓ The same questionnaire as used for the socio-economic baseline survey will be applied in the repeat survey, with adjustments as agreed during the working session. Road Condition Index has been included as a key indicator. The questionnaire is attached as Annex B to this report pending review by the Senior Environmental Officer in SLRA.
- ✓ The ten Trading Centres (TCs) will remain the focal point of observation for the repeat survey.

- ✓ The repeat survey will involve a team of seven enumerators as compared to four during the baseline survey. They will spend about ten working days to complete the survey in all ten TCs.
- ✓ The team will start by performing jointly a pretest survey in one TC to ensure that there is a common understanding of the questionnaire and also on time management.
- ✓ Compilation of the data summary into one spreadsheet for the ten TCs will be done in Tonkolili District after scrutinizing the data in ten questionnaires jointly. This will help to avoid irregularities that occurred during the baseline survey.
- ✓ The team confirmed that they will pay attention to details during the repeat survey, e.g. improving traffic counts on normal and market days. In addition to data collection, they will also document short stories as appropriate to illustrate the transport situation in Tonkolili District.
- ✓ The Senior Environmental Officer from SLRA will do a refresher session with the TDC team on the questionnaire just before the repeat survey. She will also manage the process throughout the ten days of survey for accountability purpose.
- ✓ The Information, Education and Communication Officer (IECO) for TDC was informed of the dates of the repeat survey and may participate if resources permit.
- ✓ The GEM Communications expert will initiate communications with IECO on the GEM project to increase awareness of the project purpose at district level and subsequently to improve results on the ground.
- ✓ Timing for the repeat survey will be from 25th October to 8th November 2017. TDC to come up with an action plan at the earliest to tie down resources and firm up commitment with the SLRA team. The budget for the repeat survey will most likely be on cost-sharing basis between TDC and SLRA.

At the heart of socio-economic impact assessment of road asset management is the level of appreciation of the country teams on the purpose of this component of the GEM project and how it relates to the wellbeing of rural communities and policies for rural roads development. The success of the repeat surveys and onward activities depends on the level of understanding and commitment by the participating countries to perform data collection diligently and timely within the scope of available resources.

5 Review of the Pradhan Mantri Gram Sadak Yojana (PMGSY) Project

5.1 Purpose of the Review

The purpose of this review is to identify key issues from the PMGSY that may be of relevance to GEM project.

5.2 Overview

PMGSY was launched by the Government of India in December 2000 as a special intervention to intensify rural roads development in the country. The broad objective was to ensure sustainable poverty reduction. PMGSY provides good quality and well-engineered all-weather rural road connectivity to eligible habitations and rural growth centres. Construction of roads is fully-funded by the Government, whereas maintenance is the responsibility of mandated State governments.

The Government of India through technical assistance by the International Labour Organisation (ILO) conducted an 'Impact Assessment Study of the Improved Rural Roads Maintenance System' in four States under the PMGSY in 2015. The study assessed the impact of the maintenance (and non-maintenance) of PMGSY rural roads on socio-economic indicators in the influence area of the subject roads in terms of agricultural growth, income and employment generation, access to healthcare, education and on the poverty alleviation. The habitations included in the study have identical socio-economic conditions to ensure fair comparison of data from sample and control habitations.

The overall lesson learned from the study is the need to improve road maintenance practices on a sustainable basis. This is due to the fact that positive socio-economic impacts were found in the habitations having better maintained roads and less in areas with unmaintained roads. Study lessons have provided the basis for advocacy on sustainable investments in proper maintenance of rural roads network in India.

5.3 Relevance to GEM Project

Specific lessons from the PMGSY study that are relevant to the GEM project:

- The real impact of rural roads is only possible when the round the year connectivity is sustained. In many habitations where the constructed roads have not been maintained, the road access is disrupted for a substantial period thereby constraining mobility of people.
- In many cases where road construction attracted complementary investments by the people, poor or no maintenance has disrupted the road connectivity threatening the sustainability and returns on such investments.
- Most of the roads built in the rural areas resulted in significant savings in travel time and cost, as well as better public transport facilities. Moreover, more farmers are sourcing better agricultural inputs and services where the roads are maintained, and many have shifted to more profitable crops.

- New income opportunities and small enterprises have flourished due to the rural roads, with impressive gains where roads are maintained, but losses where roads are not maintained.
- Where roads are constructed there has been very substantial time saved for people travelling outside to access health facilities, with even more doctors and health workers visiting these villages more frequently than before. But the people in habitations connected by roads which are not maintained travel less often to health facilities and show comparative poorer mother and child health indicators.
- In relation to education parameters, significantly more schools have appeared and more teachers per number of students in the habitations where roads are better maintained.

Other aspects of PMGSY where lessons can be drawn to benefit the GEM project:

- **Maintenance sustainability:** The National Rural Road Development Agency (NRRDA) has introduced a mechanism of integrated 5-year maintenance of the roads constructed or upgraded under PMGSY. Rural road agencies are required to prepare budgetary requirements based on life-cycle costs that take care of maintenance and reconstruction of the asset on a long-term basis. The Standard Bidding Documents for the construction of roads include a 5-year routine maintenance component to be carried out by the same contractor. The amount for maintenance is typically 6 – 13% of the base year construction cost. This amount is released by the concerned State Government as and when required, whereas the entire construction cost is funded by the Government of India. This innovative approach has gone a long way in preserving the investments made in rural road provision in India. (This element of PMGSY is worthy of further study to obtain appropriate lessons for adaptation in the GEM / AfCAP participating countries, as well as to strengthen the performance assessment tool for RAM in terms of sustainability, consistency and operational relevance in Sub-Saharan Africa).
- **External communications:** NRRDA has a parallel initiative through the ILO, among others, to propagate the essence of maintenance of created road assets to key stakeholders including road users, which also includes drafting a maintenance policy framework. This is another aspect worthy of follow-up by GEM to see how the information is categorized and targeted to beneficiaries and decision makers.
- **Socio-economic impacts:** Despite the maintenance shortfalls, one can conclude that the positive socio-economic impacts of PMGSY have been in line with the level of resources invested in the program by the Government of India. This is not the case in GEM participating countries, where also the GEM project investments overall are much less in comparison with PMGSY's. The GEM project is seeking to increase awareness of the need for governments to allocate resources for effective and sustainable maintenance of roads. However, GEM has no little direct influence on maintenance budgets in participating

countries, and as such no guarantee on positive socio-economic outcomes of the project in the short to medium term.

6 Country Visit to Zambia, Uganda and Sierra Leone by Charles Bopoto

6.1 Background

This section of the report covers the visits made by the Road Condition Monitoring Expert of the GEM Advisory Team to the project countries over the following periods:

- Zambia – 21st to 23rd August 2017,
- Uganda - 24th to 28th August 2017,
- Sierra Leone - 29th August to 1st September 2017.

Details of the itineraries of the visits and the persons met are given in Annex C.

The objectives set for the visits were as follows:

- Review and validate 2016 data,
- Discuss, re-run 2016 condition data analysis,
- Re-value road assets as at 2016,
- Review condition survey forms in preparation for 2017 surveys,
- Refresh country team members on data collection method,
- Carry out field visit to self-calibrate on assignment of D&E values, etc,
- Update GEM Project country work plans.

6.2 Observations and Outcomes of Visit

6.2.1 Review and Validation of Baseline Data

Exercises were undertaken with each country technical team to review road condition data that had been flagged as incorrect or had been entered into Excel sheets as incomprehensible characters where numerical values were expected.

The teams also gave the correct indication of which roads were earth or gravel surfaced.

Road condition data for Zambia, UNRA and Sierra Leone had minor problems. Data for Kamuli district required more attention as there had been some misallocation of the degree and extent of some of the defects.

The country teams agreed to send finalised corrected data to the GEM team within the week following the visit.

6.2.2 Structures Database

For each country, the structures' information was compiled into an Excel based database. The same database can be added to and edited by the teams.

An output of the database is an estimation of maintenance, repair and reconstruction costs.

6.2.3 Road Condition Data Analysis

Following correction of the data the meetings then proceeded to analyse the data using the macro designed to calculate the Functionality Index, Condition Index – Pavement and Condition Index – Formation.

The expert explained the analysis method to the teams, describing how the Deduct system was developed by the American Corps of Engineers and then refined for use in South Africa under the TMH series.

The outcome of the exercise was the request by the participants to modify the Excel spreadsheet to allow updating by users to enter more road information. In the particular case of Zambia, the tool was seen by the council as useful in attending to all roads, not just the GEM designated network.

6.2.4 Asset Valuation

Following analysis of road condition data, the results were then used to calculate the current asset value of the GEM network. The process of calculating the asset value was explained in detail. Each country team was given the leeway of defining own inputs into the process such as unit cost for re-gravelling, routine maintenance etc.

Again, at the end of the process there were requests to modify the spreadsheets to allow input of data for all roads within the districts. It was also agreed to undertake asset valuation of each segment separately.

6.2.5 Revisions to Road Condition Data Collection Forms

The forms used in the collection of road inventory and condition data during the first round were to be used for the second round without major modifications.

The only form that was modified was that for recording the Degree and Extents of each defect. The form was simplified to attend to only those defects that apply to the GEM project.

Annex C contains the revised unpaved road condition survey form that is to be used in the 2nd round surveys.

6.2.6 Refresher Sessions on Survey Methods

The expert and the teams refreshed themselves on the application of the forms mentioned above. The thought processes when undertaking the surveys were reviewed and all the images that guide the rating process were examined in detail.

The exercise resulted in better understanding of the importance of adopting a well-structured approach when undertaking the fieldwork. It was also agreed in general that each survey team should be composed of at least two persons to discuss the road condition at the end of the survey of each segment and cross-check each other.

6.2.7 Fieldwork

Due to time constraints, there was no fieldwork undertaken during the visit apart from a visit to a recently re-gravelled road in Sierra Leone.

6.2.8 Road Asset Management Self-Assessment

The meetings in Tonkolili and Kamuli were attended by technical as well as non-technical personnel. It was imperative to briefly introduce all participants to the analysis of the results of the self-assessment process undertaken by the road authorities.

The presentation of the asset management pyramid and how it was affected by the various variables generated a significant amount of debate. It was pointed out to the participants that the pending visit by the Maintenance Expert would attend to the area in greater detail.

6.2.9 Updating of GEM Country Action Plans

The meetings held in each country also attended to updating the action plans which were prepared in May 2017 for UNRA and March 2017 for Tonkolili, Kamuli and Chongwe.

The updated action plans are given in Annex E.

It was noted that all countries had not actively attended to planned activities and this may have a negative effect on the project outcome.

6.2.10 Programme for 2nd Round of Surveys

All participating countries had advanced plans for undertaking the second round of road condition surveys. Funds had been secured and teams were being defined.

All countries were expected to undertake their surveys in the month of September as indicated on the action plans. By the end of October Uganda's UNRA and Zambia had undertaken the road condition surveys. Uganda's UNRA has since submitted its results to the GEM Advisory Team. The surveys in Kamuli and Tonkolili are underway.

6.3 Recommendations

The project countries have on the whole failed to undertake some very important activities that were included on their action plans.

It was recommended that a concerted follow-up be made from this point going forward to encourage the teams to follow up on issues listed on the action plans.

On technical aspects, it is recommended that results of the condition data analysis be represented through a mapping system to increase the level of appreciation of the project output by users and lay stakeholders.

An important area that the GEM team will need to attend to is the application of the results of the condition analysis in defining re-gravelling and rehabilitation needs.

7 Country Visit to Zambia and Uganda by Kingstone Gongera

7.1 Background

This section of the report covers the visits made by the Road Maintenance Expert of the GEM Advisory Team to the project countries over the following periods:

- Zambia – 3rd to 6th Sept 2017,
- Uganda - 10th to 15th Sept 2017,

The objectives for the visits were as follows:

- Review the self-assessment questionnaire used in the first round and introduce a reviewed edition for the second round of assessment.
- Provide clarification on responses to sections of the questionnaire
- Update GEM Project country work plans.
- Assist country representatives in preparations for the PIT meeting

7.2 Visit to Zambia

7.2.1 Review of Self-Assessment Questionnaire and introduction of the edited version.

Chongwe Municipal Council has not done any maintenance work on any of the GEM projects due to lack of funding. The official request for funds to the Road Fund had not been submitted in the format required by the Road Fund. This was established after the Maintenance Expert requested to see a copy of the request made to the Road Fund.

Engineer Chilonda followed up with Ministry of Local Government on the issue and guidance on the format and procedure for request of funding was provided. The request has since been submitted.

The team discussed in detail the new edition of the self-assessment questionnaire and guidance on how to fill in the responses was given. The assessment will be done after the second round of data collection for the road condition surveys and the socio – economic data.

RDA is providing the funds for the surveys, and a request had been made by Eng Chilonda.

Copy of the edited self-assessment questionnaire is in **Annex B**

7.2.2 Updating of GEM Country Action Plans

The team met in Chongwe and went through the Action Plan. Chongwe municipal council has developed a draft Asset Management Policy based on the working session held in March during the GEM Advisory Team (GAT) visit. The AM Policy will be presented to full council for adoption⁴.

The Council is considering adopting the RDA Road Maintenance Strategy level of service guidelines for primary feeder roads. The RDA has set a target of 80% of all primary feeder roads to be in good condition by 2024.

The revised Action Plan is in **Annex C**

7.3 Visit to UNRA (Uganda)

The Road Maintenance Expert met with UNRA representative Dr. E Mbabazi and had detailed discussion on the revised questionnaire. The UNRA representative noted that there was a need to identify personnel within UNRA who had served the organization long enough to give an objective assessment. Most staff are fairly new and not fully conversant with some of the organisational challenges. She indicated that UNRA would identify heads of departments that will sit together and agree on the responses to the questionnaire.

Currently a consultant has been commissioned to carry out road condition surveys on all UNRA roads and will be training personnel in UNRA on data collection. This is part of strengthening of the overall Asset Management System being run by UNRA.

The meeting also looked at the UNRA Action Plan and agreed on new dates to action the outstanding issues. The self-assessment will be done after the second round of data collection.

Uganda will be hosting the next PIT meeting and preparations for the presentations have started with guidance from the GAT team.

7.4 Visit to Kamuli

The Road Maintenance Expert visited Kamuli District and had a working meeting with the District team. It was noted that no routine road maintenance work had been done on all the GEM roads in 2017 due to lack of funding. The state of the roads was reported to be deteriorating as a result of lack of attention to defects developing. The financial year 2017/2018 has begun and an allocation of 80 million Shillings has been released for periodic maintenance on a 22km road in Kamuli. Of the 80 million, 26 million has been allocated to routine maintenance work for the first quarter of July to September and a second disbursement is expected in October for the same

⁴ The AM policy was subsequently presented to Council but was not formally adopted.

road. The rest of the road network has not been allocated any funds for routine or periodic maintenance.

The team discussed the self-assessment form and highlighted the edits that were made to the form.

Revised targets for the Action Plan were also discussed and new dates set. The second round of assessment will be done after collection of the road condition and the socio – economic data. The team also discussed preparation for the PIT meeting to be held in Uganda.

7.5 Recommendations

In both Zambia and Uganda no road maintenance work has been done on the GEM project roads in 2017 due to lack of funding. The impact of the support is at risk as this will affect the effectiveness of the technical support given so far. There is lack of political will and appreciation of the asset value of rural roads and it is recommended that more dialogue at higher level is necessary to influence the decisions for allocating resources.

In terms of developing appreciation of managing the road asset and importance of keeping records on road inventory and condition, the road agencies have shown marked improvement and appreciation of the support.

There is still need for more training on various specific areas to strengthen capacity of personnel working within the District councils.

8 Country Visit to Tanzania by Charles Bopoto

8.1 Objectives

The visit to Tanzania took place from 16th to 20th October 2017. The objectives of the visit were to:

- Present an overview of the GEM Project and AM Assessment Procedures to the Tanzania Rural and Urban Road Agency (TARURA) and the district staff;
- Assist the District to update its AM Self-Assessment status and discuss the results;
- Present a brief on GEM's procedures for Road Condition Assessment and Asset Valuation;
- Assist the districts to identify AM gaps and prepare mitigation plans.

8.2 Activities undertaken

The following activities were undertaken:

- Introductory meetings at TARURA Head Office with the Executive Director, Directors of Development, Maintenance and Planning;
- A meeting with the TARURA Executive Director and his team during which the GEM RAM Self-Assessment Tool was presented and discussed. The meeting went through the questionnaire, in particular Building Block 1 – External Issues;
- Visit to Kilindi District where meetings were held with the Council Manager/Engineer and his team as well as with the Acting Director of the Council;
- Visit to an EU-funded road upgrading project being executed by the Council.

8.3 Findings and outcomes

The findings of the visit were:

- Since the expression of interest by representatives of PO-RALG in the GEM Project in 2016, a new organisation, TARURA, has been established to manage roads that previously were under the responsibility of the District Councils. The organisation is in the process of establishing itself. All engineering personnel at district level have been transferred to TARURA and are operating independently of the councils.
- TARURA Management expressed interest in becoming part of the GEM Project. An application will soon be lodged.
- In examining Building Block 1 of the RAM Assessment, TARURA scored itself at 62%.
- It was observed that TARURA could use the RAM Self-Assessment Tool as a self-auditing tool at various levels of the organisation and could invite other peer organisations to give an external view.

- It was announced that TARURA would be represented at the forthcoming AFCAP Meeting to be held in Uganda.
- The visit to the district revealed that Councils would still be involved in the preparation of annual plans through presenting their priorities to TARURA for consideration, as well as participation in Regional Road Boards.
- The Council Manager/Engineer is well versed in the District Road Management System (DROMAS) which is currently being used for capturing inventory information, condition survey data and contract management records. The modules for project prioritisation etc are under development.
- The advent of TARURA has freed the Council Manager/Engineer from some council responsibilities and his input into road maintenance activities has now become more focussed. Payments to contractors are now being speedily settled.
- The district is responsible for 846kms of roads of which 2% are engineered gravel roads. The roads were described as being in Fair to Poor condition.
- TANROADS is responsible for 230kms of gravel roads within the district.
- TARURA does not own any road construction and maintenance equipment of its own and procures/hires from the private sector as and when required, or engages contractors on specific upgrading projects.
- The Council Manager/Engineer's team is very lean and needs more support staff, technicians etc.

8.4 Way Forward - RAM Self-Assessment Sessions/Meetings

The following options were identified and discussed with TARURA staff for the way forward for the current approved GEM budget in Tanzania (to be reviewed and confirmed by TARURA and AfCAP Management)

Option 1

The visit to the two districts in the south, Mufindi and Mbinga, would be undertaken from the 4th to 14th of December 2017 with the same objectives as listed above, as per the standing approved plan.

Option 2:

Two meetings will be held over the period 4th to 14th December at convenient locations where the GEM representative would assist the TARURA Regional Coordinators and some Council Managers/Engineers (20-25 participants) to apply the RAM Self-Assessment tool to their current situations. The outcome would be the definition of AM gaps and drafting of a plan of action to address the same. Representations for assistance from AFCAP to address the gaps through training interventions or other initiatives could then be made.

9 PhD Research Progress Report - Establishing the true value of low volume rural roads in low income countries (Kakiiza Kagaba Robert)

9.1 Important details

Institution	University of Birmingham
Program	PhD
Title	Establishing the true value of low volume rural roads in low income countries
Supervisors	Dr. Michael Burrow Dr. Gurmel Ghataora
Student	Kakiiza Kagaba Robert
Location	Uganda / United Kingdom
Type of study	Split site study
Duration	Max 4 years (9/11/2016 – 9/11/2020)

Milestones:

No.	Activity	Status	Remarks
1.	Planning and proposal writing	completed	Submitted and accepted by UoB
2.	Literature review	completed	Submitted to UoB
3.	Data collection	Phase 1 completed	GEM baseline data
4.	Reporting	Completed	9-month review report to satisfy requirements of PhD
5.	Data analysis	On going	Based on GEM data
6.	Modelling	On going	Based on GEM data
7.	Sensitivity analysis	Yet to start	To be based on Sierra Leone, Uganda and Zambia data
8.	Result analysis	Yet to start	To be done based on models
9.	Reporting	Yet to start	Based on UoB reporting standard

9.2 Introduction

9.2.1 Background

The literature indicates that Sub-Saharan Africa has approximately 700,000 kilometres of rural roads, with half of them in poor condition (African Development Bank. (2010, Sept)). These rural roads however are characterized by poor maintenance regimes, low funding and in many instances limited management. Despite inadequate maintenance, rural roads contribute significantly to the economic and social development of the areas they traverse (World Bank, 2005). Most rural regions in SSA are agrarian and so their economic outlook relies on farm products reaching markets on time, undamaged and with economic vehicle operating costs. Further, human resources and products which support agriculture also need good access. Poor transport infrastructure and associated high costs of transport services from poor route conditions, or intermittent seasonal access, necessarily adversely impact agricultural costs.

Further, rural communities with inadequate access are also often restricted from social interaction, from schools, health facilities and basic needs (Burrow et al., 2015).

Despite rural roads being drivers of development in the communities they serve, decision makers are reluctant to allocate adequate funding for the improvement and maintenance of rural road networks.

Instead there is a preference for opening new earth or gravel roads, new construction of paved roads and upgrading gravel roads to paved or bitumen standards due to the greater visibility they exhibit to the voters and donors (World Road Association (PIARC), 2002). In Uganda, for example, rural road management has been relegated to the lowest tiers of management – sub-county and district administrative structures. These tiers are least funded and have no formal structures to manage the roads while the construction of national roads with visibility are managed at a high-level tier by the Uganda National Roads Authority (UNRA). This administrative level is well resourced with significant amounts of money, equipment and human resource. The lack of rural road maintenance funding can be attributed to many factors including (Burrow et al., 2016):

1. political preference for new construction over maintenance
2. insufficient road maintenance budgets
3. the lack of a suitable means of motivating a strong case arguing for funds for rural maintenance where social benefits are significant
4. institutional memory loss due to lack of proper documentation of the works for reference purposes
5. inappropriate institutional arrangements and;
6. ineffective rural road asset management.

This research focuses on item three above.

The literature shows that research has attempted to link the improved performance in road asset management to improved economic and social benefits for local communities in rural areas (GEM, 2017). Often multi-criteria approaches are used to compare social and economic valuations. There is a need however to develop methodologies which can be used to monetize the social benefit of rural roads so that the appropriation of investment is transparent and equitable by including social benefit in cost-benefit analyses along with the calculated economic benefits.

Further, in addition to social and economic benefit rural roads can also be valued in terms of the physical assets which they contain (e.g. carriageway, drainage, utilities etc). Consequently, it is possible to conceive a valuation of the benefits (and cost) of a rural road to consists of the monetized social and economic benefit together with the physical value of the assets of the road. Such an approach would provide a means by which rural road assets managers could argue for

funds and enable the maintenance of rural roads to be prioritized in a transparent and equitable manner.

Accordingly, this PhD research is based on an investigation of the true value of rural road asset in low income countries and its eventual use in arguing for funds for maintenance and upgrading of rural roads as well as in prioritization of funding where maintenance budgets are insufficient. The true value of rural road asset combines both the structural (physical) value of the road and monetized social economic value of the road asset. Literature review further relates social impact to social value (Bassi, 2013) that may be defined in reference to three key elements as noted by Clifford, 2014: These are;

- a) the value created as a consequence of someone's activity (Emerson et al., 2000);
- b) the value experienced by beneficiaries and all others affected (Kolodinsky et al., 2006);
- c) an impact that includes both positive and negative effects (Wainwright, 2002);

This PhD study is based on a split site type of study program. This entails carrying out the research from Uganda, supplemented by fortnightly supervision meetings by Skype and up to six months over three years at the University of Birmingham.

9.3 Aim and objectives

The aim of this study is to develop a theoretical model that can establish the true value of low volume rural roads in low income countries.

To meet the above aims, the research has a number of objectives as follows:

- i. Determine the components of true costs and benefits of low volume rural roads via a review of the literature and from stakeholder consultation
- ii. Explore means of valuing the true costs and benefits of roads in terms of the physical, economic and social benefits and costs from road investment.
- iii. Develop a framework for valuation which monetizes costs and benefits
- iv. Demonstrate the use of the model using case studies from Sierra Leone, Uganda and Zambia.

9.4 Progress

9.4.1 Completed activities

The following activities have been completed;

- 1. Project planning
- 2. Literature review
- 3. Methodology
- 4. Preliminary (baseline) data collection.

9.4.2 Project planning

The Gantt chart in Figure 9-1 below shows the progress of the research against agreed milestones.

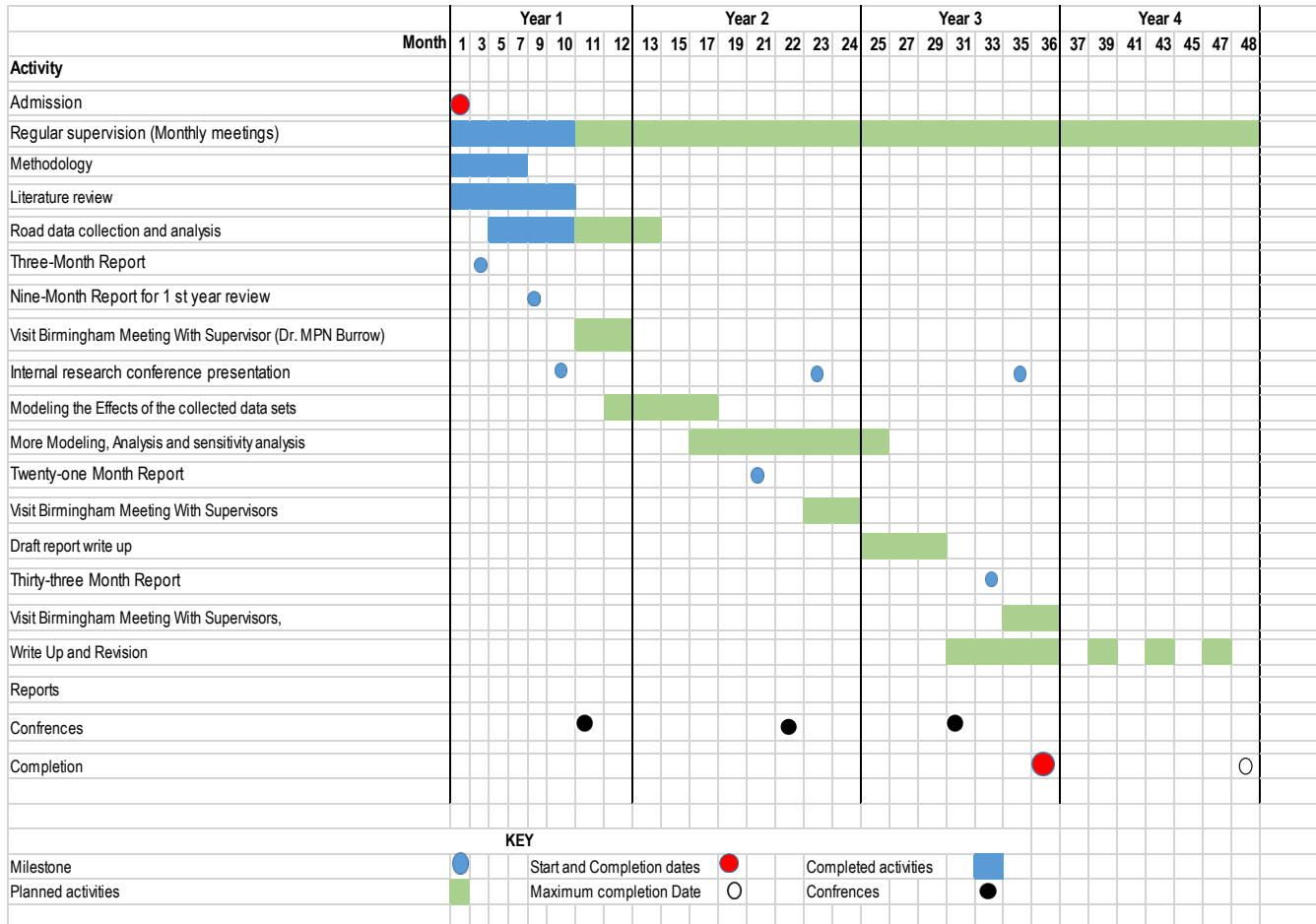


Figure 9-1: Progress of the research against agreed milestones

9.4.3 Literature review

For this research, a comprehensive literature review was carried out covering the following topics;

1. Road asset management,
2. Rural road improvements and maintenance,
3. Social Economic benefits accruing from rural roads,
4. Road valuation concepts
5. Valuation of Social - Economic benefits and Road improvement prioritisation methods

A systematic review process was used to conduct the literature review that used a key word search to identify pertinent documents. The identified documents were reviewed in relation to core thematic areas indicated above.

A systematic review is defined as; ‘A review of a clearly formulated question that uses systematic and explicit methods to identify, select, and critically appraise relevant research, and to collect and analyse data from the studies that are included in the review. Statistical methods (meta-analysis) may or may not be used to analyse and summarise the results of the included studies’ (Cochrane Collaboration, 2014).

Statistical methods and meta-analyses are being used to analyse and summarise the results of the included studies in such a way that critical information can be obtained.

The key findings from the literature review are:

- a) Sub-Saharan Africa has approximately 700,000 kilometers of rural roads, with half of them in poor condition (African Development Bank, 2010)
- b) Rural roads contribute significantly to the economic and social development of the areas they traverse (World Bank, 2005)
- c) The true value of the road will require a combination of the physical value, economic value and the social value. A combined model will be required to combine all the parameters
- d) The literature shows that research has attempted to link the improved performance in road asset management to improved economic and social benefits for local communities in rural areas (GEM, 2017).
- e) Rural communities with inadequate access are also often restricted from social interaction, from schools, health facilities and basic needs (Burrow et al., 2015)
- f) For comprehensive valuing of the assets on the road asset the main components which need to be considered, should include: Physical road and its structures, Services running

along or under the road, the economic benefits or costs, the social benefits or costs, political benefits, cultural benefits

- g) there is a preference for opening new earth or gravel roads, new construction of paved roads and upgrading gravel roads to paved or bitumen standards due to the greater visibility they exhibit to the voters and donors (World Road Association (PIARC), 2002)
- h) The objective of socio-economic impact analysis is to assess the magnitude and distribution of both direct and indirect effects. Past efforts at assessing the impact of infrastructure projects have typically been limited due to the lack of available baseline and control data. This has made it difficult to disentangle the effects from the infrastructure project from those of other interventions and the overall development of the economy
- i) Road condition (in the form of road roughness IR) to determine the cost and benefits of roads may be useful for roads with a reasonable amount of traffic since they utilize road roughness to project road use costs. MCA among others provide comparisons between projects and this may be useful to prioritization.
- j) A number of approaches for the cost-benefit analysis of feeder roads have been put forward in the past: consumer surplus; producer surplus; compound ranking methods; and multi-criteria analysis (Robinson, R. (1999)).
- k) There are a variety of tools which can capture the economic benefit of rural roads these include, HDM-4, CBA, and RED among others
- l) The true value of the road may comprise of physical cost, economic cost and the cost of social benefits. The physical costs include the actual road with its associated structures and the value of the added amenities which may grow as a result of new or enhanced roads. These amenities include water lines, data cables and Electric power lines
- m) Monetizing social benefits remain a key issue for research. Most literature on this aspect relate to other sectors other than rural roads.

9.5 Methodology

The methodology for the research is presented in Figure 9-2 below.

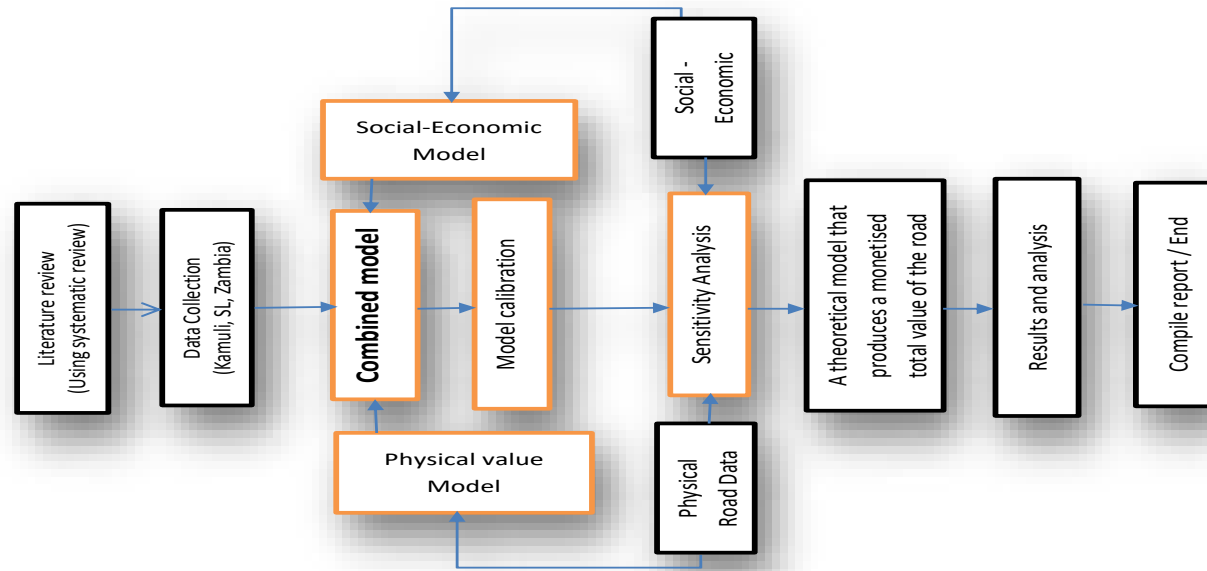


Figure 9-2: Methodology of the research

9.6 Data collection and analysis

To date, baseline road condition and socio-economic data was collected by the researcher for the Kamuli district for the GEM project. Similar data sets obtained for the Tonkolili district in Sierra Leone and Chongwe district in Zambia will also be used in the research programme. It is anticipated that as the research progresses additional data will be collected to enable social benefit to be monetized

The data collected and analysed included rural road authority self-assessment, road condition data, road infrastructure assessments and social economic data.

All data was collected using questionnaires and face to face meetings with stakeholders. Collected data indicates a correlation between road maintenance and social economic benefits accruing from that particular road.

9.7 Planned activities

The following activities are ongoing;

- a) Modelling
- b) Data collection
- c) Result analysis
- d) Reporting

9.8 Conferences, Meetings, Presentations and Travel

a) Data collection

Carried out and facilitated GEM road condition and socio-economic data collection for Kamuli district, Uganda.

b) Conferences

A draft abstract has been submitted to RECAP for consideration for the 2018 SARF/IRF/PIARC Regional Conference for Africa (Durban, October 2018).

c) Meetings

GEM PIT meetings have been attended in Pretoria (GEM Launching Meeting Pretoria SA, 6th – 7th July 2016), Cape Town (Caledon Workshop - Western Cape, 15th November 2016), and Johannesburg (GEM Team Meeting, 1st and 2nd August 2017).

d) Presentations

Poster prepared for the UoB to showcase my research. This formed part of a presentation made to RECAP at the University of Birmingham on 23rd October and will be used to demonstrate the research activities of the UoB's rural road research group.

e) Travel

To fulfil the split site requirements of my UoB PhD, I am required to spend at least 6 months at the university during the course of my PhD. In line with this requirement I have planned to travel between November and December 2017.

9.9 Reporting and Monitoring by University of Birmingham

The University of Birmingham has provided general timeline as indicated in Figure 9-3 below.

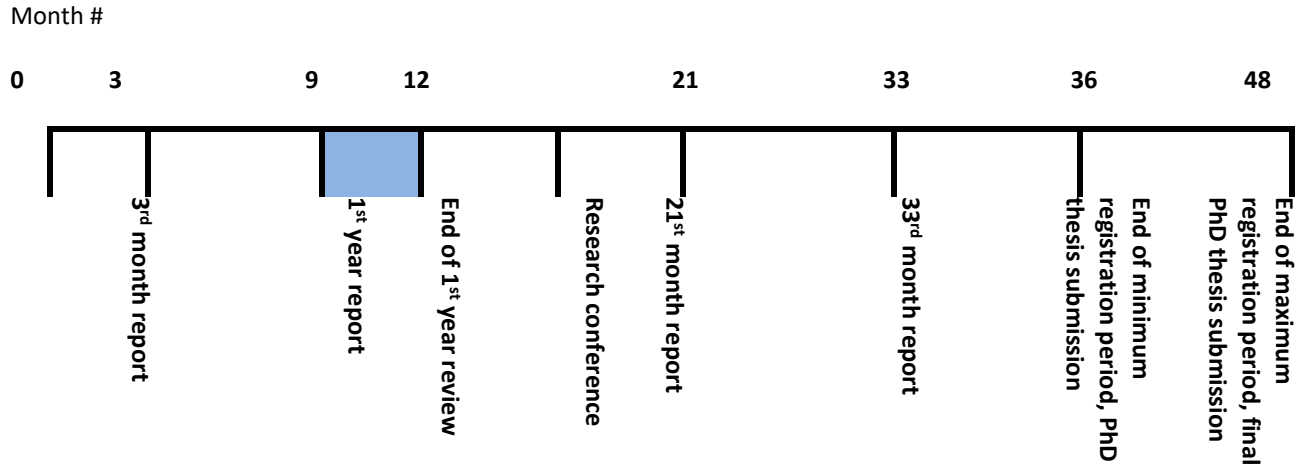


Figure 9-3: Research Timeline:

9.10 References

1. Burrow, M.P.N., Geddes, R.N., Pinard, M, I, Gongera, K., Bopoto, C., Ghataora, G.S., Gillett, S. and Petts, R. (2016). Specification for Rural Road Asset Management Performance. International Conference on Transport and Road Research. Mombasa, Kenya, 16-18th March, 2016.
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10 PhD Research Progress Report: A probabilistic tool to calculate short and medium term rural road network condition as a function of maintenance expenditure. (Peter S. Kome)

10.1 Background

Following the literature review, consultation between the academic supervisors at the University of Birmingham and RECAP, a working title for the research project has been chosen. It is “A probabilistic tool to calculate short and medium term rural road network condition as a function of maintenance expenditure”. This report outlines the progress made to date with respect to the research project. It outlines the aim and objectives of the project, summarises the literature, delineates the research methodology and describes the theoretical framework of the probabilistic tool.

10.2 Rationale

A large proportion of the populations of countries in Sub-Saharan Africa lives within rural areas and relies on agriculture as the main source of income. These communities are mostly linked to local markets and urban settlements through series of rural roads collectively referred to as the rural or feeder road network. Roads deteriorate due to the effects of the environments (climate change), traffic volume, traffic loading and deficient design standards (Baomah, P. 2010) and therefore require appropriate maintenance. However, in Sub-Saharan African countries (SSAs), the maintenance of rural roads tends to be neglected and as a result the roads are often in a poor state of repair. This results in high transport costs and in some regions roads may be impassable in the rainy season. As a result, there is a considerable constraint on agricultural production (i.e. for communities exporting goods and importing products and services to support agriculture); and citizens in these communities are impeded from accessing social services such as healthcare, education, communication and other crucial development needs.

The lack of investment in rural road network maintenance within the region is considered to be due to a number of reasons including political preference for new construction over maintenance, insufficient road maintenance budgets, the lack of a suitable means of motivating a strong case arguing for funds for rural maintenance where social benefits are significant, institutional memory loss, inappropriate institutional arrangements and ineffective rural road asset management practices (Burrow et al., 2016). This is despite the fact that development partners (WB, EU, AfDB etc.) to most SSA government, provide significant amounts of financial support on an annual basis towards rural roads maintenance and reconstruction programmes to support the agricultural and mining sectors.

To keep the existing networks operational at optimum condition road agencies at local levels need to develop the capacities not only to measure current network conditions but also to be

able to predict future deterioration so that preventative maintenance may be carried out and appropriate maintenance budgets set aside. Against this background, within a given planning period local authorities should take into consideration the financial resource constraint and prioritize required maintenance interventions, with the goal of achieving maximum impact across their networks and value-for-money on road maintenance expenditures (URF Final Report, 2012).

Although promoting social benefits is enhanced through the maintenance of rural roads by local authorities, the lack of a structured network level financial engineering driven model to determine the actual and future maintenance needs of these rural road networks in SSAs is of concern. This situation is as a result of the continuous absence of any form of road asset management systems/framework to:

- a) Predict and compute, at the network level, the actual road maintenance needs of the feeder/rural road networks and
- b) Collect and collate into a database, the systematic deterioration of these networks.

10.3 Aim and Objectives

To develop a computer based network level tool to predict the condition of rural road assets (*pavement and drainage assets*) under different maintenance budget scenarios.

10.3.1 The Objectives

To address the aim, the following research objectives have been developed:

- i. To explore the literature on asset management systems with a view to identifying an appropriate methodology for network level rural asset management.
- ii. To identify the major components of any rural road (network) which require maintenance.
- iii. To understand how the major components deteriorate over time and the effect of maintenance on such deterioration.
- iv. To explore the literature to identify suitable deterioration models for each of the components identified in objective i.
- v. By means of exploring the literature and consulting with asset managers of rural networks in SSA, develop a concise and structured framework for predicting the total future maintenance requirements over a given planning horizon, for a rural road network.
- vi. Test the developed framework with data collected from three rural road agencies.

10.4 Methodology

To address the requirements of the research, a methodology has been developed. This is summarised below and outlined in Figure 10.1.

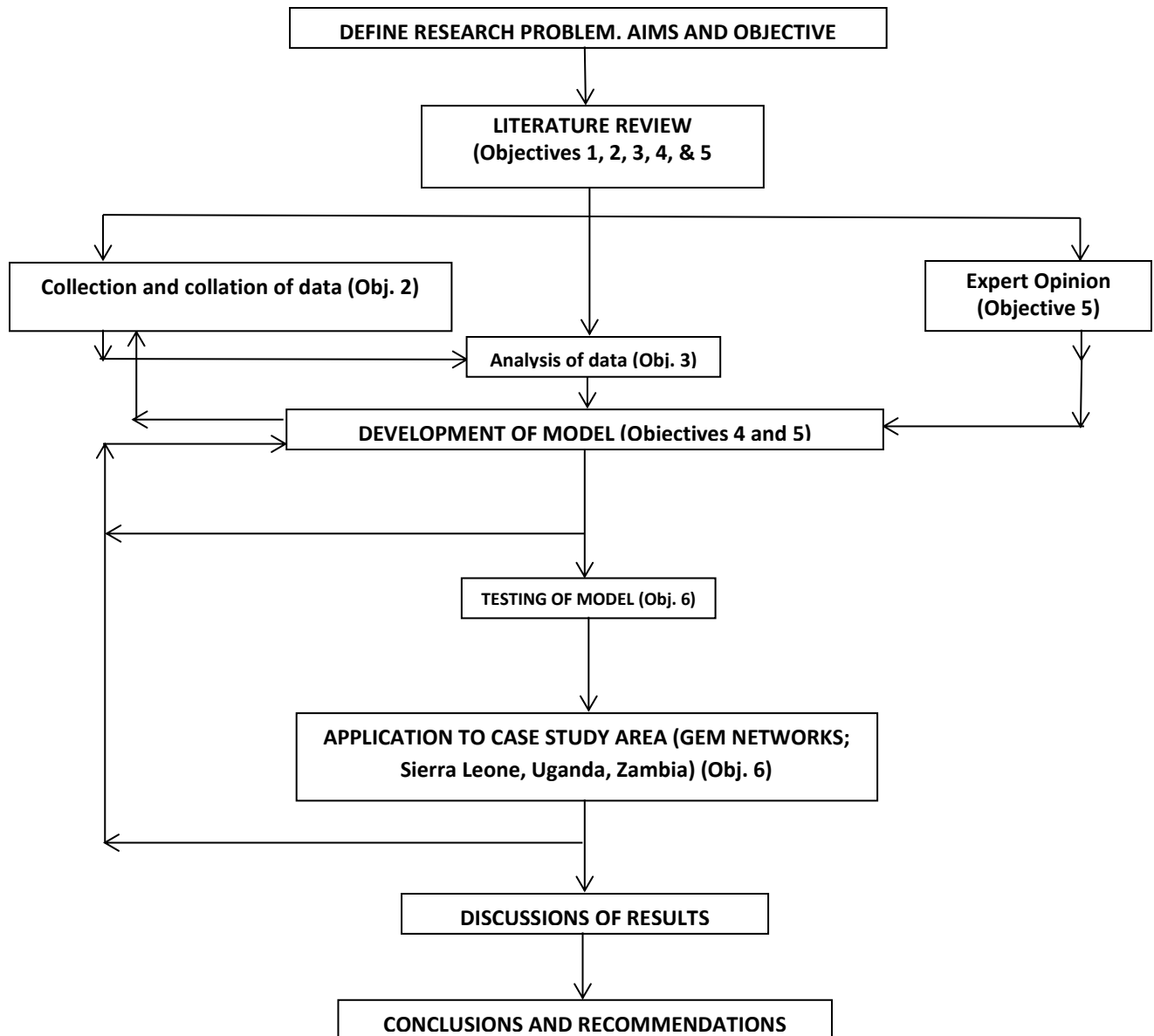


Figure 10-1: Research Methodology

10.5 Literature review

A systematic literature review is being undertaken on the following topics

Objective 1

- Assessing Rural Road Agency Performance
- Road Management Policy
- Rural Road Investment Efficiency
- Network Level Maintenance Models
- Road investment appraisal

- Multi-criteria Analysis

Objectives 2 and 3

- Pavement engineering
- Assessing Asset Management Performance

Objectives 4 and 5

- Probabilistic Risk Analysis
- Deterministic deterioration models.

10.6 The Conceptual Model

Based on the literature review a theoretical model for the research has been developed. This is illustrated in Figure 10-2 and described below.

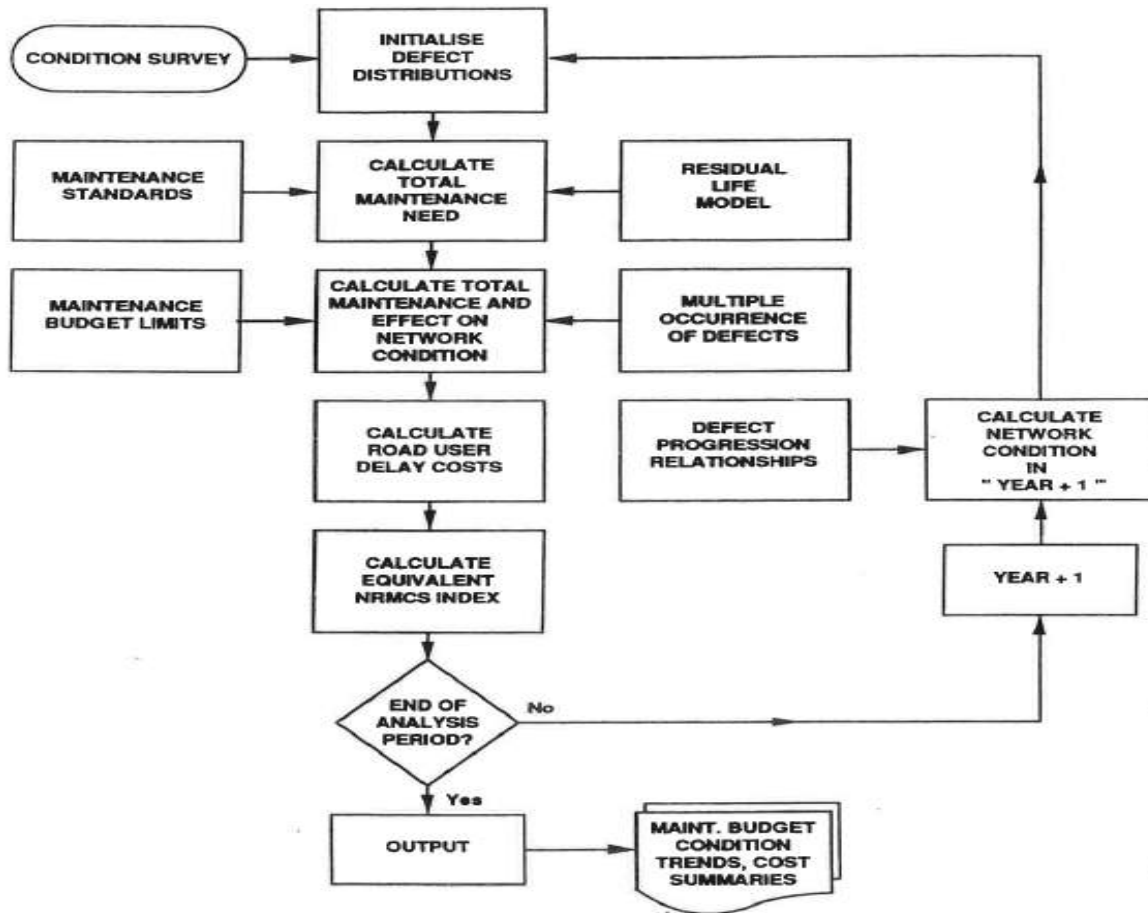


Figure 10-2: Theoretical Model

- Initialise defects distribution: This is a measure of the observed defects, their severity and distribution, captured during the road and structure inventory and condition surveys in the three GEM project networks.

- Calculate total maintenance need: This part of the model computes the percentage of a rural road network requiring maintenance. The calculation is performed separately for different conceptual networks (e.g. carriageways constructed from different materials will be considered as separate conceptual networks, all small structures as separate conceptual networks etc). Need is calculated by comparing the recorded defects against user (agency) defined intervention levels at which various treatments are to be applied. Also taking into account the proportion of the network which should receive structural maintenance determined using a residual life model.
- Calculated total maintenance and effect on road network condition: This process allocates available budget (based on priorities set by the agency) to portions of the conceptual network and then computes the effect of these on asset condition via maintenance restoration models.
- Road user delay costs: Where appropriate road user delay costs (and other associated costs) will be considered. This aspect of the conceptual model is subject to on-going discussion.
- Calculate equivalent NRMCS indices: One output from the tool will be indices of road condition (e.g. NRMCS).
- Defect progression relationships: These are deterioration models for each asset type which are being based on historical data. The literature review suggests a Markov chain approach may be the most appropriate for the task at hand due to the asset type, availability of data and transparency. Work is ongoing towards the development of the deterioration model using data obtained from the three rural networks in the GEM participating countries. These data are presently being analysed.

10.7 Other Activities

10.7.1 GEM project specific activities

- ✓ Provided support to the road condition survey and road asset valuation specialist, during his country visit between August 30, 2017 to September 2, 2017.
- ✓ Coordinated the visit of the GEM socio-economic specialist during her September 5th – 9th, 2017 visit.

10.7.2 Conferences

Draft abstract submitted to RECAP for consideration for the 2018 SARF/IRF/PIARC Regional Conference for Africa (Durban, October 2018).

10.7.3 Meetings

GEM PIT meetings in Pretoria (GEM Launching Meeting Pretoria SA, 6th – 7th July 2016), Cape Town (Caledon Workshop - Western Cape, 15th November 2016), and Johannesburg (GEM Team Meeting, 1st and 2nd August 2017).

10.7.4 Presentations

Poster developed as part of a presentation made to RECAP at the University of Birmingham on 23rd October.

10.7.5 Travel

I have planned to travel to the UK (as a requirement of my research) between November and December 2017.

10.8 Planned Activities

The following activities are planned in the next three months:

- ✓ Continue with literature review.
- ✓ Progress with the development of the deterioration models.

Details of planned activities for the next three months are provided in the attached Gantt Chart.

Topic:		A probabilistic tool to calculate short and medium term rural road network condition as a function maintenance expenditure																												
Activity No.	Description	Tasks Proposed Dates		Week Startin	30 October 2017	06 November 2017	13 November 2017	20 November 2017	27 November 2017	04 December 2017	11 December 2017	18 December 2017	25 December 2017	01 January 2018	08 January 2018	15 January 2018	22 January 2018	29 January 2018	05 February 2018	12 February 2018	19 February 2018	26 February 2018	05 March 2018	12 March 2018	19 March 2018	26 March 2018				
		Begin	Complete		Duration (d/w/m)	47	48	49	50	51	52	53	54	55	56	57	58	59	60											
1.0	Finalise methodology	06 March 2017	08 September 2017																											
2.0	Literature review	06 March 2017	open																											
3.0	Submission of 3RD UoB 3 months report	14 August 2017	10 November 2017																											
4.0	Submission of GEM 3 months report	02 August 2017	30 October 2017	★																										
5.0	Data Collection ad Collation	16 July 2017																												
6.0	Data Analysis	20 November 2017																												
7.0	End of year UoB supervision Visit		08 December 2017																											
8.0	Preparation of Conference paper(s)	03 July 2017																												
9.0	Development of Models	16 February 2018	29 June 2018																											
10.0	Submission of 1ST Annual UoB report		26 January 2018																											
11.0	Testing of Model																													
12.0	Application of Model to GEM networks																													
13.0	Compilation and write-up of PhD report																													
14.0																													
15.0	Presentation and Research Poster																													

10.9 References (used in this report)

1. Burrow, M.P.N., Geddes, R.N., Pinard, M, I, Gongera, K., Bopoto, C., Ghataora, G.S., Gillett, S. and Petts, R. (2016). Specification for Rural Road Asset Management Performance. International Conference on Transport and Road Research. Mombasa, Kenya, 16-18th March 2016.
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<http://ethos.bl.uk/OrderDetails.do?did=1&uin=uk.bl.ethos.520378> [Accessed April 4th 2014].

11 Planned Activities for Next Quarter

The following activities will be undertaken in the period November to January 2017:

- PIT Meeting in Uganda on 21st November 2017.
- Second visit of the Road Condition Monitoring Expert to Tanzania.
- Continued support to the participating roads agencies to meet the targets of their Action Plans and complete their Asset Management Policy Statements.
- Visit of the Road Maintenance Expert and the Road Condition Monitoring Expert to the participating countries to follow up on resolutions passed at the PIT meeting.
- First visit of the Communications Expert to Zambia (pending approval from the RDA management).

Annex A: Zambia Visit by C Lema: Programme of Visit and List of People Met

Itinerary	Date	Time/Logistics	Issues Discussed
Arrival in Lusaka	2/8/2017		
Travel to Chongwe & meeting with CMC team	3/8/2017	9.30 am – 16.00 pm	<ul style="list-style-type: none"> ✓ Discussion of baseline results, preliminary analysis & implication for repeat survey ✓ Detailed discussion of indicators & proposals for improvement of socio-economic questionnaire.
Meeting with CMC Clerk			<ul style="list-style-type: none"> ✓ Introducing GEM project and status
Meeting with RDA		16.30 – 17.15 pm	<ul style="list-style-type: none"> ✓ Briefing on the progress of socio-economic component of GEM project & proposed communications component.
Chongwe District	4/8/2017	9.30 am – 12.30 pm	<ul style="list-style-type: none"> ✓ Planning – repeat survey
Meeting with Public Relations Officer for CMC	4/8/2017	11.30 am – 12.30 pm	<ul style="list-style-type: none"> ✓ Discussion on communications component of GEM project.
Field visit		13.30 – 16.00 pm	<ul style="list-style-type: none"> ✓ 1 representative trading centres on a road prioritized for maintenance. ✓ Discussion of next steps & Conclusion
Departure	5/7/2017		

NAME	Designation/Organisation	Contact
Thomson Banda	Manager, Research & Development, RDA	thomsonbanda@roads.gov.zm
Eng. Presley Chilonda	Principal Engineer, Roads Development Agency (RDA)	pchilonda@roads.gov.zm
Eng. Peter Banda	Director of Engineering, Engineering Dept. Chongwe Municipal Council (CMC)	Pebajr@yahoo.com
Mutambo Lazarous	Ass. Civil Engineer, Engineering Dept. CMC	Mutambo.lazarous@gmail.com
Mr. Raphael Zulu	Ag. Town Clerk - CMC	
Ms. Kapesa Shikabonga	Social Economic Planner, Planning Dep. CMC	KShikabonga@yahoo.com
Zenzo E. Simwaba	Intern, Engineering Dept. CMC	Eng.sezz@gmail.com
Namasiku Njovu	Public Relations Officer, CMC	Cathynams21@gmail.com chongwedistrictcouncil@gmail.com

Annex B: Sierra Leone Visit by C Lema - Programme and List of Persons Met

Itinerary	Date	Time/Logistics	Issues Discussed
Arrival in Freetown	5/9/2017		
Meeting with SLRA team	6/9/2017	8.30 – 9.00 am	✓ Discussion and confirmation of program of visit
Travel to Tonkolili & meeting with TDC team		9.00 am – 16.30 pm	✓ Discussion on GEM socio-economic component and status, baseline results & implication for repeat survey
Meeting with: TDC Chairman	7/9/2017	9.00 – 9.30 am	✓ Update on GEM project socio-economic component and progress to date
Bike Riders Union Chairman		9.30 – 10.30 am	✓ Discussion on transport issues & challenges in Tonkolili District
Workshop with TDC & SLRA team		10.30 am – 17.30 pm	✓ Detailed discussion of indicators & proposals for improvement of socio-economic questionnaire. ✓ Discussion of progress in maintenance of road links to ten trading centres ✓ Planning for repeat survey
Field visits	8/9/2017	9.00 am – 13.30 pm	✓ Magburaka township market ✓ Masanga trading centre on the road under rehabilitation
Travel back to Freetown		14.30 pm	✓ Discussion of next steps & Conclusion
Departure	9/9/2017		

NAME	Designation/Organisation	Contact
Peter S. Kome	Chief Engineer, SLRA	kome1978sl@gmail.com
Tamba Amara	Snr. Engineer, SLRA	tmannamara2003@gmail.com
Lucy T. Essa	Snr. Environmental Officer, SLRA	lucykonneh@gmail.com
Patrick J. Lavalie	Environmental Engineer, SLRA	lavaliepj@yahoo.com
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Sallieu Komeh	Works Engineer, TDC	sallieumkomeh@yahoo.com
Abul Aziz Sesay	Assistant Engineer, TDC	
Albert Coker	Environmental & Social Officer, TDC	albertcoker86@gmail.com
Peter S. Bangura	Information, Education & Communication Officer, TDC	Peterbangs01@gmail.com
Mohamed Sesay	Bike Riders Union Chairman, Tonkolili District	
Alusine A. Sesay	Chairman, TDC	
Festus Kalay	Chief Administrator, TDC	

Annex C: Country Visits by C Bopoto - Programme and List of Persons Met

Day	Activity	Participants
21 August 17	Arrive Lusaka, Zambia	CTB
22 August 17	Working meetings/interactions at Chongwe Municipality, District Engineer's office <ul style="list-style-type: none"> Review and validate 2016 data Discuss, re-run 2016 condition data analysis, deduct values etc Re-value road assets as at 2016 	District Engineer District Engineer's staff Regional Office Rep Eng Chilonda, if available
23 August 17	Working meetings/interactions at Chongwe Municipality, District Engineer's office <ul style="list-style-type: none"> Review condition survey forms Refresh on data collection method Brief field visit to self-calibrate on assignment of D&E values, etc Update Work Plan Wrap up 	District Engineer District Engineer's staff Regional Office Rep Eng Chilonda, if available
24 August	Arrive in Kampala, Uganda	CTB
25 & 26 August 17	Working meetings/interactions at UNRA Jinja Station and Kamuli District Engineer's office <ul style="list-style-type: none"> Review and validate 2016 data Discuss, re-run 2016 condition data analysis, deduct values etc Re-value road assets as at 2016 	Jinja Station Engineer and staff District Engineer and technical staff Dr Mbabazi or Ms L Musenero, if available R Kakiiza, if available
28 August 17	Working meetings/interactions at UNRA Jinja Station and Kamuli District Engineer's office <ul style="list-style-type: none"> Review condition survey forms Refresh on data collection method Brief field visit to self-calibrate on assignment of D&E values, etc Update Work Plan Wrap up 	Jinja Station Engineer and staff District Engineer and technical staff Dr Mbabazi or Ms L Musenero, if available R. Kakiiza, if available
29 August 17	Arrive in Freetown, Sierra Leone	CTB
30 August 17	Working meetings/interactions at Tonkolili, District Engineer's office <ul style="list-style-type: none"> Review and validate 2016 data Discuss, re-run 2016 condition data analysis, deduct values etc Re-value road assets as at 2016 	District Engineer District Engineer's staff P. Kome, if available
31 August 17	Working meetings/interactions at Tonkolili, District Engineer's office <ul style="list-style-type: none"> Review condition survey forms Refresh on data collection method Brief field visit to self-calibrate on assignment of D&E values Update Work Plan Wrap up 	District Engineer District Engineer's staff P. Kome, if available
01 September 17	Depart Freetown for Johannesburg	CTB

People Met

Zambia:

NAME	DEPT	DESIGNATION	EMAIL ADDRESS
Presley Chilonda	RDA-HQ	AFCAP Desk Officer	pchilonda@roads.gov.zm
Victor Miti	RDA Lusaka Region	Eng. Planning & Design	vmiti@roads.gov.zm
	Chongwe Municipal Council	Council Town Clerk	
Eng. Peter Banda	Chongwe Municipal Council	Director of Works	pebar@yahoo.com
L. Mutambo	Chongwe Municipality Roads Department	Civil Engineer	mutambo.lazarus@gmail.com

Uganda – UNRA

NAME	DEPT	DESIGNATION	EMAIL ADDRESS
Mark Rubarenzya	UNRA	Head, Research and Development	Mark.Rubanrenzya@unra.go.ug
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Isaac Menya	UNRA	Manager – Network Planning	Isaac.menya@unra.org

Uganda – Kamuli District

NAME	DEPT	DESIGNATION
Mulondo Grace	Kamuli District	Director of Engineering
Mufumba Daniel	Kamuli District	Assistant Engineer
Mugeeze Charles	Kamuli District	Roads Inspector

Sierra Leone

NAME	ORGANISATION	DESIGNATION	EMAIL ADDRESS
Tamba Amara	SLRA	Chief Engineer DD	tmannamara@gmail.com
Peter Kome	SLRA	Chief Engineer	Kome1978@hotmail.com
Mohamed Lahai	SLRA/Tonkolili District	District Engineer	Mohamedlahai12@yahoo.com
Mohamed Sankoh	Tonkolili District	Roads Supervisor	

Annex C: Country Visits by K Gongera - Programme

Day	Activity	Participants
3 rd Sept 2017	Arrive Lusaka, Zambia	KSG
4 th Sept 2017	Meeting with Eng Thomson Banda <ul style="list-style-type: none"> • Discuss purpose of visit • Discuss A.M. Policy for Chongwe 	
5 th Sept 2017	Meetings at Chongwe Municipality, District Engineer's office <ul style="list-style-type: none"> • Review self-assessment forms. • Update Work Plan. • Discuss toad maintenance challenges • Discuss preparations for PIT meeting • Wrap up 	District Engineer District Engineer's staff Eng Chilonda
11 th Sept 2017	Arrive in Kampala, Uganda	KSG
11 th Sept 2017	Working meeting UNRA office in Kampala <ul style="list-style-type: none"> • Review self-assessment questionnaire • Review Action Plan for 2017 • Preparatory discussion for PIT meeting • Wrap up 	Dr Mbabazi
12 th Sept 2017	Meeting in Kamuli District Engineer's office <ul style="list-style-type: none"> • Review edited self-assessment forms • Update Work Plan • Preparatory discussion for PIT meeting • Wrap up 	District Engineer and technical staff Eng Grace Mulondo

Annex E: Updated GEM Project Country Action Plans

Updated Action Plan – Tonkolili District⁵

No.	Action	Responsibility	Planned Completion Date	Status at Date: 01 Sept 2017	Revised Completion Timing
1	Complete road condition surveys	District & SLRA Eng	End Dec 2016	Complete, final verification in progress	6 Sept 17
1a	Analyze road condition data and input	District & SLRA Eng		Complete, to update when data verification is done	6 Sept 17
2	Completion of AM Policy	C.A. & District Eng, Roads Committee	15 Apr 17	Complete, Council to review and adopt	30 Sept 17
3	Recommend actions to be taken to solve AM gaps identified	Eng District & SLRA	30 Apr 17	Work in progress	15 Oct 17
4	Convene a special council meeting to present progress so far on the AM Project raising achievements realized so far.	Eng District & SLRA	7 TH April 2017	Done, Jul 17	
5	Convene one-day stakeholder meeting in Freetown to report on GEM progress so far	Tamba/Kome/Lahai	May 2017	Not done, was awaiting Council meeting to take place	Nov 17
6	Request for training in identified areas (Survey, Design of minor structures, Auto cad, Supervision of works, Planning of works, materials selection & reporting)	District Eng Tonkolili	5 May 17	Still to do	15 Sep 17
5	Extend road inventory & condition surveys to remainder of road network in Tonkolili	District & SLRA Eng	July 17	Still to request funds from council to undertake exercise	Nov 17
6	Quantify maintenance funding gap, and present to Council for support	District & SLRA Eng	Sept 17	On going	Oct 17
7	Request GAT for assistance in works planning and reporting	TDC Eng	31 Mar 17	Still to do	15 Sept 17
8	Prepare for the PIT Meeting	C.A. & District Eng, Roads Committee	Sept 17	On going	31 Oct 17
9	Specify and request GPS receivers and dashboard camera	TDC	Apr 2017	Requested, included in 2018 budget	Aug 17

⁵ Following visit of C Bopoto August 2017

Updated Action Plan – UNRA⁶

No.	RAM Aspect		Action	Responsibility or Lead	Planned Completion Date	Status at Date: 25 Aug 2017	Progress 11 th Sept 2017	Revised Completion Timing
1	General	1.1	Prepare for PIT Meeting – GEM Tech issues	R&D	15 Oct 17	Ongoing	Ongoing and the ReCAP (Les & Leta) visited the venue for the meeting	
		1.2	Prepare to Host AfCAP Regional Meeting	R&D	30 Oct 17	Ongoing	GEM preparing for the meeting and a report has been prepared by Dr Emma.	
		1.3						
2	External	2.1	Pertaining to UNRA's communication plan advocate for emphasis on community consultation and involvement	R&D	30 June 17	Still to link with PCA (Public + Corporate Affairs Dept.)	An engagement of political and technical leaders of the central region met and UNRA (district reps, Parliamentarians) discussed UNRA activities and provided feedback on operations. This is intended to cover all regions	Nov 2017.
		2.2	Recommend provision of a platform for coordination of road related issues at local government, district, regional and national levels	R&D; Corporate Strategy	31 Aug 17	Proposed to use Road Fund platform, still to explore	UNRA in discussion with RF on how to use existing structures for coordination among road agencies at district and regional level	Feb 2018
		2.3						
3	Institutional	3.1	Expedite and operationalize the AM Policy	Legal Services	31 Oct 17	Draft for all road prepared by Aurecon, being rationalized and linked to Corporate Plan/Strategy; to review rural road component	Corporate strategy has now been approved so UNRA intends to align the AM Policy to the Strategy. GEM is following up Nov.	Nov 2017
		3.2	Review of LoS for Class C roads in consultation with stakeholders (road users, MoWT etc)	R&D; Network Planning and Maintenance	June 18		The corporate strategy has defined the LoS for all roads and UNRA intends to harmonise the Strategy and AM Policy	Nov 2017
		3.3	Review and expedite the drafting of an Emergency Response Plan with clear allocation of responsibilities at	Maintenance	31 Oct 17	National framework available; to obtain the document and share and review	A framework for emergencies exists but UNRA is working on a detailed response plan with clearer actions and responsibilities.	Dec 2017

⁶ Following visit of K Gongera September 2017

No.	RAM Aspect		Action	Responsibility or Lead	Planned Completion Date	Status at Date: 25 Aug 2017	Progress 11 th Sept 2017	Revised Completion Timing
			national, regional and station levels					
		3.4	Recommend establishment of a Road Asset Management Unit and identification of champions and enablers	R&D + Network Planning	30 June 17	Currently being led by Network Planning; to review AM policy and Roads and Bridge Management Strategy on creation of new unit	The unit is under Network planning currently consultants have been engaged to collect road condition data and train personnel in UNRA on data collection.	Dec 2017
		3.5						
4	Funding	4.1	Advocate exploration of alternative sources of funding for maintenance	Corporate Strategy; Network Planning; R&D	31 Dec 17	Ongoing	On some of the current construction projects the contractor has been asked to do the maintenance of the road after completion of the project. The funding is built in the construction budget for the road.	Mar 2017
		4.2	Prepare observations report and recommendations for empowering and building confidence in station managers to make informed and timeous decisions in utilization of funds	R&D to Change Management; HR; Maintenance	31 Oct 17	To commence	UNRA to engage Director Maintenance on possible training initiatives. Dec 2017	Feb 2017
		4.3						
5	Managerial	5.1	Improve access to AM system components by all relevant staff to the level appropriate to function	Network Planning; Change Management; IT	31 Dec 17	Ongoing; plans being made to improve access to ROMARPS and bridges BMS	Ongoing, maintenance personnel at HQ have access to BMS. Network planning to look into it.	31 Dec 17
		5.2	Operationalise existing manuals and procedures	Maintenance	31 Dec 17	Ongoing		31 Dec 17
		5.3	Training for station managers in procurement procedures	HR	31 Dec 17	Still to commence, R&D to recommend training		Feb 2018
		5.4	Carry out 2 nd Round of GEM Road Condition Surveys	R&D; Network Planning	30 Sept 17	Plans advanced, resources already allocated	Beginning of October will commence 2 nd round of data collection.	Oct 2017
		5.5						
6	Technical	6.1	Build capacity at station level to implement AM procedures as set out in operational and technical guidelines	HR; Network Planning	31 Dec 17	Network undertaking planning training in data collection procedures as part Aurecon's exercise; building		31 Dec 17

No.	RAM Aspect		Action	Responsibility or Lead	Planned Completion Date	Status at Date: 25 Aug 2017	Progress 11 th Sept 2017	Revised Completion Timing
						the stations' capabilities		
		6.2	HQ to monitor personnel charged with collecting road condition data including validation of the output	Network Planning; R&D	30 June 18	Ongoing, refer to 6.1 above		June 2018
		6.3						
7	Operations	7.1	Propose a review of procurement procedures to make process more efficient and timeous	Procurement	31 Dec 17	Issue raised by most departments; R&D to make own observations known and present recommendations for review	GEM to recommend revision of procedures for procurement.	31 Dec 2017
		7.2						
8	Socio-economic evaluation	8.1	Evaluate baseline data	GEM-GAT	30 June 17	Process undertaken, some data will need verification in 2 nd round surveys	Completed July 2017	
		8.2	Collect 2 nd round data for GEM projects	R&D; EHSS	30 Sept 17	To commence 18 th Sept	Planned for Sept	30 Sep 17
		8.2						

Updated Action Plan – Kamuli District⁷

No.	RAM Aspect		Action	Responsibility	Planned Completion Date	Progress 12 th Sept 2017
1	General	1.1	Comment on Baseline Report	DE	07 April 2017	Eng Grace still to make comments
		1.2	Prepare for T2 Meeting in Livingstone (8-10 May)	DE + Team	30 April 2017	Done – D.E. HAD PROBLEMS AND DID NOT ATTEND
		1.3	Prepare for PIT Meeting in Nov. 2017		Oct 2017	D.E. and team to work on 2017 work plan and draft 2018 work plan based on experiences in 2017.
		1.4				
2	External	2.1	Develop a public consultation and communication plan	DE + Team + PR Dept.	30 April 2017	By October D.E plans to develop a detailed plan. Still relying on radio talk shows held every Tuesday and Wednesdays on radio.
		2.2	Sensitize the Works Committee on Road Asset Management benefits etc	DE	30 June 2017	
		2.3				
3	Institutional	3.1	Draft mission statement for roads and the AM Policy and present to CAO for onward presentation and adoption by Council	DE + Team	30 April 2017 Revised date - Oct 2017	Mission Statement has been developed and displayed at the office, the AM Policy still to be developed.
		3.2	Write to CAO/HR requesting filling the vacant posts	DE	30 April 2017	Request was made but still waiting for clearance from PSC and MoF
		3.3	Request more training on Asset Management aspects	DE	15 May 2017	Working on gap analysis before making request. By PIT request will be made.
		3.4	Investigate available options for rapid road roughness surveys	DE	30 April 2017	Liaise with UNRA to use the same technology which is appropriate for gravel roads.
		3.5	Finalise Level-of-Service definition and obtain buy-in by Council	DE	30 June 2017	Not yet done
		3.6				
4	Funding	4.1	Determine requirements – backlog maintenance	DE + Team	30 June 2017	Not yet done
		4.2	Request funds for road condition surveys, including purchasing road roughness measuring equipment	DE	30 Nov. 2017	Request made and expecting the provision this week. Does not include purchase of equipment
		4.3	Calculate Network Asset Value using GEM Spreadsheet	DE + Team	30 July 2017	Done, but results need verification.
		4.4	Assist Council and CAO to campaign for more funding and timely release by the Road Fund	DE	31 Dec. 2017	On going

⁷ Following visit of K Gongera September 2017

No.	RAM Aspect		Action	Responsibility	Planned Completion Date	Progress 12 th Sept 2017
		4.5				
5	Managerial	5.1	Request training in Whole Life Costing from AFCAP	DE	30 April 2017	Still to be done
		5.2				
6	Technical	6.1	Determine, document and justify needs for simple laboratory tests, indicate quantities of equipment and specs, write to CAO	DE + Team	30 June 2017	Still to be done. Planning to take over lab being used on the development project in Kamuli township/municipal
		6.2	Request training assistance in Construction Management, Force Account Operations, etc from AFCAP, GIS systems and Mapping	DE	30 April 2017	Still to be done
		6.3	Complete road condition data analysis	DE + Team	31 May 2017	
		6.4	Undertake 2nd round of Road Condition Surveys and analyse in preparation for PIT Meeting	DE + Team	30 Sept 2017	Planning to do it next week. 18 th Sept
		6.5				
7	Operations	7.1	Make equipment and workshop equipment needs known to CAO – number, specs, utilization estimates	DE + Team	30 April 2017	Still to write to CAO
		7.2	Further develop maintenance planning and reporting instruments using templates provided under GEM	DE	30 April 2017	Now in use
		7.3	Request information on best practices on technical audits of design and maintenance works, study	DE +Team	31 Dec. 2017	Done, Eng Charles provided a number of documents
		7.4				
8	Socio-economic evaluation	8.1	Undertake 2nd round of Social data collection and analysis in preparation for PIT meeting	30 Sept. 2017		Planning to do it next week- 18 th Sept
		8.2				

Updated Action Plan – Chongwe District⁸

No.	RAM Aspect	Action	Responsibility	Planned Completion Date	Status at Date:	Revised Completion Timing
1	Maintenance Funding	<ul style="list-style-type: none"> Request for maintenance funds to commence the maintenance works on the project roads and other roads by beginning of March 2017 	<ul style="list-style-type: none"> DES, DF 	<ul style="list-style-type: none"> 31 March 2017 	Not done yet. To submit a detailed road condition survey with photographs and bind the report for submission to NRFA.	By 20 th of Sept P.C. and PB will meet on the 12 th of Sept to finalize submission, hard copy directly to RF copied to MoLG & RDA
2	Road Condition Data Analysis	<ul style="list-style-type: none"> Undertake road and structure data analysis and prepare a prioritised road maintenance plan including quantifying backlog maintenance 	<ul style="list-style-type: none"> DES 	<ul style="list-style-type: none"> 30 April 2017 	Not yet done, PC and PB meet on the 12 th to prepare prioritized maintenance plan.	By the 20 th Plan finalized
3	Follow-up Road Condition Surveys and Data Analysis	<ul style="list-style-type: none"> Carry out follow up road condition surveys and analyse the data, include entire network 	<ul style="list-style-type: none"> DES, RDA 	<ul style="list-style-type: none"> 30 Sept 2017 	Request for funds has been made and PC& PB to carry out the repeat surveys before end of Sept	On Target
4	Formulation of Asset Management Policy	<ul style="list-style-type: none"> Complete drafting the AM Policy 	<ul style="list-style-type: none"> DES, RDA RO 	<ul style="list-style-type: none"> 31 May 2017 	Done, need to refine in line with the RDA Road Maintenance Strategy guidelines	20 Sept to complete and finalize
5	Formulation and document an Emergency Response plan	<ul style="list-style-type: none"> Prepare the emergency response plan for presentation to management and request for its approval 	<ul style="list-style-type: none"> DES 	<ul style="list-style-type: none"> 30 April 2017 	Still to start PC. L.M.	31 May 2017 REVISED TO 25 TH OF Sept
6	Capacity Building	<ul style="list-style-type: none"> Write motivation to AFCAP for training support in asset management Write motivation to AFCAP for support to attend a course at Stellenbosch support in asset management. 	<ul style="list-style-type: none"> RDA RO/CDC RDA RO/CMC 	<ul style="list-style-type: none"> 30 April 2017 30 April 2017 	P.C to draft a motivational letter to AFCAP	To be done by 20 th Sept P.C.
7	Asset management system	<ul style="list-style-type: none"> Incorporate GIS referencing system in data collection Develop an excel road based inventory for documentation of data 	<ul style="list-style-type: none"> RDA RO/CMC RDA RO/CMC 	<ul style="list-style-type: none"> May 2017 July 2017 	Done	P.C, PB & VM

⁸ Following visit of K Gongera September 2017

No.	RAM Aspect	Action	Responsibility	Planned Completion Date	Status at Date:	Revised Completion Timing
8	Maintenance Operations	<ul style="list-style-type: none"> Complete repair of the grader Commence the Road maintenance works. 	<ul style="list-style-type: none"> DES CDC 	<ul style="list-style-type: none"> Jan 2017 31 Mar 2017 April 2017 	Awaiting payment Done grader paid and now in good working condition	31 March 2017 15 April 17
9	Socio-economic data Collection.	<ul style="list-style-type: none"> Complete baseline data collection Carry out a repeat of the data collection 	<ul style="list-style-type: none"> DES DES/DDP 	<ul style="list-style-type: none"> January 2017 30 Sept 2017 	Done the baseline. Repeat to be done after road condition surveys in Sept	GEM TEAM
10	Prepare for T2 Meeting in Livingstone	<ul style="list-style-type: none"> Prepare presentation for AM Workshop 	DES/RDA	21 Apr 2017	DONE	
11	Prepare for PIT Meeting in Nov 2017	<ul style="list-style-type: none"> Prepare presentation on status of GEM project 	DES/RDA	31 Oct 2017	Sept preparation in progress	

