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Economic Growth through Effective Road Asset Management

Progress Report No. 2

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Project No. 10636A GEN2018A

3rd August 2017

CIVIL DESIGN SOLUTIONS

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Quality assurance and review table			
Version	**Author(s)**	**Reviewer(s)**	**Date**
Draft	Robert Geddes Camilla Lema Grace Muhia Kingstone Gongera	Charles Bopoto (Internal) Les Sampson (PMU) Jasper Cook (PMU)	28th July 2017
Final	Robert Geddes		3rd August 2017

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ReCAP Completion Report Template

ReCAP Database Details: Economic Growth through Effective Road Asset Management			
Reference No:	10636A GEN2018A	**Location**	Regional Africa
Source of Proposal		**Procurement Method**	
Theme		**Sub-Theme**	
Lead Implementation Organisation	Civil Design Solutions	**Partner Organisation**	
Total Approved Budget		**Total Used Budget**	
Start Date		**End Date**	
Report Due Date	17 July 2017	**Date Received**	28 July 2017

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 May-July 2017. During the reporting period, GEM[1] Advisory Team members visited Uganda to assist the Uganda National Roads Authority (UNRA) to finalise the collection and collation of the baseline data for the project and undertake gap analysis exercises based on the Road Preservation Pyramid. UNRA is now participating in the project as a separate road agency alongside Kamuli District.

Follow up was made with Tonkolili District in Sierra Leone, Chongwe District in Zambia and Kamuli District in Uganda for their draft asset management policies and progress reports on their action plans.

The GEM Advisory Team conducted a workshop on rural road asset management on 9th May at the Technology Transfer (T2) Conference in Livingstone, Zambia.

The set of indicators for the socio-economic study of communities in the project areas was streamlined following a visit of the Rural Transport Economist to Uganda. She was accompanied by the External Communications Expert, who drafted proposals for the introduction of an External Communications component to the GEM project. At the heart of socioeconomic 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 affects the wellbeing of rural communities and policies for rural roads development. The success of the exercise depends on the level of commitment by the survey teams to perform data collection effectively and exhaustively within the scope of available resources.

The GEM project work on a new composite index of road asset management performance was shared with DFID through the Rural Access Working Group of the Sustainable Mobility for All (SuM4All) initiative, and the preparation of the Baseline Global Mobility Report 2017.

The tool for analysis of road condition data and calculating the asset value of the road networks was proposed and shared with all participating country teams.

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

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.

During the next quarter, the GEM Advisory Team will continue to offer technical assistance to the project countries in various aspects including preparation of the AM Policies, completion of data analysis, asset valuation, selection of training courses, works programming and monitoring.

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
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
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

Contents

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-Sahara 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. 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-Sahara 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 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).

The project representatives of the participating countries are as follows:

Uganda:

- Uganda National Roads Authority: Dr Mark Henry Rubarenzya and Dr Rodgers Mugume
- 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:

- To be advised.

1.6 Measurement of Asset Management Performance

Performance in rural road asset management is being monitored against the key building blocks for sustainable asset management as follows:

- External environment (including political support)
- Institutional arrangements

- Funding
- Management structures
- Technical capacity
- Operations.

Baseline data in road asset management for each of the participating countries was collected in the period from September 2016 to May 2017. This included measurements of the road network condition and a self-assessment of road agency performance. These measurements will be repeated annually for comparison with the baselines presented in this report. This will enable a qualitative analysis of road agency performance under each asset management building block, and changes in performance over time.

The establishment of the baseline showed that significant gaps exist in pre-requisites for sustainable road preservation in the three project countries: Sierra Leone, Zambia and Uganda. Major weaknesses were reported under the external, institutional and funding building blocks. The Western Cape's situation is in contrast with the other participating areas as their asset management approach is in a more mature state. The results of the baseline survey are included in the Baseline Study Report (dated 27th April 2017). The data were updated for Kamuli, Chongwe and Tonkolili in the First Progress Report (29th May 2017) and, for UNRA, in this report.

The impact of the road condition on the rural economy and social well-being is being measured through conventional indicators measuring the cost and availability of rural transport. The purpose of the socio-economic component is to draw the attention of policy makers to the importance of rural roads in the local economy. The proposed "External Communications" component of the project will ensure that relevant findings of the study reach the decision makers in a format that draws their attention.

1.7 Advisory Team

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

- Team Leader: Rob Geddes
- Road Maintenance Expert: Kingstone Gongera
- Road Condition Monitoring Expert: Charles Bopoto
- Rural Transport Economist: Camilla Lema
- Institutional and Financing Expert: Mike Pinard
- Other Technical Experts including Grace Muhia (External Communications) and Gerrie van Zyl (Road Asset Management).

The University of Birmingham 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 May to July 2017.

2 Summary of Progress and Outcomes

2.1 Activities undertaken in the Quarter

The following activities were undertaken during the reporting period:

- Submission of first Quarterly Progress Report including report on March country visits.
- GEM workshop at Technology Transfer Conference in Livingstone, Zambia, on 9th May.
- Team Meeting in Livingstone on 9th May.
- Country visits to Uganda for UNRA AM self-assessment and Action Plan and preparation of visit report.
- Report back on country visit to Team Leader in Harare.
- Discussions with AfCAP Management on new External Communications component.
- Internal discussions on GEM Asset Management and Road Preservation Indices.
- Contribution to SuM4All debate on rural access indicators.
- Preliminary analysis of socio-economic analysis of data collected in rural trading centres in Uganda.
- Lecture by Kingstone Gongera at the Senior Roads Executive Course at University of Birmingham on Road Asset Management in June (see Annex I).
- Circulation of road condition analysis and asset valuation tools.
- Follow up with participating countries on Action Plans.
- Trial inputs in Uganda for the new External Communications component.
- Visit to Uganda to review the socio-economic indicators and prepare for the second round of data collection.
- Planning for Team Meeting in Johannesburg on 1st and 2nd August 2017.

2.2 Country Visit to Uganda for UNRA Self-Assessment

Kingstone Gongera and Charles Bopoto visited Uganda over the period 15th to 21st May 2017. This followed a decision by AfCAP management to include UNRA in the GEM project as a separate roads agency.

The objectives set for the visits were as follows:

- Undertake a mini-workshop on Asset Management with UNRA staff.
- Identify the gaps in the baseline data collected by UNRA.
- Review the responses to the AM self-assessment questionnaire with the country team.
- Assist UNRA to draw up an Action Plan for 2017.

A network of 505 km of rural roads in the Kamuli area has been identified by UNRA for GEM study purposes. The roads fall under the responsibility of the UNRA Jinja Station. An inventory and condition survey have been carried out on these roads, and socio-economic data collected in ten villages served by the project roads.

2.3 Country Visit to Uganda for Socio-Economic Study and External Communications Component

GEM Advisory Team members Camilla Lema (Rural Transport Economist) and Grace Wahome (Communication Expert) visited Uganda (the National Roads Authority – UNRA) and Kamuli District Council (KDC) from 3rd to 7th July 2017. The purpose of the visit was to conclude the socioeconomic baseline phase of the project and launch preparations for repeat surveys planned in 2017. In-depth discussions were held with UNRA and Kamuli District teams on the baseline indicators, associated data summaries and preliminary analysis. The aim was to enhance clarity of the indicators and underlying data requirements, data collection principles, data presentation and analysis. The discussions were instrumental in setting the basis for subsequent repeat surveys, as well as in refreshing the survey teams on the purpose of socioeconomic study in relation to rural roads asset management and link to policy development.

Site visits were conducted to UNRA and Kamuli District trading centres to complement the information gathered from team working sessions. Overall the meetings and site visits provided useful information enabling clarity of the baseline data and streamlining of indicators in the socioeconomic questionnaire.

2.4 Follow up of Road Agency Policy Development and Action Plans

The GEM advisers have been following up with the participating roads agencies on the preparation of their asset management policy statements and action plans. The following documents have been received and are included in the Annexes:

- Chongwe District: AM Policy Statement (Annex C).
- Chongwe District: Action Plan 2017. Status as at 21 July 2017 (Annex D).

2.5 Constraints to Achieving Project Objectives

The following is a summary of constraints to the project achieving its objectives:

- An unsupportive “external” environment in some project areas may constrain the roll out of the agency action plans.
- Inadequate internal capacity in the roads agencies to roll out the action plans, and inadequate access to training opportunities.
- Inadequate funds for road maintenance may result in lack of meaningful results from the socio-economic studies.

3 Road Management Index

3.1 Purpose

The GEM project is developing an index for assessing the capacity of a rural roads agency to undertake efficient and effective asset management. It is suggested that elements of this index approach could be of relevance to the development of a the SuM4All Global Indicators on progress towards the 2030 SDGs.

3.2 Pyramid

The index recognises that the asset management challenge faced by rural roads agencies in developing countries is multi-dimensional in nature. It is intrinsically linked to several inter-related factors that may be viewed as the building blocks of a pyramid. Political support for conducive policies and related legislation that commit to road preservation is the foundation of the pyramid. Compliance with this crucial element is necessary for ensuring that there is sufficient institutional capacity and a predictable and reliable source(s) of funding to enable the agency to plan and manage successful delivery of maintenance to preserve the investments made in road infrastructure.

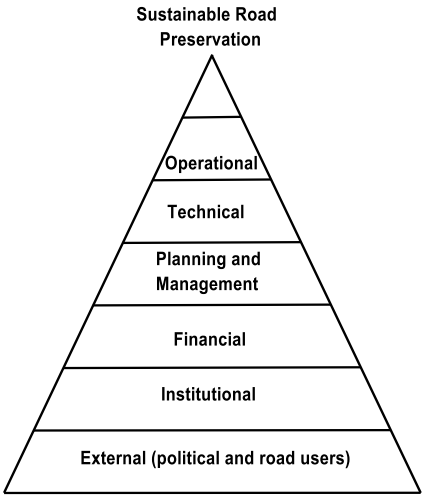


Figure 1: Road Preservation Pyramid

3.3 Definition of Index

The pyramid provides a rational basis for assessing the capacity of an agency to undertake efficient and effective asset management of its road network in terms of a Roads Agency Asset Maturity (RAAM)[2] index. This index is a composite measure of the agency's maturity across the six building blocks of the hierarchical Road Preservation Pyramid which can be assessed through a series of related questions. Since the building blocks contribute to different extents to such maturity, each one must be assigned a different, appropriate weighting. Based on a

[2] The name of the index and the appropriate weightings for each building block are under discussion.

maximum RAAM index of 4, the level of maturity of an agency to undertake asset management is proposed as follows:

- 0 to < 1: Not developed
- 1 to < 2: Minimum
- 2 to < 3: Core
- 3 to < 4: Mature
- 4+: Advanced

The RAAM index may be used by road agencies as a means of undertaking a gap analysis to determine the most pressing issues that need to be addressed to improve their capability to undertake asset management in a more efficient and effective manner.

4 Findings of UNRA Assessment

4.1 Key Observations

Key observations of the assessment of UNRA asset management were as follows:

- The framework for asset management is largely in place although it is biased towards Class A and B roads; the GEM project focuses on Class C roads and below.
- There is minimal involvement of stakeholders in the development of works plans or reporting on progress.
- Funding of road preservation is poor; network needs are far from being met and funds are disbursed late from the Road Fund.
- Planning processes have suffered due to poor funding of the network.
- Whilst planning and operational manuals are available they have largely not been utilised.
- The rural road network is not well referenced although it has been inventoried.
- The technical departments of UNRA are well defined with roles and responsibilities specified. The incumbents, who by and large are new in their posts, are striving to understand what is expected of them.
- There is an element of over-staffing in UNRA and this has led to inefficiencies in key operations due to the inherent bureaucratic processes.
- There are significant potential benefits that will accrue to road users if rural roads are considered as assets and considered in the same manner as higher-class roads.

4.2 Self-Assessment

The outcome of the self-assessment questionnaire scoring is summarised in Table 3.1 and the radar diagrams below. The summary of scores for each building block and the calculation of the Maturity Index are shown in Figure 5. It is noted that the assessment carried out jointly by UNRA staff and the GEM Advisory Team (GAT) in May 2017 produced significantly lower scores across most of the building blocks than the initial UNRA self-assessment. The GAT was able to provide clarity on the requirements for a "yes" answer against each question.

It is noted that the "Asset Management Maturity Index" is still evolving as a concept under the GEM research project. Discussion is on-going regarding the appropriate name for the index and how the relative weightings for the building blocks should be applied.

Table 1: Results of Performance Self-Assessment - UNRA

RAM Building Block	#	Item Assessed	Agency Score (Feb 2017)	May 2017 Joint Assessment
External	1.1	Stakeholder consultation	4	2
	1.2	Council and Parliament engagement	1	1
Institutional	2.1	AM policy development	3	2
	2.2	Level of service – existence	1	1
	2.3	Level of service - use	4	1
	2.4	Emergency response plan	1	2

RAM Building Block	#	Item Assessed	Agency Score (Feb 2017)	May 2017 Joint Assessment
	2.5	Staff roles and responsibilities	3	1
	2.6	Staff training and capacity building	4	2
	2.7	Staff salaries	1	4
Financial	3.1	Provision of road maintenance funding	1	3
	3.2	Budget funding against perceived need	0	3
	3.3	Asset valuation	2	0
	3.4	Budget funding - asset value	0	0
	3.5	Financial forecasting	2	0
	3.6	Accounting system	4	3
Managerial	4.1	AM system	4	1
	4.2	Maintenance intervention levels	4	0
	4.3	Maintenance plans - existence	4	3
	4.4	Maintenance plans - methods used	4	2
	4.5	Maintenance backlog	4	1
	4.6	Traffic forecasting	4	0
	4.7	Capital expenditure - basis for	4	2
Technical	5.1	Road referencing system - existence	3	4
	5.2	Road inventory - existence	4	2
	5.3	Road inventory data	3	2
	5.4	Road condition assessment	4	1
	5.5	Asset utilisation	4	1
Operational	6.1	Service delivery mechanisms	4	3
	6.2	Maintenance planning	4	0
	6.3	Auditing	3	2

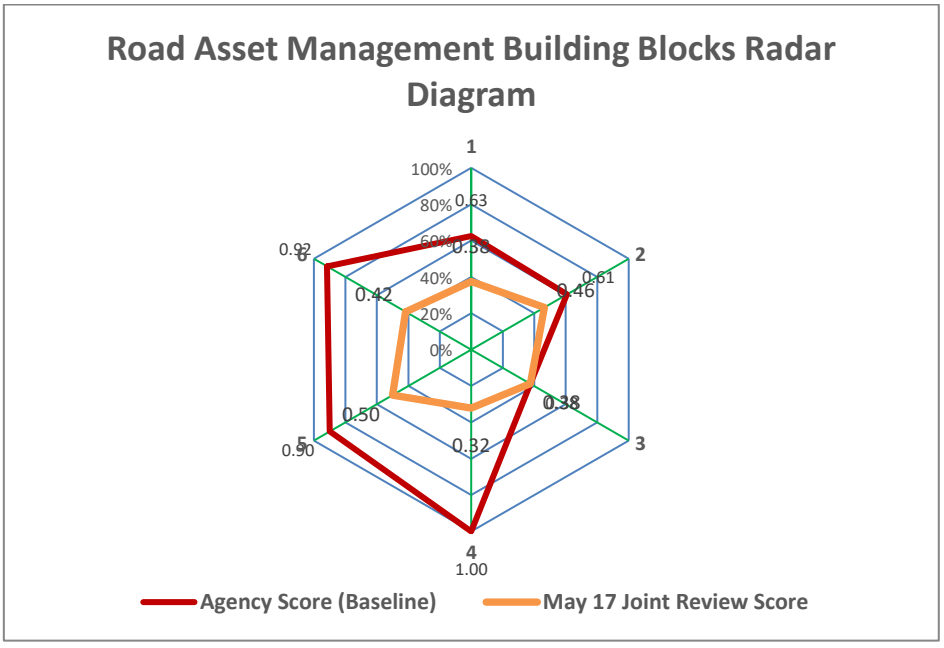


Figure 2: Radar Diagram for UNRA (Building Blocks)

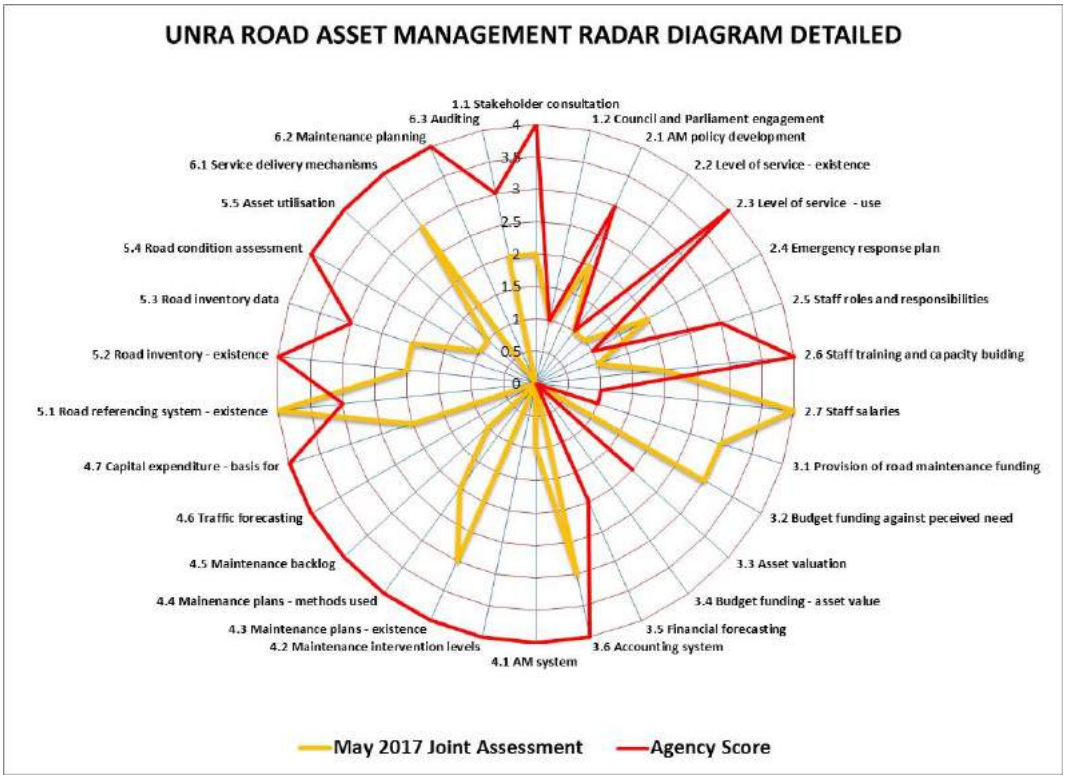


Figure 3: Radar Diagram for UNRA (All Questions)

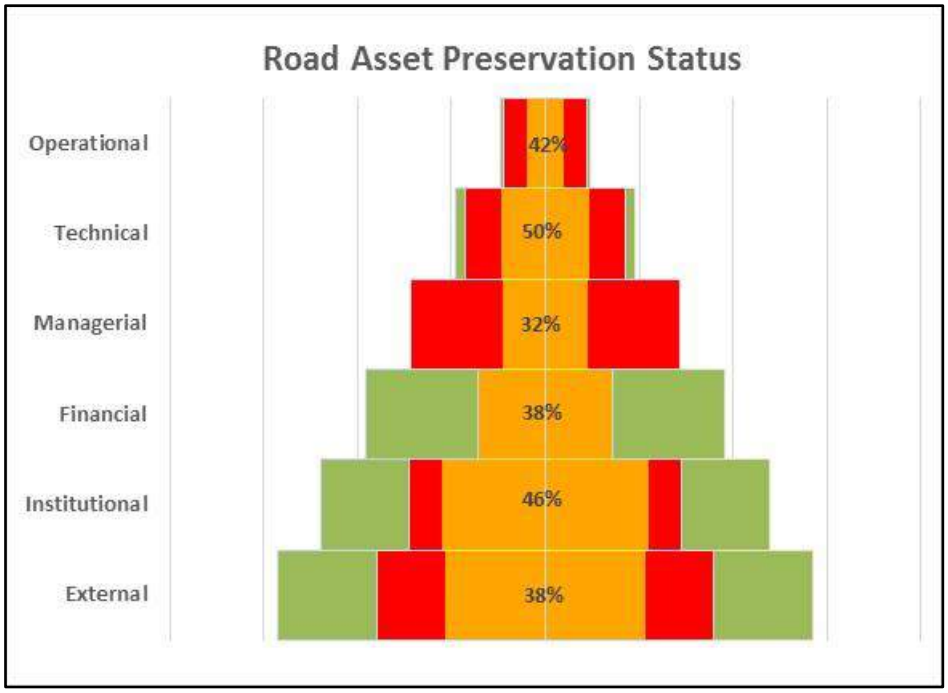


Figure 4: Road Asset Pyramid Representation (Building Blocks)

Scoring criteria:	
0	Not developed
1	Minimum
2	Core
3	Mature
4	Advanced

RAM Building Block	Agency Score (Baseline)	Advisory Team Score (Baseline)	May 17 Joint Review Score
External	0.63	0.63	0.38
Institutional	0.61	0.61	0.46
Financial	0.38	0.38	0.38
Managerial	1.00	1.00	0.32
Technical	0.90	0.90	0.50
Operational	0.92	0.92	0.42
Weighted Aggregated Score (GEM Maturity Index)			**1.6**
			Core

Weightings	Coefficient
6.00	0.29
5.00	0.24
4.00	0.19
3.00	0.14
2.00	0.10
1.00	0.05
21.00	1.00

Figure 5: Calculation of Maturity Index

4.3 UNRA Measurable AM Data

Table 2 includes the "Measurable Road Asset Management Data" for UNRA Jinja Station. The data were provided by Jinja staff. Where "benchmark" figures are given, these have been set by the roads agency. In most cases the "benchmark" values have not yet been set. It is expected that UNRA will introduce more benchmark values as the project progresses.

Table 2: AM Measurable Data - UNRA

Building Block	Data Item	Unit	Benchmark	2016	May 2017
External (Jinja Station)	Stakeholder communication tools available	No.		1	2
	Meetings with stakeholders – pre-budget	No.		1	1
	Meetings with stakeholders - post budget	No.		0	0
Institutional (Jinja Station)	Total establishment - engineers + technicians	No.	9	40	40
	Vacancies - engineers + technicians	No.		20	20
	Planned training programmes	No.		5	5
	Training courses undertaken	No.	1	2	2
	Station Engineer salary as % of private sector	%		110%	120%
Financial (Jinja Station)	Estimated project road network asset value	mUS$		15.5	15.5
	Total requirements - routine maintenance	mUS$		not known	not known
	Total requirements - periodic maintenance	mUS$		not known	not known
	Total requirements - rehabilitation/reconstruction	mUS$		not known	not known
	Total requirements - development	mUS$		not known	not known
	Budget - routine maintenance	mUS$		not known	not known
	Budget - periodic maintenance	mUS$		not known	not known
	Budget - rehabilitation/reconstruction	mUS$		not known	not known
	Budget - development	mUS$		not known	not known
	Funding - Road fund	mUS$		40	50
	Funding - Council funds	mUS$		not known	not known
	Funding - Donors	mUS$		not known	not known
	Funding - Others	mUS$		not known	not known
Managerial (Jinja Station)	Cost of asset management system	US$		not known	not known
	Annual maintenance cost of AM system	US$		not known	not known
	Network under routine maintenance	Km	876.2	not known	not known
	Network under routine maintenance as % of total	%	75.9	not known	not known
	Network under periodic maintenance	Km	220.3	not known	not known
	Network under periodic maintenance as % of total	%	19.1	not known	not known

Building Block	Data Item	Unit	Benchmark	2016	May 2017
	Network under rehabilitation	Km	32	not known	not known
	Network under rehabilitation as % of total	%	2.77	not known	not known
	Network upgrading	Km	37	not known	not known
	Network upgrading as % of total	%	3.21	not known	not known
	Network planned for periodic next 3 yrs	Km		not known	not known
	Network planned for rehabilitation next 3 yrs	Km		not known	not known
	Network planned for upgrading next 3 yrs	Km		not known	not known
Technical (Jinja Station)	Total network length in GEM project area	Km	1153.6	1000	1000
	Project network length	Km	505.5	300	300
	Network length - engineered/gravelled	Km	937.6	50	50
	Network length - non-engineered	Km	Nil	50	50
	No of culverts - pipes			not known	500
	No of culverts - box		Nil	not known	25
	No of low level drifts		Nil	not known	5
	No of bridges		1	not known	2
	No of structures inspected			not known	532
	No of visual inspection cycles - road		1	not known	1
	No of vehicle counts		1	not known	nil
	% Network - Very Good		5	not known	0
	% Network - Good		40	not known	10
	% Network - Fair		50	not known	25
	% Network - Poor		5	not known	25
	% Network - Very Poor		Nil	not known	40
	% Culverts - Very Good		2	not known	5
	% Culverts - Good		8	not known	50
	% Culverts - Fair		60	not known	20
	% Culverts - Poor		20	not known	15
	% Culverts - Very Poor		10	not known	10
	% Bridges - Very Good		Nil	not known	5
	% Bridges - Good		Nil	not known	30
	% Bridges - Fair		1	not known	30
	% Bridges - Poor		Nil	not known	30
	% Bridges - Very Poor		Nil	not known	5
	No of impassable points - > 2 days closed		Nil	not known	10
Operational (Jinja Station)	No of graders		2	none	none
	No of tractors		1	none	none
	No of water bowsers		1	none	none
	No of tippers		4	none	none
	No of pedestrian rollers		1	none	none
	No of self-propelled rollers		1	none	none
	Average annual utilization rate - graders	%	100	not known	not known
	No of roads supervisors		7	1	1
	No of foremen		Variable Item	3	3
	No of skilled and semi-skilled workers		Variable Item	not known	not known
	Total man-days of labor utilised			not known	not known

Building Block	Data Item	Unit	Benchmark	2016	May 2017
	No of roadworks tenders			not known	not known
	No of contracts awarded			not known	not known
	No of technical audits		1	nil	nil

4.4 Findings and Recommendations

4.4.1 AM Framework and Policy

UNRA has a well-developed Road Asset Management Framework, but is it geared mainly towards the management of higher class roads.

It has been indicated by UNRA that an Asset Management Policy has been prepared but is waiting for approval of the UNRA 5-year Corporate Strategy before it can be publicised or shared with the GEM team. The Policy needs to be examined to determine its applicability to lower tier roads which are the subject of the GEM project.

4.4.2 Asset Management System

UNRA over the years has attempted to introduce various computerised road management systems to assist in the planning and monitoring of works. Currently the network planning department is utilising the Deighton Total Infrastructure Management System (dTIMS). It was noted, however, that knowledge of the system resides in the few personnel running it at Headquarters level. Stations level personnel are not conversant with the system. It will be necessary to open the system to all level of users, albeit with strict access control. The system will assist in improving how the road asset is managed especially at station level.

4.4.3 Stakeholder Involvement

There is minimal involvement of road users and elected officials in the preparation of works plans and approval of budgets by UNRA at rural roads level. It is not clear how the ordinary person is involved or how feedback is provided on ongoing projects or programmes. The instruments for reporting back to stakeholders need improving. Consideration could be given to use of community radio, road shows, use of pamphlets, suggestion boxes, etc.

4.4.4 Road Inventory

The setting up of road inventories has been successfully undertaken in the project area and all the data has been entered into the data management software at national level. The data base would be more useful if it were accessible at station level.

4.4.5 Works Planning

Staff at station level do not have adequate skills and experience to plan when the works will be undertaken and are generally not able to prioritise projects for the limited funding available. Operational manuals are available for use by the staff though they are not utilised. It will be necessary for the GEM Advisory Team to assist the teams to become familiar with Life Cycle Costs Analysis leading to the generation of monthly, quarterly, yearly and multi-

year programmes of works. In addition, advice will be given on basic planning of daily maintenance works.

4.4.6 Works Monitoring and Reporting

Monitoring of road works calls for the strict adherence to set reporting protocols. The UNRA operational manuals provide well laid out systems for collecting information on a daily basis leading to preparation of Monthly, Quarterly and Annual Reports. Such reports would provide information on productivity achieved by works teams as well as unit costs. Urgent refresher courses are recommended for UNRA staff at station level: the GEM project area could be considered as a pilot for testing the training methods before wider roll-out.

4.4.7 Capacity Building in District Councils

A process of identification of skills gaps in District Councils is in progress by UNRA. Training courses will then be designed for the various levels and capacity building plans drawn up. Prioritisation should be given to training of technical staff, that is the engineers, technician, foremen, operators etc.

5 Socio-Economic Impact Monitoring

5.1 Objectives of the Visit to Uganda

Both UNRA and Kamuli District Council conducted socioeconomic baseline data collection separately in the period between November 2016 and January 2017. Respective data summaries including preliminary analysis results for Kamuli District were included in the GEM Baseline Study Report submitted in April 2017. However, there are still gaps in the data that need attention before proceeding with repeat surveys. Therefore, the purpose of the visit was to complete socioeconomic baseline surveys in preparation for repeat surveys in 2017.

Specific objectives were as follows:

- *Finalization of socioeconomic baseline data summaries.* This included clarification of data and improvement on presentation, discussions of results, preliminary analysis and implication for repeat surveys.
- *Preparation for repeat surveys.* This included agreement on headline and secondary indicators (i.e. prioritization and streamlining of baseline indicators in line with UNRA and KDC expectations), as well as planning for repeat surveys.
- *Field visit to project areas to inform repeat surveys*. This included a visit to four trading centres on UNRA project roads for familiarization, as well as three trading centres on Kamuli District roads that are currently under maintenance.

5.2 Program of Activities

The GEM advisory team country visit covered the following activities aimed to improve understanding of rural transport dynamics (focusing on road condition) in Kamuli District and how this contributes to socioeconomic wellbeing of the local communities.

- Introductory meetings with UNRA team in Kampala and KDC social and environmental sector team.
- Meeting with Road Inspector for Kamuli District Council to discuss progress in road maintenance on GEM project roads.
- Workshop with KDC social and environmental team – indicators and data requirements.
- Meeting with Boda boda (motorcycle taxi) Association Chairman (also a Councillor) for Kamuli District.
- Field visit to seven trading centres in Kamuli (four under UNRA and three under KDC).
- Meeting with Road Foreman in UNRA Office Jinja to discuss progress in road maintenance on project roads.
- Debriefing meeting with Kamuli District Engineer.
- Workshop with UNRA socioeconomic team and enumerators in Kampala.

5.3 Key Issues from Working Sessions with Kamuli District Teams

5.3.1 General transport situation in Kamuli District

- All roads under the GEM project connecting to ten trading centres are district classified roads that are qualified to receive roads fund for maintenance. The scope of GEM project does not directly cover issues of 'first mile' type of basic access infrastructure that remains a challenge for efficient rural travel and transport.
- The dominant mode of passenger and freight transport in Kamuli District is a boda boda due to availability and convenience, i.e. door-to-door service resulting in time saving. Thus, even if a boda boda would be more expensive than other modes in terms of passenger-km travelled the benefits on time savings would prevail over other modes of transport.
- It was noted that transport users in Kamuli district have a better perception of transport/travel time than of distance due to prevailing rural transport conditions, also common to other rural areas in Sub-Saharan Africa.
- Safety of boda boda operators is a major challenge in Kamuli district. Available electronic tracking gadgets that could help to reduce safety risk are not affordable by the majority of boda boda operators.

5.3.2 Transport costs and charges

- Key factors that determine the cost of transport and price charges for both passenger and freight transport in Kamuli district are the distance and demand. When transport operators are sure of getting passengers or freight in both outward and return trips they will set reasonable prices. However, if they are not certain they will charge more on the outward trip to compensate for empty return trip.
- Variation of transport charges: Between 1 km and a threshold of 40 km distance the price of freight transport remains more or less the same. Likewise, the price of passenger transport is the same between 1 km and a threshold of 5 km. E.g. Boda boda fare is UG Shillings 1,000 for a short travel of less than 5 km, and UGS 1,500 for the distance exceeding 5 km. However, night time transport - normally after 10.00 pm will attract more than three times the normal fare on a boda boda due to safety risk of riders. For instance, day time fare for Kamuli – Namwendwa road (15 km) is UGS 2,000 whereas night travel fare can go up to UGS 10,000.
- Association of boda bodas in the district lead the process to agree on transport charges and fares since there is no formal regulation of rural transport operations in Uganda. Discussions with the Chairperson, who is also a Councilor in KDC confirmed that prices are determined by the measure of kilometers, e.g. UGS 500/km to cover operational and replacement costs. This will yield an average profit of UGS 10,000 to 15,000 per day. When the road condition is in fair to good state the price remains stable. But when the road condition is poor operators tend to overcharge to compensate for excessive wear and tear.

5.3.3 Commodity prices

- Farm-gate prices are determined by buyers (middlemen/traders) because farmers have little or no bargaining power. However, when the road condition is good it boosts farmers bargaining power and vice versa.

When the roads are in bad condition more people conduct their transport operations by walking, leading to losses on agricultural produce and consequent price increases.

- Agricultural produce or food prices (particularly at farmgate) are mainly influenced by how much supply is there, and not only the road condition. For example, interview with traders in Nakabungu TC (under UNRA) that has a collection centre for maize revealed that during the harvest season (June - September) maize sell at UGS 700/kg, and go up to UGS 1,800/kg during off season.
- The number of shops and kiosks in/and around the trading centres depend on the purchasing power of surrounding village communities rather than the population factor.

5.3.4 Progress in road maintenance connecting to ten trading centres

Progress in road maintenance leading to better or worse (or status quo) road condition will have implication on the results of planned repeat survey for socioeconomic impact assessment in September/October 2017. By the time of GEM advisory team visit in Kamuli district, progress was less than 50% on the road network linking to ten TCs under the GEM project.

- Kagumba TC; connected by Nawantale – Kibuye road (22km). Routine maintenance – reshaping work to restore the camber was ongoing (11km completed), but delayed because of shortage of equipment.
- Wandegaya TC; connected by Kasambira – Bugulumbya road (9km). Routine maintenance works including reshaping completed in April 2017.
- Ndalike TC; connected by Bulopa – Namwendwa – Ndalike road (17km). Routine maintenance works completed in June 2017. However, problematic rocky areas along the road have not been addressed thus remaining a constraint especially in transporting the sick to a health centre located about 13km from the TC.
- All other road links to the remaining TCs are planned for maintenance in the first and second quarter of 2017/18. However, in some cases political demands make it difficult to adhere to plans. Also, progress is hampered by the shortage/breakdown of road repair machines, as well as shortage of maintenance funds whereby maintenance needs are met at around 25% only in Kamuli District.
- Vehicle overloading is a big challenge to road maintenance and preservation in Kamuli district. Roads are continually being damaged by heavy trucks of up to 40 tonnes whereas allowable design weight on district roads is < 20 tonnes. Roads done in November 2016 are in a bad state due to heavy vehicles transporting sand and

sugarcane. The problem is that there is no penalty for overloading on rural roads. Even though sugar companies contribute fuel for roadworks machines, but this is not sufficient to compensate for the damage exerted on the roads.

5.4 Planning for Repeat Survey – Kamuli District Council

During the two working sessions with the District social and environmental team the questionnaire for baseline survey was once again discussed in detail to ensure thorough understanding of the indicators and implication for onward data collection. This also enhanced understanding of the GEM project purpose and the link with rural roads development policies.

The ten trading centres will remain the focal point of observation for socioeconomic impact assessment repeat surveys. However, following exhaustive discussions with the Kamuli district team, alterations were made to the baseline survey questionnaire to match with reality. This is in consideration of progress and plans on road condition improvement, as well as time lapse between the last baseline survey and the planned repeat survey in September/October 2017. The following decisions were made:

- Omission of 18 indicators including all under education, health and agriculture, and two under road safety. It should be noted that these indicators have not been permanently removed from the study, but some or all will be subject for measurement as appropriate in the follow-up socioeconomic survey in 2018.
- Adjustment to three indicators on prices to take into account seasonality. For the repeat survey data will be collected on two cash crops – maize and rice, instead of three, i.e. coffee, maize and rice as in the baseline survey. This is due to the fact that the timing for the repeat survey in September will be off season for coffee.

Reduced version of priority indicators to be measured in the repeat survey in Kamuli District is attached as Annex B. The full version of baseline survey indicators is included in the GEM baseline study report of April 2017 and thus not attached to this report.

5.5 Key Issues from Working Sessions with UNRA Team

The workshop conducted with UNRA country team improved clarity on the importance of measuring socioeconomic impact of road asset management and road condition and how it relates to policy decisions on rural roads development. Going forward a summary of key issues (also based on the experience from baseline survey) that are imperative to improve the planned survey results is outlined below.

- Thorough familiarity with the questionnaire was emphasized for enumerators in order to come up with detailed data that will make sense in the analysis and results.
- Enumerators need to learn to appreciate the way of life of communities in/and around the trading centres and learn how to communicate with them effectively in a friendly language.
- Enumerators must be aware of the wealth of knowledge available at local level and pay attention to details pertaining to TCs and surrounding environments in the roads

links. This will improve data and analysis results, and build up a better understanding of transport situation in the respective areas.

- During the survey enumerators should apply their skills into what they are probing from the beginning of the exercise to ensure that information to be obtained is useful. This will also help to widen the scope of knowledge on the dynamics of rural transport in the survey areas. E.g. people will not necessarily use boda bodas, they will have a reason for that, so probe on it for better understanding.
- The survey team will need to conduct feedback meetings in the field in order to clarify early enough any discrepancies in the data, thus to improve the survey results.
- Time management is necessary during the survey to get the best out of resources to be invested in the repeat surveys.

5.6 Progress in Road Maintenance Connecting to Ten Trading Centres

As mentioned earlier progress in road maintenance and road condition has direct implication on the socioeconomic impact of the project. Traders interviewed during the field visit in Ndalike TC along Namwendwa – Ndalike road (24km) stated that the road condition matters a lot in terms of time and number of trips to be done. A road in good state will allow 10 trips per day, in fair state 5 trips per day, and in poor state 2 trips per day. The ultimate effect is on transport and commodity prices for consumers.

Since 2015 UNRA is undertaking programmed three-year term (2015 to 2018) maintenance contracts on rural roads, some of which are part of the GEM project roads. The program is said to have generally improved the road network condition substantially resulting in travel time savings and allowing more transport operators to serve the local communities.

- Kamuli – Namurumba – Iyingo (47km) – spot improvement done in June 2014. The road was affected by rains and is in fair condition.
- Iganga – Nakabugu – Bulopa (57km) – in good condition, with ongoing work under term maintenance contract.
- Kamuli – Namasagali (23km) – in poor condition, to be done in July – September 2017 quarter under force account.
- Kamuli – Namwendwa – Kaliro (46km) – half in good condition. Ongoing work under term maintenance contract.
- Kaliro – Nawakoike – Irundu (52km) – half in good condition, with ongoing periodic maintenance contract.
- Kamuli – Nawantale – Kidera – Bukungu (68km) – in good condition, with ongoing work under term maintenance.

It was not possible to determine the exact amount of work that has been done to improve the road network condition linking to ten TCs since the previous socioeconomic baseline survey in October 2016. However, a rough assessment from the progress outlines above indicates that close to 50% of roads were in fair to good condition during the time of visit.

5.7 Planning for Repeat Survey – UNRA

Detailed review of socioeconomic baseline questionnaire was done during the workshop with UNRA team to verify indicators and ensure that they are well understood by the data collection team in line with the GEM project purpose.

Figure 6: Meeting at UNRA

Clarification was provided on the baseline data for completeness in preparation for repeat survey planned in September/October 2017. Areas for clarification were highlighted and data gaps identified and discussed. E.g. clarification needed on the data pertaining to indicators no. 11 and 12 – *available trips on a normal and market day*, in relation to indicator 10 – *no. of private transport operators serving the trading centre*. Also, big variations observed in recorded prices need further explanation. E.g. the price of 1kg of maize is 1200 in Buyende, 500 in Bulopa and 200 in Namasagali. Also, the price of salt in Buyende (1km from district centre) is 800/kg, Bulopa (24km) is 1200/kg, and Namwendwa (15km) is 1500/kg, which may not be realistic.

Preliminary analysis of selected data was done using direct transport indicators primarily to demonstrate the need for clarity and completeness of data and the implication on the expected outcomes. An example is presented in the chart below with outlier in the fourth TC and missing data in the sixth TC, a situation that should be avoided as much as possible in the repeat survey.

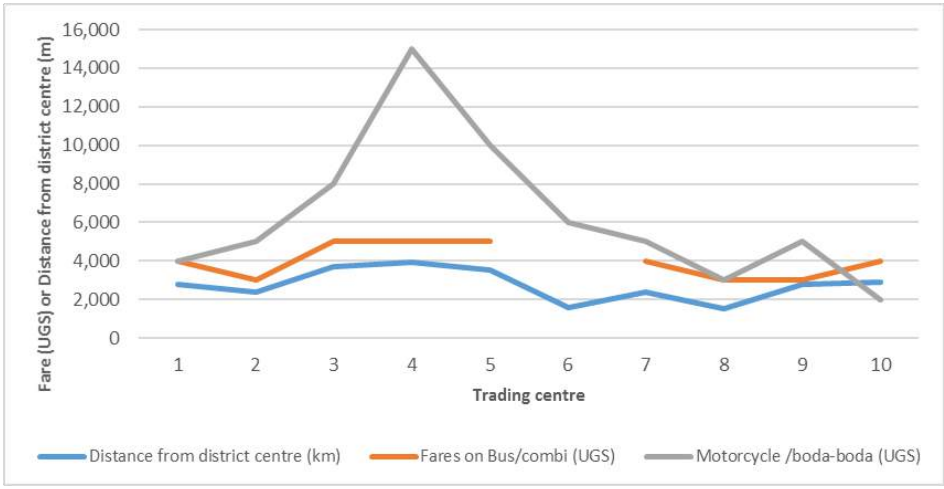


Figure 7: Comparison of Distance versus Fares on Public Transport (UNRA data)

The team agreed on the following:

- The baseline questionnaire must be put in order prior to the commencement of repeat survey. This will allow a realistic preliminary analysis of baseline data and a better comparison of trend with the repeat survey data.

- Questionnaire for the repeat survey (attached as Annex C) is the same as the baseline version, however, 4 indicators have been omitted, i.e. 2 on road safety, 1 for health, and 1 for agriculture.
- Adjustment to indicators on commodity prices to reduce a wide range of crops priced in difference trading centres that will complicate data analysis. The advice was to stick to 3 types of crops exported from the village, one of which is maize.
- After completion of repeat survey in the field each enumerator will input the data in the summary sheet to be provided by the GEM Rural Transport Advisor. This will enable early cleanup of data and clarifications that may be required at that stage prior to conducting the analysis.
- In terms of resource requirements, the last socioeconomic baseline survey by UNRA was done in seven (7) working days (including travelling) by a team of six enumerators working in pairs. Approximate time input to administer one questionnaire was six hours. Based on this experience the team recommended that ten (10) working days instead of seven will be required for the repeat survey. With additional one pair of enumerators that has been added to the original team of six the time will allow more probing leading to sound judgement of responses and realistic data.

5.8 Summary of Conclusions and Recommendations

- The outcome of the socioeconomic impact assessment study will depend on the commitment by the participating countries to invest their time and skills in the surveys. Commitment or laxity in data collection exercises will directly reflect on the analysis results.
- In view of the above the Team Leader for UNRA will do a refresher session on the questionnaire just before the repeat survey in liaison with the GEM advisory team. If possible, this could be done in Jinja UNRA office in order to enable Kamuli District team to participate and thus enrich the survey results for Uganda.
- UNRA and Kamuli District Council will communicate to GEM Advisory team the exact dates for the repeat surveys after their internal consultations. The plan is complete the exercise by mid-October 2017 to allow for analysis of trend and result to be ready before the PIT meeting in November 2017.
- Communication aspect needs to be integrated as part of the entire project cycle, from planning, design and implementation. This will enable many of the key parties to contribute and be part of a shared objectives and implementation plan. It became obvious that absence of collective ownership of the project was creating disjuncture between various participating stakeholders.

6 Communications Component of the GEM Project

6.1 Purpose of the Visit to Kamuli District

The Communications Expert participated in the visit to Uganda from 2nd to 7th of July 2017. The purpose was to gain some insights into the issues that might help the district and the Uganda National Roads Agency (UNRA) to prepare and implement a communication strategy in respect of their road management policies and plans.

6.2 Contents of Communication Plan

The communication plan would include:

- Deriving human stories from the socio-economic impact studies which show the impacts of the roads to local communities.
- Providing a platform through which the agency provides a diverse range of communication outputs appropriate to a variety of stakeholders in the country.
- Provide a mechanism through which communities and other stakeholders provide feedback to the roads agency regarding their policies, plans and performance.

The communication plan should use a creative mix of media strategies, borrowing from current good practice in the public and corporate sectors. It should be based on the understanding that development involves engaging with people as individuals or in their various stakeholder formations allowing them to articulate their concerns and values, while at the same time creating the necessary mechanisms for the road agencies to promote and communicate their objectives in a clear and transparent manner. Communication is a two-way process that encourages mutual learning and understanding and the crafting of a joint vision for the future. This is illustrated in Figure 8 below.

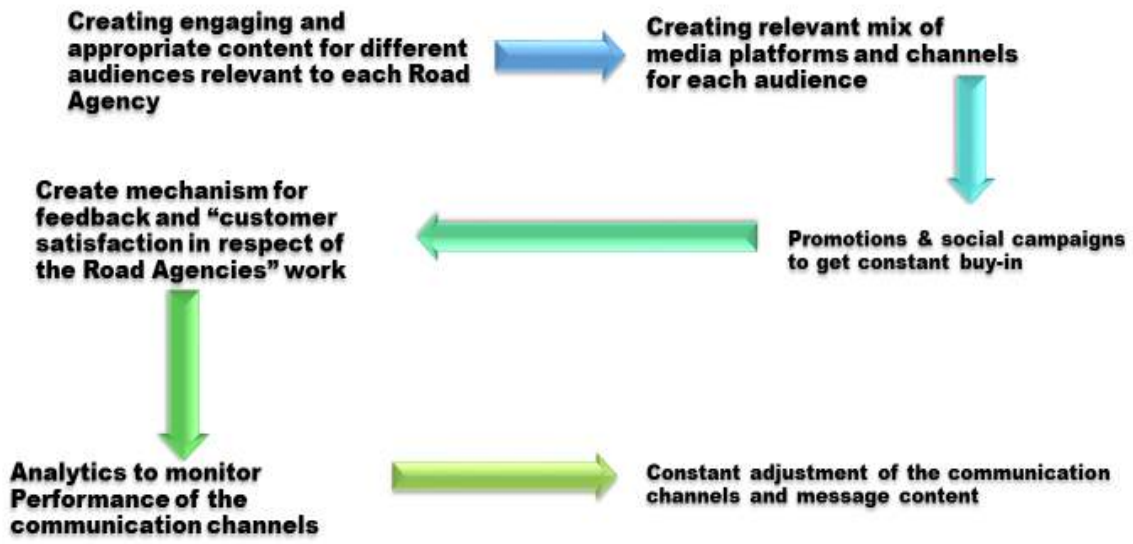


Figure 8: Developing an Integrated Communication Process

6.3 Findings

It was evident that for road asset management to be more successful, there is need to build channels for communication and engagement involving the various stakeholders and specifically, the beneficiary communities. For example, a significant gap exists between the stated objectives of a road improvement project visited in the district, and how the communities perceive it. It was evident that most local residents didn't know why the road is being improved.

In Bulopa District, a discussion was held with community members on the benefits of the roads. They got agitated wondering why the team was asking all these questions, while nobody has bothered to address their concerns. One concern involved the contractor dumping murram (gravel) on one lane of the road and leaving it there for three months. Another concern was about dust caused by the roads, which has led to many boda riders having eye problems and coughs. Women complained that their children were getting affected by the dust leading to chest coughs. They would like water to be sprayed on the roads to control the dust.

Figure 9: Murram dumped on the road in Namwendwa

Another concern that was observed is related to inadequate communication, outreach and sensitisation on issues affecting the roads. For example, it was learnt that trucks have been overloading due to lack of knowledge and guidelines on allowable weight load limits and absence of both official and or community enforcement. The District Environmental Officer reported that a 40-tonne truck transporting sand broke culverts and destroyed the road leading to its closure for more than a week.

It was also noted the roads have contributed to some positive impacts the community. New businesses have been establishment along the road and there is increased availability of boda transport.

One local entrepreneur that was met is Mr. Nelson who is a 'Rolex' maker (This is a delicacy in Uganda consisting of and egg rolled in a chapatti –Roll Eggs). On interviewing Mr. Nelson, he informed the team that before the improvement to the road he would earn 4 bags of wheat flour a day but now he earns 6 bags a day, and 8-10 bags on market days (Mondays and Wednesdays).

Figure 10: Mr. Nelson 'Rolex Maker'

The overall assessment is that communication needs to be integrated in road projects as part of the full project cycle, from planning, design and implementation. This would enable all of the key stakeholders to contribute to the project and be part of a shared objectives and implementation plan. The absence of collective ownership of projects creates a disjuncture between various participating stakeholders. Where there are significant gaps in knowledge of the various stakeholders, there is a need for training, capacity building and knowledge exchange.

6.4 Data Collection for GEM Project

During the visit to the UNRA offices in Kyambogo (Kampala), it became apparent that the enumerators engaged with collecting the baseline information and data for the GEM project had little understanding of the objectives of the project. They had been trained in-house by UNRA but were not sufficiently aware of the purpose for which the data was being collected, and how it is to be used. In addition to this, the absence of a consistent approach in translation of information from one language to another has resulted in distortions to the quality of data. A considerable amount of time was spent ensuring that the enumerators have a better understanding of the importance of the research tools, and how to effectively communicate with informants in the villages to attain good results. There is need for further training before the group is dispatched again to the field. This training can be carried out by UNRA experts.


Figure 11: Participants at UNRA offices in Kyambogo

6.5 Recommendations

Communication for development is a two-way process for sharing ideas and knowledge using a range of communication tools and approaches that empower organisations to take actions that truly improve the lives of the beneficiary communities. It is proposed to use a mix of modern and conventional media tools which are effective in interactive communication. These include the following:

6.5.1 A short documentary

This would be a nonfictional motion picture that shows a human story. It could document the roads under improvement and highlight the benefits experienced by the community due to this work. The documentary should be translated to vernacular to reach local communities. Production of such a video may be constrained by lack of funding in UNRA or from the District Council[3].

6.5.2 Websites & Social media

- A variety of national and international websites (AFCAP/IFRTD etc) are available to communicate effectively about projects.
- Social media sites can be used to bring awareness to the wider network of the transport community. The advantage of this tool is that the information can be disseminated in real time to reach larger interactive audiences.

Figure 12: Some Social media tools

6.5.3 Newsletters and Print Media

- Communities can be engaged using visual artworks in the form of posters and fliers with illustrations and creative copy to simply but effectively communicate the benefits of the project.
- Advertiser feature programmes on the local radio stations can discuss and highlighting the benefits of road projects to the community in vernacular language.
- A dedicated newsletter by UNRA would help to engage the key stakeholders
- Articles in the ReCAP newsletter would reach out to a wider community for awareness of the GEM project.

6.5.4 Community Discussion Forums

During the field visit it was noted the existence of Barazas. These are informal community discussion forums led by the chief and opinion leaders. Such meetings can be effective in the training, sensitisation, creating awareness and engagement of the community.

[3] There is currently no budget in the GEM Advisory Team contract for communications activities.

Figure 13: Community Discussion Forum (Barazas)

6.6 Sustainability of Communications Activities

The development and roll out by the roads agencies of a communications plan for the GEM project will depend on the following being in place:

- An officer in the agency with responsibility for communications
- A budget for communications activities.

The GAT team can provide guidance and advice on external communications but funding of the activities by AfCAP would not be sustainable. It is more likely that UNRA would be able to meet these requirements than the district roads agencies.

7 Progress of University of Birmingham PhD Research

7.1 Introduction

Two University of Birmingham (UoB) PhD candidates 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.

7.2 Peter Kome Research project

7.2.1 Objective

The overall aim of the research is to develop a computer based tool to predict the performance of road networks under different maintenance budget scenarios. The model will project future road condition using a probabilistic approach taking into account current condition, maintenance history, and recorded road deterioration. The intention is that the tool will support high level decision making and the argument for funds for road maintenance in a transparent way which is easily understood by decision makers and politicians alike.

The approach and general framework is based on a tool developed by UoB for the Transport Research Laboratory (TRL) which now forms the core tool for the UK's Highway Maintenance Efficiency Programme (HMEP). HEMP compliments any existing project-level pavement management systems or other economic tools such as RED[4] (or HDM[5]).

The research work is aiming to:

1. Develop deterioration models for road pavements (earth, gravel and low volume sealed roads) based on the defects and road condition recorded by the roads agencies as part of GEM.
2. Develop simple deterioration models for other road components which form a major part of the maintenance budget (culverts, drains etc).
3. Project the effect of future changes in traffic and climate to the deterioration models.
4. Develop probabilistic maintenance effects models for road pavements.
5. Incorporate risk and uncertainty into the process.
6. Incorporate the above into the existing framework and produce a fully working prototype system.

7.2.2 Methodology

The methodology for the research includes the following steps:

1. Literature review

[4] Road Economic Decision Model.

[5] Highway Design and Maintenance Model.

2. Development of the research methodology
3. Development of the basic conceptual model
4. Network data collection and analysis
5. Checking the accuracy and applicability of the model on a selected network (i.e. the GEM road networks).

7.2.3 Progress at the end of July 2017

Progress to date includes the literature review, development of the research methodology and initial development of the conceptual model. An abstract has been prepared for a paper to be submitted to the PIARC/SARF/IRF Conference on "Roads to Social and Economic Growth" to be held in Durban in October 2018 (see Annex G).

7.3 Robert Kakiiza Research Project

7.3.1 Objective

The overall aim of the research is to develop a model that prioritises rural road asset management based on physical and social/economic value. The specific objectives include:

- Comprehensive review of available literature
- Develop simple indicators and tools for measuring / Monetising economic and social impact of rural roads
- Develop simple tools for calculation of physical road asset
- Develop a model combining both the physical road asset measured through replacement cost and the value accrued from the economic and social benefits for local communities along the road under assessment
- Apply the models to assess achieved periodical incremental (and measurable) improvements due to asset management performance
- Assess future research needs.

7.3.2 Methodology

The research methodology includes the following:

- Literature review
- Data collection (GEM project data are being used)
    - Road condition data
    - Social and economic data
- Data analysis and findings
- Modelling for value calculation
- Sensitivity analysis
- Value calculation and ranking
- Value linkage to gap analysis
- Development of asset prioritization model based on value
- Formulation of simplified values based prioritization guidelines for use by policy makers, managers etc.
- PhD report writing and completion of the study.

The research time frame is summarised in the figure below.

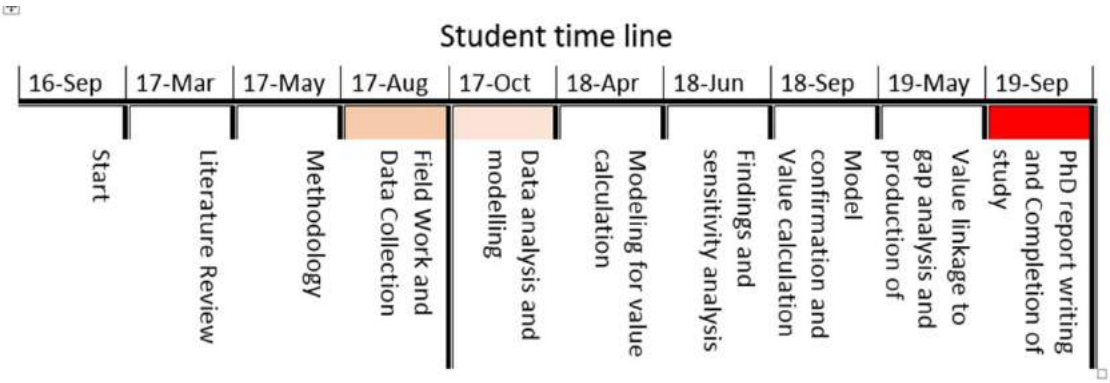


Figure 14: Time Line (R Kakiiza PhD Programme)

7.3.3 Progress

Progress to the end of July 2017 includes the following:

- Literature review covering:
  - Rural access roads in Sub-Saharan Africa
  - available literature and reports on road asset valuation, social economic benefit valuation, road maintenance valuation
  - Available Models for value calculations
  - Recent road management and maintenance programmes
- Data collected from the four GEM project areas
  - Availability and cost of transport
  - Prices of goods in the trading centre
  - Education - nearest school - Name of school:
  - Road Safety
  - Health - nearest health centre/clinic
  - Agriculture
  - Economic activities - non-farm
  - Road safety
  - Visual road condition.
- Initial analysis of data to compare variables (e.g. value of goods exported from a village versus road condition).

8 Planned Activities for Next Quarter

The following activities will be undertaken in the period August to October 2017:

- Team meeting in Johannesburg on 1st and 2nd August 2017.
- Visit of the Team Leader and Road Condition Monitoring Expert to Tanzania to follow up on self-assessment questionnaires submitted by three districts.
- Continued support to the participating roads agencies to meet the targets of their Action Plans and complete their Asset Management Policy Statements.
- Visit of Rural Transport Economist to Zambia and Sierra Leone to prepare for the next round of the socio-economic field surveys.
- Visit of the Road Maintenance Expert and the Road Condition Monitoring Expert to the participating countries to prepare for the next round of self-assessments.
- Preparations for the Project Implementation Team (PIT) meeting in the week of 20th November 2017 in Uganda.

Annex A: UNRA Visit Programme and List of Persons Met (May 2017)

Visit Programme

Day	Time	Activity
Mon. 15 May	14:30 16:00	• GAT Arrives • Introductory meeting to refine and agree on week's programme

Tues. 16 May	09:00 - 16:00	• Meetings in Kampala with relevant departments to discuss elements of RAM self-assessment:
		  ○ Maintenance; Regional Office
		  ○ Network planning
		  ○ Research

Wed. 17 May	8:00 – 11:00 11:00 – 13:00 14:00 – 16:00	• Travel to Jinja Station • Meeting with Head of Jinja Station and Team to discuss elements of self-assessment process, etc • Site visit to inspect typical works
Thurs. 18 May	07:30 – 10:00 10:00 – 13:00 14:00 – 16:00 16:00	• Travel to 2nd selected regional office • Meeting with selected Regional Office Manager and Team to discuss elements of self-assessment process, etc • Site visit to inspect typical works • Travel to Kampala
Fri. 19 May	10:00 – 13:00 14:00 – 15:30 15:30 – 16:30	• Discussion of UNRA self-assessment and GAT assessment outcomes • Action planning session • GAT Exit meeting
Sat. 20 May	07:00	• GAT Departs

List of Persons Met

NAME	DEPT/ORGANISATION	DESIGNATION
Eng. Dr. M.H. Rubarenzya	UNRA, Research and Development	Head
Leah Musenero	UNRA, Research and Development	Research Fellow
Emmerentian Mbambazi	UNRA, Research and Development	Research Fellow
Gilbert Kibuuka	UNRA, Jinja Station	Maintenance Engineer
Joseph Kakonge	UNRA, Jinja Station	Maintenance Engineer
Alex Otim	UNRA	Road Development Manager
Isaac Menya	UNRA, Network Planning	
Stephen Musumba	UNRA	
Richie Muzaale	UNRA	
Ignatius Halerimana	UNRA	
Anatoli Byaruhanga	UNRA Jinja Station	

Annex B: UNRA Asset Management Workshop Outcome[6]

POLICY ASPECT	GUIDING NOTES	OUR ANSWERS	ACTION WE CAN TAKE	WHO LEADS, WHO HELPS?	DATE TO FINISH ACTION?
THIS IS OUR UNDERSTANDING OF ROAD ASSET MANAGEMENT (RAM)!	Definition of Road Asset Management?? What is our understanding of RAM?	• Keeping roads in good order • Maintain performance • LoS defined • Planning, prioritising investment • Knowing the status of the roads – good, fair, poor • Sustainable funding, internal financing (not relying on external funding)	•	•	•
BENEFITS THAT CAN ACCRUE FROM EFFECTIVE RAM?	Suggest and list	• Improved and sustainable access to social services • Economic development • Increased trade • Improved access to basic services • Uplift standard of living • Travel time saving • Access to information • Safety • Lower price of goods, commodities and services • Improved health • Improved organisational image • Improved employment through local participation	•	•	

[6] It is expected that the roads agency will complete missing sections of this table in their own time.

POLICY ASPECT	GUIDING NOTES	OUR ANSWERS	ACTION WE CAN TAKE	WHO LEADS, WHO HELPS?	DATE TO FINISH ACTION?
		• Cost savings in maintenance expenditure			
OUR RAM **AIMS/OBJECTIVES?**	Sustainable development? Safety? Target Level of Service?	• Build public trust • Value for money • Achieve desired level of service by Class (Speed, riding quality) • Enforcing of axle load limits • Achieving all weather access • Consistent provision of road full width for use • Prolong the lifespan of the asset through regular maintenance • Improve road safety • Standardise interventions • Maximum stakeholder involvement • Lower vehicle operating costs	•	•	•
OUR ORGANISATIONAL CONTEXT	Stakeholders? Which other organisation influences us? Legal requirements? Reporting requirements?	• Road users – motorists, pedestrians, cyclists, truckers • Funding agencies – Road Fund, EU, World Bank, donors, Govt of Uganda, Min of Finance • Politicians, the Executive, Legislature • Councillors, MPs, Local Authorities • MoW, NPA, NEMA, NFA, Min of Tourism, Min of Energy, Public Prosecutor and Disposal of Assets • Min of Defence, Office of the President	•	•	•

POLICY ASPECT	GUIDING NOTES	OUR ANSWERS	ACTION WE CAN TAKE	WHO LEADS, WHO HELPS?	DATE TO FINISH ACTION?
		• Min of Agriculture and Fisheries, Min of Lands • Uganda Police • Contractor, Consultants, Business Community • UNRA Act, Constitution, PPDA Act, Road Fund Act, Public Finance Act, NEMA Act, Gender and Labour Act, Equal Opportunities Act, Axle Load Control Regulations • Land Act			
THESE ARE OUR ROAD ASSETS AND WE VALUE THEM!	List these and indicate your perception of condition? How are we planning and providing these?	• Road signs, furniture, bridges • Pavement, culverts, gravel • Road reserve • Road markings • Equipment • Road formation • Offices and equipment	•	•	
OUR ENABLERS? WHO AND WHAT CAN MAKE EFFECTIVE RAM HAPPEN?	Funds? People? Leaders? Definition of roles and responsibilities?	• Road Fund • UNRA Exec Director • Parliament • UNRA, UNRA Management • Local Authorities • Min of Finance • Min of Works • PPDA	• Spruce up PPDA Act and procedure	•	•

POLICY ASPECT	GUIDING NOTES	OUR ANSWERS	ACTION WE CAN TAKE	WHO LEADS, WHO HELPS?	DATE TO FINISH ACTION?
		• Road Users			
OUR STRENGTHS	What are we good at as an organisation relative to provision and maintenance of roads?	• Competent staff • Good salary structures • Capacity Building Program in place? • Good data management systems – dTIMS • Maintenance section almost full staffed • High level stakeholder involvement and engagement			
OUR WEAKNESSES	What do we lack internally to the organisation vis a vis roads provision and maintenance?	• Funding poor • Lack of Asset Management Policy • Inadequate equipment • Unserviceable Equipment • Procurement delays • Procurement thresholds for regions not practical • Centralised procurement • Data management systems not fully operational • Lack of skilled personnel in the market to take up vacant UNRA posts • 40-50% vacancies in UNRA • Regional posts not filled – Technicians, Mechanics			

POLICY ASPECT	GUIDING NOTES	OUR ANSWERS	ACTION WE CAN TAKE	WHO LEADS, WHO HELPS?	DATE TO FINISH ACTION?
		• Human resources deficiencies to operate systems • Changing priorities • Political interference			

Annex C: Chongwe District: Draft AM Policy Statement

CHONGWE MUNICIPAL COUNCIL

DRAFT ASSET MANAGEMENT POLICY

INTRODUCTION

The purpose of the asset management policy is to demonstrate the Chongwe Municipal Councils commitment to the responsible management of Council's road assets. The policy sets the guidelines for implementing consistent asset management processes throughout the district.

This document will be subjected to further changes as deemed by members.

2. AIMS / OBJECTIVES OF THE POLICY

The aims/ the objectives of the policy is to ensure that adequate provision for services is made for the long-term management of Chongwe Municipal Council's Road assets by:

- Ensuring that Council's services and road infrastructure is provided in a sustainable manner, with the appropriate levels of service to residents, visitors and the environment.
- Implementing appropriate asset management strategies and appropriate financial resources for the preservation of Road assets.
- Creating and sustaining asset management awareness across the organisation through training and development.
- Creating and sustaining asset management awareness across the community and all the stakeholders at large.
- Meeting legislative requirements for asset management.
- Ensuring resources and operational capabilities are identified and responsibility for asset management is allocated.
- Demonstrating transparent and responsible asset management processes that align with best practice.
- Ensuring the accurate recording of asset information;
- Ensuring Maintenance of Council's Road Assets.

Scope of the Policy

This asset management policy applies to all Road assets, owned by the Municipal Council. Council's Road assets identified are:

- Road signs,
- Drainage systems,
- Pavement,

- Guard rails,
- Lighting,
- Pavement,
- Culverts,
- Bridges,
- Offices, workshops,
- Vehicles, equipment

Responsibilities

The following Critical roles and responsibilities are identified in the management of this policy:

The Council

Council is responsible for:

- Providing stewardship of the assets;
- Adopting a corporate asset management policy and strategy;
- Considering the impact of financial and service level decisions on other Council assets.

Asset Management steering group

The Asset Management Steering Committee is responsible for:

- Reviewing the Asset Management Policy and strategy and ensuring integration with the Long Term Financial and strategic Plan.
- Monitoring the implementation of asset management policy, strategy and plans.
- Developing and reviewing processes and practices to ensure assets are managed effectively.
- Ensuring that asset information is captured and updated.

Council Management

The Council Management is responsible for:

- Allocating resources to the Implementation of the Asset Management Strategy and Plans.
- Ensuring that actions identified in the Asset Management Strategy (improvement plan) are completed within timeframes.
- Developing and implementing maintenance and capital works programs in accordance with the integrated planning and reporting documents.
- Delivering levels of service to agreed standards.
- Managing infrastructure assets in consideration of long term sustainability.
- Presenting information to Full Council on lifecycle and costs; and

- Ensuring that individual asset management responsibilities are identified in staff work plans.

Policy Statement

Asset Management Principles

- An Asset Management Strategy exists for implementing systematic asset management and appropriate best practice throughout Council.
- All the relevant legislative requirements together with social, political and economic environments are to be taken into account in the management of our assets.
- The asset management plans are developed and updated for each road asset class. The plans are to be informed by community consultation and financial planning and reporting.
- The Council to develop an inspection process for each road asset class to ensure agreed service levels are maintained and to identify asset renewal priorities.
- Service levels will be developed and defined in each asset management plan. The service levels will form the basis of annual budget estimates.
- The Future service levels will be determined in consultation with the community.
- Renewal plans will be developed based on service levels, condition and risks.

Policy implementation

Chongwe Municipal Council's Road assets will be managed in the most cost effective manner, driven by defined service levels and performance standards. This will require ongoing assessment of the following key issues:

a) community expectations;
b) strategic and corporate goals;
c) long term financial model; and
d) Legislative requirements.

All the above will only be achieved through strategic planning, service level review, output review, and development/ implementation of the asset management framework.

Annex D: Chongwe District: Action Plan 2017. Status as at 21 July 2017

No.	RAM Aspect	Action	Responsibility	Planned Completion Date	Status to Date:	Revised Completion Timing
1	Maintenance Funding	• Request for maintenance funds to commence the maintenance works on the project roads and other roads by beginning of March 2017	• DES, DF	• 31 March 2017	• A request was sent and funds are yet to be released • Follow ups are being made to ensure works commence before the onset of the rains	Ongoing
2	Road Condition Data Analysis	• Undertake road and structure data analysis and prepare a prioritised road maintenance plan including quantifying backlog maintenance	• DES	• 30 April 2017	• In Progress, this activity may be completed before the revised completion date	18 August 2017
3	Follow-up Road Condition Surveys and Data Analysis	• Carry out follow up road condition surveys and analyse the data, include entire network	• DES, RDA	• 30 Sept 2017	• Still to start, this activity may start earlier than the planned date	• 30 Sept 2017
4	Formulation of Asset Management Policy	• Complete drafting the AM Policy	• DES, RDA RO	• 31 May 2017	• A draft AM Policy was submitted to the advisory team • The policy is awaiting approval and adoption by the council	

No.	RAM Aspect	Action	Responsibility	Planned Completion Date	Status to Date:	Revised Completion Timing
5	Formulation and document an Emergency Response plan	• Prepare the emergency response plan for presentation to management and request for its approval	• DES	• 30 April 2017	• Still to start, this activity may be completed before the planned date	18 August 2017
6	Capacity Building	• 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.	• RDA RO/CDC • RDA RO/CMC	• 30 April 2017 • 30 April 2017	• Motivation was prepared and it is awaiting approval by National AFCAP Coordinator • Motivation was prepared and it is awaiting approval by National AFCAP Coordinator	• 30 July 2017 • 30 July 2017
7	Asset management system	• Incorporate GIS referencing system in data collection • Develop an excel road based inventory for documentation of data	• RDA RO/CMC • RDA RO/CMC	• May 2017 • July 2017	• GIS referencing system was adopted in the data collection method • An excel road based inventory was developed	
8	Maintenance Operations	• Complete repair of the grader • Commence the Road maintenance works.	• DES • CDC	• Jan 2017 • 31 Mar 2017	• Grader repair is Done • Pending awaiting funds	31 March 2017 15 April 17
9	Socio-economic data Collection.	• Complete baseline data collection • Carry out a repeat of the data collection	• DES • DES/DDP	• January 2017 • 30 Sept 2017		

No.	RAM Aspect	Action	Responsibility	Planned Completion Date	Status to Date:	Revised Completion Timing
10	Prepare for T2 Meeting in Livingstone	• Prepare presentation for AM Workshop	• DES/RDA	• 21 Apr 2017	• The PIT prepared and attended the workshop at the 8th T2 conference	
11	Prepare for PIT Meeting in Nov 2017	• Prepare presentation on status of GEM project	• DES/RDA	• 31 Oct 2017		

Annex E: Programme of Visit and List of People Met (July 2017 visit)

Program of Visit

Itinerary	Date	Time /Logistics	Issues Discussed
Arrival in Uganda	2/7/2017	Night in Kampala	
Meeting with UNRA Travel to Kamuli District & meeting	3/7/2017	9.00 – 11.00 am 2.00 – 5.00 pm	✓ Introductory meeting ✓ Discussion of results /preliminary analysis & implication for repeat surveys
Kamuli District	4/7/2017	9.00am – 4.00pm	✓ Agreement on indicators for repeat survey ✓ Planning – repeat survey
Field visits – UNRA & Kamuli District trading centres Meeting in UNRA Jinja Office	5/7/2017	10.00am – 3.00 pm 4.00 – 5.30 pm	✓ 4 representative TCs on UNRA roads; ✓ 3 TCs on Kamuli District roads ✓ Discussion on the status of road maintenance on UNRA project roads
Workshop in UNRA	6/7/2017	9.00 am -	✓ Clarifications on data summary sheet ✓ Discussion of results /preliminary analysis & implication for repeat surveys
Workshop in UNRA	7/7/2017	Workshop	✓ Agreement on indicators for repeat survey ✓ Planning - repeat survey ✓ Discussion of next steps & Conclusion
Departure	8/7/2017		

List of People Met

NAME	Designation/Organisation	Contact
Dr. M.H. Rubarenzya	Head, Research & Development Dept. UNRA	markhenry.rubarenzya@gmail.com
Dr. Rogers Mugume	Research Fellow, Research & Development Dept. UNRA	Rodgers.Mugume@unra.go.ug
Dr. Emmerentian Mbambazi	Research Fellow, Research & Development Dept. UNRA	Emmerentian.Mbabazi@unra.go.ug
Dr. Leah Musenero	Research Fellow, Research & Development Dept. UNRA	Leah.Musenero@unra.go.ug
Edith Bateganya	Sociologist, UNRA	Edith.bateganya@unra.go.ug
Anatoli Byaruhanga	Maintenance Foreman, UNRA Jinja Station	
Eng G. Mulondo	District Engineer, Kamuli District Council (KDC)	
Robert Isarirye	Head of Department, Natural Resource Office, KDC	alupar@yahoo.com
Sam Bakaki	Senior Environmental Officer, KDC	sbakaki@yahoo.co.uk
Mugeere Charles	Road Inspector, KDC	
Godfrey Nasawe	Councilor, and Chairperson of Bodaboda Association, Kamuli District	

In addition to the above list, 9 UNRA staff, company liaison officers /enumerators participated in the 2-days workshop.

Annex F: Kamuli District Repeat Survey Questions

Questions	Units
General	
Name of trading centre/village	
GPS coordinates	
Map coordinates	
Population	No.
Distance from nearest paved road	Km
Distance from district centre. *Name of centre: Kamuli*	Km
Average travel time to district centre (by different modes of transport) *Boda*	Min
Name of the road serving the trading centre/village	
How many days of the year is the road closed due to rains?	
Availability and cost of transport	
No. of private transport operators serving the trading centre/village	
Light vehicle	No.
Bus/combi	No.
Motorcycle (boda-boda)	No.
Freight transport /trucks (10 tonnage)	No.
No. of available trips to district centre per day (on a normal day)	
Light vehicle	No.
Motorcycle (boda-boda)	No.
Bus/Taxi	
Freight transport /trucks (10 Tonnage)	No.
Fares on public transport to the district centre (passenger-km)	
Light vehicle	UGX
Bus/taxi	UGX
Motorcycle (boda-boda)	UGX
Cost of freight transport to the district centre (ton-km)	
Truck (10 tons)	UGX
Light vehicle (…tons) Taxi fare per passenger	UGX
IMTs /motorcycle (…tons) one person per freight	UGX
Prices of goods in the trading centre	
Prices of two items exported from the village (rice, maize)	
Maize (maize grains per Kg)	UGX
Rice (processed rice per Kg)	UGX
Prices of three items imported into the village (salt, sugar, soap)	
Salt (A sachet)	UGX
Soap (1kg White Star Soap)	UGX
Sugar (1kg unpacked)	UGX
Road Safety	
No. of accidents on the road serving the trading centre /village for past year	No.
Price of goods in the district centre (same items as priced in the village/trading centre)	
Prices of the two items exported from the village	
Maize (maize grains per Kg)	UGX
Rice (processed per Kg)	UGX
Prices of the three items imported into the village	
Salt (A sachet)	UGX
Soap (1kg White Star Soap)	UGX
Sugar (1kg unpacked)	UGX

Annex G: Kamuli District Repeat Survey Questions

Questions		Units
General		
1	Name of trading centre/village	
2	GPS coordinates (utm wgs84)	
3	Map coordinates (utm arc1960)	
4	Population (from the census results)	
5	Distance from nearest paved road (someone must drive through)	km
6	Distance from the nearest district centre. *Name of centre: Kamuli*	km
7	Average travel time to nearest district centre (by different modes of transport)	
	1. light vehicle	Min /Hrs
	2. Bicycles	Min /Hrs
	3. Boda boda	Min /Hrs
	4. Taxi	Min /Hrs
	5. Other (specify) - Truck	
8	Name of the road serving the trading centre from the district centre	
9	How many days of the year is the road closed due to rains?	Days
Availability and cost of transport		
10	**No. of private transport operators serving the trading centre**	
10.1	Light vehicle (Small vehicles park operators)	No.
10.2	Bus/combi (taxis park operators)	No.
10.3	Motorcycle (boda-boda) (different boda boda parks)	No.
10.4	Bicycles (bicycle Operators)	No.
10.5	Freight transport /trucks (lorry / trucks parks operators)	No.
11	**No. of available trips to district centre per day (on a normal day)**	
11.1	Light vehicle (Small vehicles park operators / Administrative office)	No.
11.2	Bus/combi (taxis park / administrative office)	No.
11.3	Motorcycle (boda-boda) (different boda boda parks)	No.
11.4	Freight transport /trucks (lorry / trucks parks)	No.
12	**No. of available trips to district centre per day (on a market day)**	
12.1	Light vehicle (small vehicles park)	No.
12.2	Bus/combi (taxis park)	No.
12.3	Freight transport /trucks (lorry / trucks parks)	No.
12.4	Motorcycle (boda-boda) (different boda boda parks)	No.
13	**Fares on public transport to the district centre (passenger-km) in Uganda shillings**	
13.1	Light vehicle (small vehicles park)	UGS
13.2	Bus/combi (taxis park)	UGS
13.3	Motorcycle (boda-boda) (different boda boda parks)	UGS
13.4	Bicycles (bicycle Operators)	UGS
14	**Cost of freight transport to the district centre (ton-km)**	
14.1	Truck (….tons)	UGS
14.2	Light vehicle (…tons)	UGS
14.3	IMTs /motorcycle (…tons)	UGS
	Bicycles (bicycle Operators)	UGS
Price of goods in the trading centre in Uganda shillings		

15	**Prices of three items exported from the village (e.g. potatoes, rice, maize, charcoal) (To be established from the sub-county extension staff)**	
15.1	*Item 1 (name)- state units: Maize*	Per kg
15.2	*Item 2 (name)- state units: Millet (M); Coffee (CO); Cotton (CN); Cassava (CA); Sweet potatoes (Sp) Groundnuts (GN)*	Per kg
15.3	*Item 3 (name)- state units: Rice (R); Sugarcane (Sc); Cassava (CA); Beans (B)*	Per kg
16	**Prices of three items imported into the village (sugar, salt, soap) (To be established from the sub-county extension staff)**	
16.1	*Item 1 (name)- state units: Sugar*	Per kg
16.2	*Item 2 (name)- state units: salt*	Per kg
16.3	*Item 3 (name)- state units: soap*	Per kg
Education- nearest school (1km) - *Name of school: (to be collected from the nearest school)*		
17	Average time to reach the nearest school from the trading centre by different modes of transport indicate the different modes of transport.	
	1. Walking	Min/Hrs
	2. Boda boda	Min/Hrs
	3. Bicycle	Min/Hrs
	4. Others **(specify)**	
18	No of pupils enrolled at the nearest school (gender disaggregated) from the school	Male
		Female
19	Average monthly pupil attendance rate for past year (gender disaggregated)	Male
		Female
20	No of staff employed at the school (gender disaggregated)	Male
		Female
21	Average monthly staff attendance rate for the past year (gender disaggregated)	Male
		Female
Road safety (to be established from the DEOs, CDOs, SASs and the traffic police officers)		
24	No. of accidents on the road serving the trading centre /village for past year	No.
Health - nearest health centre/clinic- *Name of health centre/clinic and distance-km from trading centre*: (to be established from the Health facility)		
25	Average time to reach the nearest health centre (3 / 4) from the trading centre by different modes of transport	
	1. light vehicle	Min /Hrs
	2. Bicycles	Min/Hrs
	3. Boda boda	Min/Hrs
	4. Taxi	
	5. Other (specify) Walking	Min/Hrs
26	Average no of health workers at health centre each month for the past year (gender disaggregated)	Male
		Female
27	Average no of patients treated each month for the past year (gender disaggregated)	Male
		Female
Agriculture		
30	Price of main cash crop produce in the district centre	Per kg
31	Price of main cash crop produce in the village/trading centre	Per kg
32	Farm-gate price of main cash crop produce in the village	Per kg
Economic activities - non-farm		
33	Factories, local industries /cottage industries in the village/trading centre (type & no.) create a table for type and number	

34	No. of shops / kiosks in the village/trading centre	No.
Price of goods in the district centre (same items as priced in the village/trading centre)		
35	Prices of the three items exported from the village	
35.1	*Item 1 (name)- state units: Maize*	Per kg
35.2	*Item 2 (name)- state units: Millet (M); Coffee (CO); Cassava (CA); Groundnuts (GN)*	Per kg
35.3	*Item 3 (name)- state units: Rice (R); Sugarcane (S); Cotton (CN); Sweet potatoes (Sp)*	Per Kg
36	Prices of the three items imported into the village (sugar, salt, soap)	
36.1	*Item 1 (name)- state units: Sugar*	Per kg
36.2	*Item 2 (name)- state units: Salt*	Per Kg
36.3	*Item 3 (name)- state units: Soap*	Per kg

Annex H: Abstract of UoB Paper submitted to PIARC/IRF/SARF Conference

A Stochastic Model for Rural Road Maintenance

Rural road maintenance in Sub-Saharan Africa is underfunded as the benefits are less tangible than investment in building new roads or funding strategic or national road development. As a result, investment in rural road maintenance is often inefficient, not transparent and motivated by non-needs driven factors. This is having a significant effect on the socio-economic development of rural communities. To ameliorate this, there is a need to present the benefits of rural road maintenance in a concise, transparent and straightforward manner that is meaningful to politicians and senior decision makers.

The research describes work that was carried out to develop a probabilistic tool which is capable of determining the effects of maintenance on road asset condition over time at the network level under budget constraints. The tool consists of Markov based rural road asset deterioration and maintenance effects models. These have been determined as a function of climate and traffic for a variety of assets and geo-environments in the region. The robustness and viability of the tool is demonstrated via data collected from three Sub-Saharan countries.

Annex I: Presentation to the Senior Roads Executive Course

Rural road Asset management in Sub Saharan Africa.

KINGSTONE GONGERA
INDEPENDENT CONSULTANT

State of rural roads in Sub Saharan Africa

Damaged river crossing in Kano State in Northern Nigeria. After construction the road never received any funding for maintenance

State of rural roads in Sub Saharan Africa

Rural feeder road in Sierra Leone. During the rainy season this road is completely closed and not passable due to lake of maintenance. Lack funding has been given as the main reason for neglect.

State of rural roads in Sub Saharan Africa

Limited funding and late release of budget in Kamuli, Uganda district hs left this road with bottlenecks during the rainy season

5

State of rural roads in Sub Saharan Africa

Access to farmland limited

- Transporting farm produce using animal drawn carts hampers growth in production

6

State of rural roads in Sub Saharan Africa

Southern Ethiopia rural feeder road damaged after the rains – no funding available for maintenance.

7

State of rural roads in Sub Saharan Africa

So what is the problem with rural road asset management in Sub Saharan Africa and what can be done about the management of rural roads?

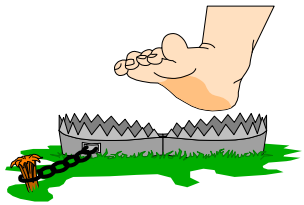
8

State of rural roads in Sub Saharan Africa

- Many African countries gained independence in the 1950s and 1960s
- Governments embarked on provision of access for both regional and rural road access
- By 1980 over 2 million km of roads with an asset value of US$150 billion was constructed. (World Bank 1995)
- However by 1990 over 33% of the asset value was lost due to lack of routine and periodic maintenance

9

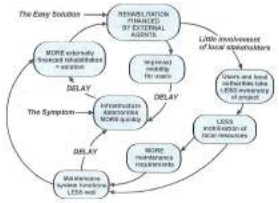
State of rural roads in Sub Saharan Africa



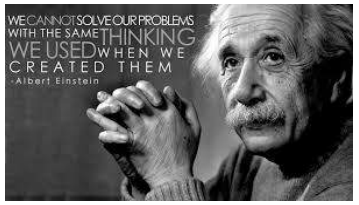
10

Economic growth through effective road asset management

Vicious cycle typical in Sub Saharan Africa



Need for a paradigm shift



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Economic growth through effective road asset management

- DFID is funding a research project on influencing road asset management in Sub Saharan Africa.
- The project is focusing on rural road networks managed by sub-national road agencies

12

The purpose of the research

- To achieve economic and social benefits for local communities as a result of
  - improved performance in rural road asset management

13

The process followed

1. Review literature on existing and recent road management and maintenance programmes; identify 'what works' and 'what doesn't work'.
2. Develop a framework to measure road asset management performance and apply it in the project areas.
3. Develop simple 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 improvements to road asset management performance in the project areas.

14

Approach

- The Technical Advisory Team encourage greater accountability of road agencies to road users and other stakeholders by posing structured questionnaires that interrogate the performance of each road agency
- Focus more on improved performance in road asset management.
- Provide opportunities for the participating road agencies and their stakeholders to improve their own performance through implementing a series of agreed actions with the advisory team.
- Support to the process through demand-led technical assistance.
- Develop a mechanism for participating road agencies to share their experiences (successes and shortcomings) – **Project Implementation Team**

15

Selection criteria for participating countries

- Geographical spread
- Range of existing network management systems
- Linkages with other AFCAP-funded projects
- Commitment to provide the required resources and data in the project area
- Willingness to disseminate the findings of periodic performance reviews

Zambia, Uganda and Sierra Leone were selected for the research project

16

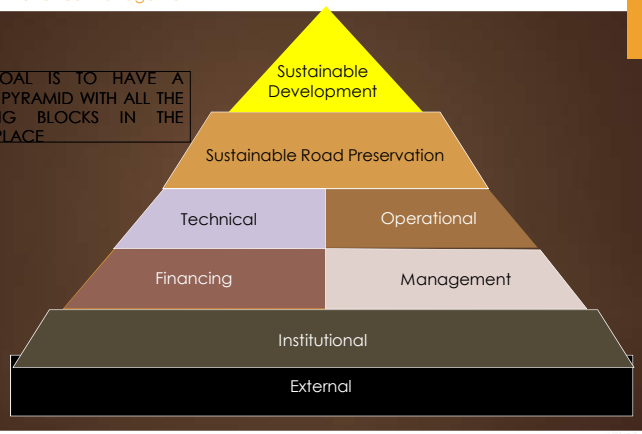
Selected Countries: Zambia, Uganda, Sierra Leone & the Western Cape of South Africa

17

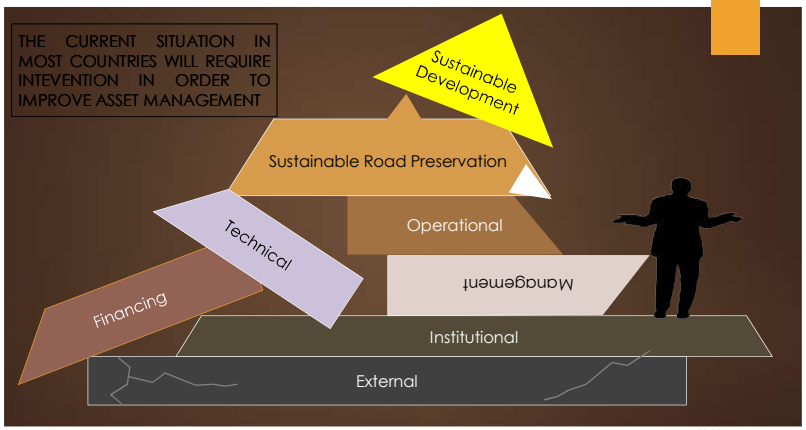
Methodology

- ✓ Self Assessment Questionnaire (PAS-55)
- ✓ Road condition monitoring
- ✓ Social and economic indicators

THE GOAL IS TO HAVE A STABLE PYRAMID WITH ALL THE BUILDING BLOCKS IN THE RIGHT PLACE



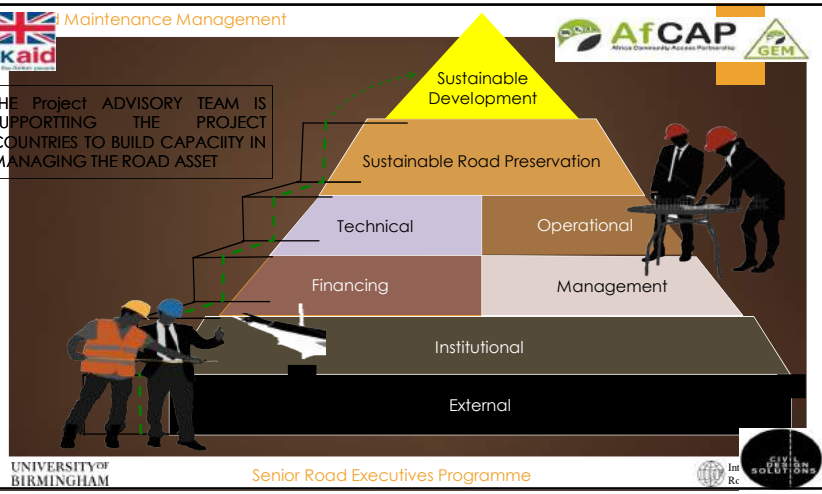
THE CURRENT SITUATION IN MOST COUNTRIES WILL REQUIRE INTEVENTION IN ORDER TO IMPROVE ASSET MANAGEMENT



UKaid

AfCAP GEM

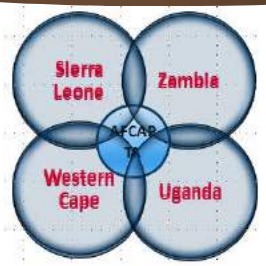
THE Project ADVISORY TEAM IS SUPPORTING THE PROJECT COUNTRIES TO BUILD CAPACIITY IN MANAGING THE ROAD ASSET



CIVIL DESIGN SOLUTIONS

21

Technical support through AFCAP



22

Literature review

- The following countries literature on road asset management for the past 50 years was reviewed:
- Ethiopia
- Malawi
- Mozambique
- Tanzania
- Uganda
- Zambia
- Zimbabwe
- Western Cape

23

Summary of findings

- There are very few examples of sustainable rural road asset management practice currently operational in sub Saharan Africa.
- Focus is mainly on implementing annual work programs rather than long term strategic plans
- Governments are more interested in new construction of roads than maintenance of existing infrastructure.

24

Summary of findings

- Funding for roads has improved through the establishment of Road Funds but the focus has been on national trunk roads and very little attention given to rural feeder roads.
- There is generally lack of political will to maintain rural road infrastructure
- Political interference is common and undermines the efficiency and effectiveness of sector organisations.
- Corruption is a significant factor affecting performance in the sector

25

Summary of findings

- Governments are grappling with their policies on decentralisation of road maintenance.
- Most countries are now following a policy of decentralisation of service delivery in key sectors, but the most effective rural roads maintenance programmes have been those that are managed centrally and implemented at local level.
- The lack of clear policy on decentralisation results in unclear roles and responsibilities for sector institutions.

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Summary of findings

- Contracting out of road maintenance has not led to capacity development in the private sector.
- The small size of contracts is not attractive to bigger contractors and small firms cannot invest in staff development. In some countries, the use of force account for undertaking maintenance works has proved to be more efficient than outsourcing such works
- Where examples of good practice exist they tend to be on donor-funded programmes with high levels of technical assistance, but these initiatives tend to flounder when the donor support is withdrawn

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Summary of findings

- The Western Cape in South Africa offers a good example of a well-managed road network. The overall commitment to provide value to road users is based on a sound, well-planned and systematic approach to asset management sets the tone and presents clear guidelines for the expected outputs.
- The approach follows a well-planned and systematic approach to asset management that examines the technical and administrative requirements for the implementation of works.
- The road management team in the Western Cape uses sound engineering methods that yield good results.
- The system provides a good bench mark for improving maintenance regimes in other countries within and beyond Sub Saharan Africa

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What is Road Asset Management

PASS 55 defines asset management as (BSI 2004

- "systematic and coordinated activities and practices which an organization adopts to optimally and sustainably manage its assets and asset systems, their associated performance, risks and expenditures over their life cycles for the purpose of achieving its organizational strategic plan".
- Asset management is related to delivering business goals through a combination of management, financial, technical and other related activities with the objective of providing an optimal Level of service in the most cost-effective manner

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Road asset management

- The objective of asset management is to meet a required level of service, in the most cost effective manner, through the management of asset for present and future customers"

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Road asset management

Robinson, 2008: provides a process for good asset management by:

- Identifying levels of service (which should be linked to policy)
- Predicting demand (i.e. levels of non-vehicular and vehicular traffic and associated axle loads)
- Assessing condition and monitoring performance
- Maintenance and its management
- Financial management
- Preparing an asset management plan (for incremental improvement

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Self Assessment Questionnaire (PAS-55

- Using a self assessment questionnaire designed to interrogate the six building blocks that form a good basis for sound road asset management, participating countries filled the assessment forms in order to establish baseline data.

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Self Assessment Questionnaire (PAS-55

- Essentially a series of questions that seek to assess the RAM maturity of a rural road agency in six key areas, or building blocks, which are considered necessary for effective asset management.
- Answers to questions in each BB reflect the extent to which agency undertakes its mandate in accordance with best practice approaches.
- Can be used by rural road agencies to assess the ir own performance in the management of their road assets by undertaking a gap analysis
- Will assist road agencies to identify areas of their approach which require improvement, and provide a means of benchmarking the organisation with respect to other RAs and to monitor changes in performance over time.

Questionnaire (PAS

- .

Building Block 1: External		
Key objective:	Facilitate delivery of a broad range of benefits to rural communities through effective interaction with external stakeholders.	
Element:	Stakeholder engagement	
Issue:	Engagement with stakeholders by means of informed consultations and a culture of open communications and knowledge sharing in order to:	
	Understand their needs and expectations by helping to identify local requirements, alternatives and solutions to problems;	
	Lobby political support for adequate AM plans and related maintenance funding;	
	Influence the development of the district's AM strategies;	
	Communicate the district's programmes and targets;	
	Assess how the district's performance is rated by stakeholders.	
QUESTION	YES/NO	JUSTIFICATION/COMMENT
1.1 (a) Does the agency communicate its maintenance and development works programmes with stakeholders (i.e. road users, local inhabitants and local businesses)?		
1.1 (b) Does the agency conduct consultations with members of the public (road users, local inhabitants and local businesses) at least annually?		
1.1 (c) Does the agency use a range of techniques to communicate with stakeholders e.g. surveys, media releases, newsletters, telephone hotlines and social media?		
1.1 (d) Does the agency have developed guidelines for community consultation?		
1.2 (a) Does the agency interact at District council level with the Roads Committee responsible for road related issues?		
1.2 (b) Do the agency and Councils meet to approve road budgets before implementation of works and periodic acquittal reports on usage of funds?		
1.2 (c) Do the agency and councils discuss the strategic plans to map out plans for short, medium and long term programmes?		
1.2 (d) Does the roads agency coordinate district programmes at provincial and national level through established council structures?		

questionnaire

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Key objective:	Facilitate delivery of a broad range of benefits to rural communities through effective interaction with external stakeholders.	
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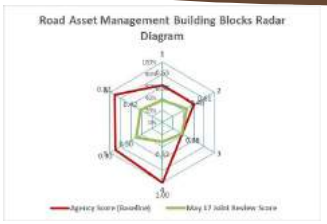
	Communicate the district's programmes and targets;	
	Assess how the district's performance is rated by stakeholders.	
QUESTION	YES/NO	JUSTIFICATION/COMMENT
1.1 (a) Has the agency developed guidelines for community consultation?	YES	
1.1 (b) Does the agency conduct consultations with members of the public (road users, local inhabitants and local businesses) at least annually?	NO	
1.1 (c) Does the agency use a range of techniques to communicate with stakeholders e.g. surveys, media releases, newsletters, telephone hotlines and social media?	YES	
1.1 (d) Does the agency communicate its maintenance and development works programmes with stakeholders (i.e. road users, local inhabitants and local businesses)?	NO	
1.2 (a) Does the agency interact at council level with the Roads Committee responsible for road related issues?	NO	
1.2 (b) Does the agency table road budgets at parliament meetings for approval before implementing works, and periodic acquittal reports on usage of funds?	YES	Road budgets are tabled to parliament for approval
1.2 (c) Does the agency discuss its strategic plans at parliament meetings to map out plans for short, medium and long term programmes?	YES	Strategic plans are approved by the Road agency board who then lobby Uganda Cabinet for funding.
1.2 (d) Does the roads agency coordinate national programmes at regional and national level through established station structures?	NO	This mainly done for maintenance and not capital development projects

Self Assessment Questionnaire (PAS-55



Road asset management

Identifying gaps

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- The six building blocks shown in the diagram show the gaps in each area that needs attention. This process assists road agencies in identifying deficiencies and focus capacity building and training in order to bridge the gaps.
- The GEM Advisory team is helping participating countries in through training andmentoring

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Road Inventory and Condition Survey

- Al l the roads under the road agency were recorded according to Name ,class and length to provide a complete inventory of the road network
- Using road condition survey forms , information on road condition was recorded and kept in spreadsheets to assist monitoring .
- The GEM advisory team, using the gaps identified during the self assessment provide training and support to road agencies
- After one year, the self assessment exercise is repeated to measure the impact of the project.
- Further support is provided and again another assessment will be done

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Social and economic indicators

- Similarly an assessment of the social and economic situation is measured through the self assessment questionnaire to form a baseline.
- The GEM Advisory team then provides support to the road agencies and another self assessment exercise is done and compared against the baseline.
- This is repeated every year for the duration of the project

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Economic growth through effective road asset management

- The aim being to transform road asset management to be done in a business like manner

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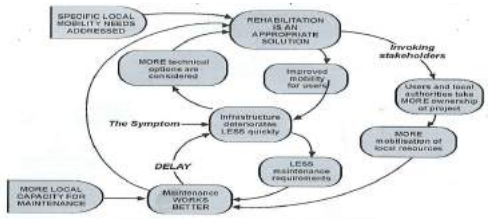
Economic growth through effective road asset management



Thank you

Name and Affiliation