Effective Rural Road Asset Management
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What is the source of problems being faced in providing and maintaining Rural Roads in SSA??
Problems?

- Political, Policy, Regulatory?
- Institutional?
- Funding?
- Managerial?
- Technical?
- Operational?
What is the value of these on our Rural Roads?

<table>
<thead>
<tr>
<th>Right of Way, Land held</th>
<th>Information Signs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formation</td>
<td>Regulatory Signs</td>
</tr>
<tr>
<td>Pavement/Gravel Layers</td>
<td>Fences</td>
</tr>
<tr>
<td>Surfacing</td>
<td>Bus Shelters</td>
</tr>
<tr>
<td>Bridges</td>
<td>Kerbs and Channels</td>
</tr>
<tr>
<td>Major culverts</td>
<td>Guardrails</td>
</tr>
<tr>
<td>Minor Culverts</td>
<td>Buildings, Equipment</td>
</tr>
</tbody>
</table>

What is Asset Management?

• “Asset management is 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”.

• Source: British Standards Institution - Publicly Available Specification (PAS) (IAM, 2008)
Why adopt Asset Management Approaches?

• Responsive to community needs
• Based on agreed strategic approaches
• Life cycle approach
• Systematic and coordinated activities
• Optimal and sustainable management of assets and asset systems
• Structured performance monitoring
• Encourages transparency & accountability
Relationship Between RAM Maturity and Road Preservation

RA maturity to undertake RAM

Measure of road preservation (Road Condition Index)

Economic efficiency frontier

GEM Project

Growth through Effective Rural Road Asset Management
Purpose

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

Time Frame

27 months (to end 2018?)

GEM Project Countries

AM Policy Workshop Participants – Chongwe, Zambia

GEM Project Components

- Development of:
  - A RAM Self-Assessment Specification/Methodology
  - Road Condition Assessment and Asset Valuation Tool
  - Method for Simple assessment of Socio-economic Impact of Maintenance Interventions
- Demand-driven Capacity Building
- RAM Performance Monitoring
- Inter-country sharing of experiences
GEM Tools for Effective Rural Road Asset Management

RAM Self-assessment Questionnaire
GEM ROAD PRESERVATION PYRAMID:

1. Sustainable Development
2. Sustainable Road Preservation
3. Operational
4. Technical
5. Planning and Management
6. Funding
7. Institutional
8. External/Political/Stakeholders

GEM Self-Assessment Questionnaire

- **35 Aspects; approx. 140 questions** assessing the RAM maturity in Building Blocks

- **Simple Yes or No Answers** to each question

- **Self-assessment** process is *internal to Road Agency*

- **Process can be External** – Peers or consultants

GEM Self-Assessment Questionnaire

- Answers reflect extent of satisfaction of mandate in accordance with best practice approaches
- Process is followed by gap analysis
- Identify areas requiring improvement, and benchmarking against other RAs and best practise
- Repeated annually
RAM Sustainability Indices

“Road Sector Sustainability Index (RSSI)”

• Weighted average of scores achieved under each Road Preservation Building Block

## Measuring Performance in Rural Road Asset Management

<table>
<thead>
<tr>
<th>Assessment Scoring Criteria:</th>
<th>Weighting Ranking</th>
<th>Building Block</th>
<th>Max. Possible Score</th>
<th>Oct 16 (Baseline)</th>
<th>Oct 17</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 0 Unsatisfactory</td>
<td>1</td>
<td>External</td>
<td>4</td>
<td>3.0</td>
<td>2.3</td>
</tr>
<tr>
<td>0-1 Poor</td>
<td>2</td>
<td>Institutional</td>
<td>4</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td>1-2 Satisfactory</td>
<td>3</td>
<td>Financial</td>
<td>4</td>
<td>0.7</td>
<td>1.2</td>
</tr>
<tr>
<td>2-3 Good</td>
<td>4</td>
<td>Managerial</td>
<td>4</td>
<td>0.4</td>
<td>0.6</td>
</tr>
<tr>
<td>3-4 Excellent</td>
<td>5</td>
<td>Technical</td>
<td>4</td>
<td>0.8</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Operational</td>
<td>4</td>
<td>1.0</td>
<td>0.8</td>
</tr>
</tbody>
</table>

Road Sector Sustainability Assessment Score: 1.3
Road Sector Sustainability Rating: Satisfactory
Road Sector Sustainability Index (RSSI): 0.33
Measuring Performance in Rural Road Asset Management

Road Asset Management Building Blocks Radar Diagram

Managerial

Technical

Operational

Institutional

Financial

External

Oct 16 (Baseline) Oct 17
Measuring Performance in Rural Road Asset Management

Current Road Asset Management Pyramid - Weighted Scores

- Operational: 19%
- Technical: 25%
- Managerial: 14%
- Financial: 29%
- Institutional: 18%
- External: 58%

## Sustainability Indices - 2018

<table>
<thead>
<tr>
<th>Road Agency</th>
<th>2016 (Baseline)</th>
<th>2017</th>
<th>2018</th>
<th>Change since Baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tonkolili, Sierra Leone</td>
<td>0.33</td>
<td>0.32</td>
<td>0.37</td>
<td>+ 1%</td>
</tr>
<tr>
<td>Chongwe, Zambia</td>
<td>0.22</td>
<td>0.46</td>
<td>0.48</td>
<td>+ 114%</td>
</tr>
<tr>
<td>Kamuli, Uganda</td>
<td>0.36</td>
<td>0.40</td>
<td>0.40</td>
<td>+ 9%</td>
</tr>
<tr>
<td>UNRA, Uganda</td>
<td>0.41</td>
<td>0.59</td>
<td>0.59</td>
<td>+ 44%</td>
</tr>
<tr>
<td>Western Cape</td>
<td>0.55</td>
<td>0.57</td>
<td>0.69</td>
<td>+ 25%</td>
</tr>
<tr>
<td>TARURA, Tanzania</td>
<td>N/R</td>
<td>N/R</td>
<td>0.63</td>
<td>N/A</td>
</tr>
</tbody>
</table>

GEM Tools for Effective Rural Road Asset Management

- Road Condition Monitoring and Asset Valuation Tool
## Defects Monitored

<table>
<thead>
<tr>
<th>Gravel Loss</th>
<th>Usable Width</th>
<th>Erosion C-Way</th>
<th>Erosion-S/Drains</th>
<th>Potholes</th>
<th>Corrulation</th>
<th>Rutting</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>E</td>
<td>D</td>
<td>E</td>
<td>D</td>
<td>E</td>
<td>D</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>% of length:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**D - Degree/Severity**

**E - Defect Extent/Occurrence/Quantity**
% of length:  1. <5%  2. 5-10%  3. 10-25%  4. 25-50%  5. >50%

GEM Condition Indices

Road Condition Index - RCI (%)

Functionality Index - FI (%)  Condition Index Pavement - CIp (%)  Condition Index Formation - Clf (%)

CONDITION RATING CRITERIA
Very Poor: <30%  Poor: 30-50%  Fair: 50-70%  Good: 70-85%  Very Good: >85%

Determination of Current Asset Value

Current Asset Value (CAV) = Current Replacement Value (CRV) \times \% \text{ Remaining Life}

ASSET VALUATION: REMAINING VALUE CRITERIA

Condition and \% \text{ Remaining Life}: V. Poor: 30\%  Poor: 50\%  Fair: 70\%  Good: 85\%  V. Good: 95\%
RAM Indices – Condition, Asset Value and Preservation

“Road Asset Preservation Index (RAPI)”
• Ratio of the road network Current Asset Value divided by the Current Replacement Value

“Road Asset Funding Index (RAFI)”
• Capital Funds for Asset Renewal (periodic maintenance, rehabilitation and reconstruction) divided by the Quantified Needs

<table>
<thead>
<tr>
<th></th>
<th>S. Leone</th>
<th>Zambia</th>
<th>Uganda - Kamuli</th>
<th>Uganda UNRA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earth (km)</td>
<td>154</td>
<td>0%</td>
<td>136</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>136</td>
<td>0%</td>
<td>133</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>380</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Gravel (km)</td>
<td>84</td>
<td>0%</td>
<td>114</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>114</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>NRCI</td>
<td>44%</td>
<td>33%</td>
<td>57%</td>
<td>-2%</td>
</tr>
<tr>
<td></td>
<td>63%</td>
<td>17%</td>
<td>52%</td>
<td>-21%</td>
</tr>
<tr>
<td>NFI</td>
<td>50%</td>
<td>22%</td>
<td>58%</td>
<td>-12%</td>
</tr>
<tr>
<td></td>
<td>62%</td>
<td>-23%</td>
<td>36%</td>
<td>-54%</td>
</tr>
<tr>
<td>NCI_F</td>
<td>75%</td>
<td>44%</td>
<td>69%</td>
<td>-13%</td>
</tr>
<tr>
<td></td>
<td>74%</td>
<td>-9%</td>
<td>74%</td>
<td>-1%</td>
</tr>
<tr>
<td>NCI_P</td>
<td>67%</td>
<td>91%</td>
<td>89%</td>
<td>11%</td>
</tr>
<tr>
<td></td>
<td>84%</td>
<td>-8%</td>
<td>78%</td>
<td>-10%</td>
</tr>
<tr>
<td>CRV (USD mil)</td>
<td>7.51</td>
<td>13%</td>
<td>6.34</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>4.34</td>
<td>10%</td>
<td>11.74</td>
<td>0%</td>
</tr>
<tr>
<td>CAV (USD mil)</td>
<td>5.46</td>
<td>63%</td>
<td>4.98</td>
<td>-11%</td>
</tr>
<tr>
<td></td>
<td>3.7</td>
<td>1%</td>
<td>9.88</td>
<td>-5%</td>
</tr>
<tr>
<td>RAPI</td>
<td>0.73</td>
<td>46%</td>
<td>0.78</td>
<td>-11%</td>
</tr>
<tr>
<td></td>
<td>0.64</td>
<td>-25%</td>
<td>0.84</td>
<td>-5%</td>
</tr>
</tbody>
</table>
GEM Tools for Effective Rural Road Asset Management

- Socio-Economic Impact Monitoring Tool
S/E Impact Monitoring Process

- Identify sample points – 10 Trading Centres
- Collect data for Primary Indicators (annually)
  - Agriculture: Farm Gate Prices, Market Prices
  - Health: Staff compliment, Attendance cases
  - Education: Attendance, Enrolment
  - Cost of goods
  - Passenger Fares and Freight charges
  - Business activity
  - Transport modes, trips available
S/E Impact Monitoring Process

- Analyse data and compare
  - Simple reflexive
  - Compare T/Centres
  - Compare amongst agencies
  - Compare against Benchmarks

- Report, Use results
  - Annual reports, Dashboards etc

- Repeat annually
Key Findings and Conclusions
Key Findings & Conclusions

- Road networks constitute the largest asset in most local authorities.
- Local authorities are severely under-funded and this impedes development of efficient AM frameworks and systems.
- Road networks are generally in fair to very poor condition.

Key Findings & Conclusions

- GEM approaches resulted in agency *self-introspection and inclusiveness*
- There was *keen interest by all stakeholders* in the GEM Project at local and national levels
- There were *discernible positive changes* in AM practices and participants’ work ethics
- GEM processes encouraged *transparency and accountability; good governance*
Recommendations
Recommendations for Embedment

• Practitioner’s guide must be formally adopted by road agencies and councils; high level support required
• Training of Trainers
• Encourage uptake in bi- and multi-lateral support programs
• Asset Management at fore-front of promotion of application of ReCAP research outputs; GEM approach can be rolled out rapidly
Thank you for your attention

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