International Seminar on Road Financing & Investment

Scope of Presentation

- HISTORY – ROAD SECTOR REFORM
- INTRODUCTION AND CURRENT STATE OF THE RMS
- TYPICAL OUTPUT FROM RMS - FUNDING
- FUNDING ANALYSIS
- CONCLUSION AND RECOMMENDATION
ROAD MANAGEMENT SYSTEM NAMIBIA (RRS)

Surface Type

- Bitumen
- Earth Graded
- Earth Sand
- Earth Track
- Gravel
- Salt
- Proclaimed

Bitumen km 5474
Earth Graded km 9246
Earth Sand km 230
Earth Track km 2941
Gravel km 23 916
Salt km 220
Proclaimed km 1096

Total km 42 027
The wheel turning towards the functioning, management, maintenance and construction of Namibia’s road network.
Management of the road network

16. (1) Notwithstanding anything to the contrary contained in any other law but subject to this Act and with due regard to the funds at its disposal, the Authority shall undertake the management of the national road network, including:

(d) the operation of road management systems;

Therefore the RMS has a very crucial role to play in the whole operation of the RA.
Introduction

The development of Road Management Systems (RMS) have started in the early 1960's as a concept, but since it has been implemented in many Countries and Authority’s, it has become a process which are a modern day necessity in organizations. The integration of all systems under a *Infrastructure Management System / Asset Management System* was important for planning, coordinating, informing and finally for proper control of Road Agencies.
An Integrated Road Management System (RMS) is an all encompassing framework, including both information processing and human resources, for the integrated management of the road network, including the determination and optimization of economically warranted projects, programmes, strategies and budgets, for both development and maintenance.

What is an IRMS
NEED FOR RMS

- Transportation Authorities are always challenged by increasing demands for better services under constrained budgets.
- Better management systems are urgently needed to support more effective decision making.
- An Integrated Road Management System is such a system for properly coordinating, evaluating and maintaining infrastructure systems.
Road Agency cost, Road User Cost and Total Cost

<table>
<thead>
<tr>
<th>Maintenance Level</th>
<th>Road Agency Cost</th>
<th>Road User Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Very good</td>
<td>Low</td>
<td>High</td>
<td>High</td>
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</tbody>
</table>
PURPOSE of RMS
- ASSIST AUTHORITIES IN PROVIDING A SAFE AND ECONOMICAL ROAD INFRASTRUCTURE AT THE LEAST COST

GOALS
- IDENTIFY NEEDS ON THE NETWORK
- QUANTIFY NEEDS
- PRIORITISE NEEDS
- ASSIST IN PLANNING & MANAGEMENT
Deterioration and effect of maintenance
IMPLICATIONS OF TIMEOUS MAINTENANCE
ROAD MANAGEMENT SYSTEM

Benefits and

- PURPOSE of INTEGRATION
  - Structured flow of information
  - More thorough information
  - Maximum use of available data - share
  - Prevent duplication of data – cost
  - Availability of information 5% - 95%
  - Speed and quality of decisions
  - Training of personnel
ACTIVITY FLOW IN ROAD MANAGEMENT

- Condition survey
- Condition description
- Deterioration modeling
- Prioritization & Optimization
- Presentation to Management
- Final prioritization
- Fund allocation
- Project Planning
  - Detailed investigation and design
- Maintenance/ rehabilitation or upgrading
- Inventory

DATA MANAGEMENT
SYSTEM DEVELOPMENT LIFE CYCLE

User Requirement Specification

Functional Design Phase

Technical Design Phase

System Modeling (Coding)

System Testing & Documentation

System Implementation & Training

Post Implementation Audit

Business Process Redesign
ROAD MANAGEMENT SYSTEM

Current Situation

- Architectural System Design (ASD)
- Road Referencing System (RRS)
- Traffic Surveillance System (TSS)
- Information Management and Control System
- Pavement Management System (PMS)
- Geographical Information System (GIS)
- Unsealed Road Management System (URMS) end Dec 2001
- Material Information System (MIS) – enhancement needed
- Bridge Management System (BMS) March 2002
- Network Integration Module of IMCS by end March 2003 (Phase I)
- Project Control System (PCS) by end March 2003 – re-implement and enhancement
- Maintenance Management System (MMS) by end March 2004 – by end March 2009
- NIM Phase II by end March 2004 – Shifted to by end March 2000
A conservative calculation indicates a value of approximately N$ 7,7 billion is needed to replace only the top layers and bituminous surfacing of our paved roads.

This does not include the asset of the land, value of earth works, bridge structures, road furniture or the unsealed roads.
<table>
<thead>
<tr>
<th>FUNDING REQUIRED FOR</th>
<th>1st Year need</th>
<th>Ave/annum (5 year)</th>
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<tr>
<td>REHABILITATION</td>
<td>N$ 252 million</td>
<td>N$ 121 million</td>
</tr>
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<td>RESEAL</td>
<td>N$ 175 million</td>
<td>N$ 108 million</td>
</tr>
<tr>
<td>ROUTINE MAINTENANCE</td>
<td>N$ 57 million</td>
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<tr>
<td>TOTAL NEED (Surfaced Roads)</td>
<td>N$ 484 million</td>
<td>N$ 286 million</td>
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</table>
The following graphical displays show the impact on the network condition and remaining life for different funding allocations.
### Impact of Funding Scenarios on Pavement Condition

**Replacement Value (RV) N\$ 7,857,222,000**

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Funding Value (FV)</th>
<th>(% RV)</th>
<th>Resurfacing (N$)</th>
<th>(% FV)</th>
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#### Namibia

![Graph showing structural condition over years for Namibia](image_url)
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**Namibia**

**Namibia Pavement Management System Version 1.0**

2001/10/29

**FIGURE 14**: Impact on the Average Remaining Structural Life
FIGURE 15 Impact on the Backlog (Accumulative shortfall)
ROAD MANAGEMENT SYSTEM

The way Forward?
Further Systems to be developed
- Maintenance Management System (MMS)
- Project Control System (PCS)
- Network Integration Module of IMCS (Phase II)
- Integration of HDM-4 into the RMS (Report Finalization & Maintenance)

Refinement to suit changing environment

Data collection on all unsealed roads finalized
Verification of output in progress
The network integration module will collate the important summarised information from the various sub-systems of the RMS as well as manually entered information obtained from other needs not yet identified through a formal system.
Budget requirement for maintenance of paved roads:
- 120mill for rehab; 108mill for reseal;
- routine 57 mill;
- total 285mill.

For Gravel Roads;
- 77 mill for blading; 105 for scheduled;
- 35mill for ancillary;  71 mill = for upgrading;
- total 288.

Grand total for sealed and unsealed roads is **573 million**. Excluding rehabilitation it comes to **N$ 453 million**.
TOTAL BUDGET REQUIREMENT ANALYSIS

- The RA will get 587 million N$ for this coming year 2007/2008 which is about 77% of the total expenditure of the RFA –i.e a chunk of it.
- The budget proposed to the RFA was in the region of 800 million.
  - 587 million budget is inclusive of the Road Management including administration budget of 107 million for the RA.
  - If that is out then only 480million is allocated for the operation of the Road Network.
TOTAL BUDGET REQUIREMENT ANALYSIS

- According to the RMS output if 573 million is needed only for bitumen and gravel roads excluding structures expense, then obviously the 480 million is too low.
- The backlog is not yet attended to concerning rehabilitation and maintenance and this leaves the RA in a very critical situation regarding funding.
- The solution is to get a portion of the fuel levy increased for the roads.
- At this point in time the decision makers are not yet convinced, but the RFA and RA are perusing the issue through its public relations.
TOTAL BUDGET REQUIREMENT ANALYSIS

- Actual Maintenance Budget of 2001/2002 was 243 million for paved and unpaved roads while 2002/2003 it was 247 million, which is almost 55% of the total need only being met.

- While for rehabilitation of bitumen roads the optimum for 2001 as PMS output was 252 million; then annually 120 million. The budget for 2001/2 was 97 million while for 2002/3 was 208 million. Because of the backlog if 252 million is taken annually- then about 61% of the budget need in two years was met.
Conclusion

- The challenge of road financing by the RFA is getting stiffer every year since its formation.
- If decision makers do not react to this plea then the Roads will not be maintained as per optimum requirement which will firstly lead to all rehabilitations not to be financed (which is the situation in this current year) and later to cut on maintenance.
- It is hoped that this position will not be reached and at one point decision makers will understand the situation and take drastic action to assist the roads sector which is the backbone of the economy of a country.
The roads need to look like this! And RMS will help that to be achieved!
Thank you for your attention!