Road Asset Management Systems
# +
Performance-Based Contracting

Session 2.4: Conclusions and Way Forward

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Agenda

Day 1 Road Asset Management System (RAMS)	Day 2 Road Asset Management System (RAMS)	Day 3 Performance Based Contracting (PBC)
Session 1.1 **Introduction to RAMS**	**Session 2.1** **Data processing and management**	**Session 3.1** **Introduction to PBCs**
Coffee break	Coffee break	Coffee break
Session 1.2 **Functions of a RAMS**	**Session 2.2** **Data analysis and planning**	**Session 3.2** **Performance standards**
Lunch	Lunch	Lunch
Session 1.3 **Data to be collected**	**Session 2.3** **Road asset management**	**Session 3.3** **Inspections and Payments**
Coffee break	Coffee break	Coffee break
Session 1.4 **Method of data collection**	**Session 2.4** **Conclusions and way forward**	**Session 3.4** **Conclusions and way forward**

Road Asset Management (System)
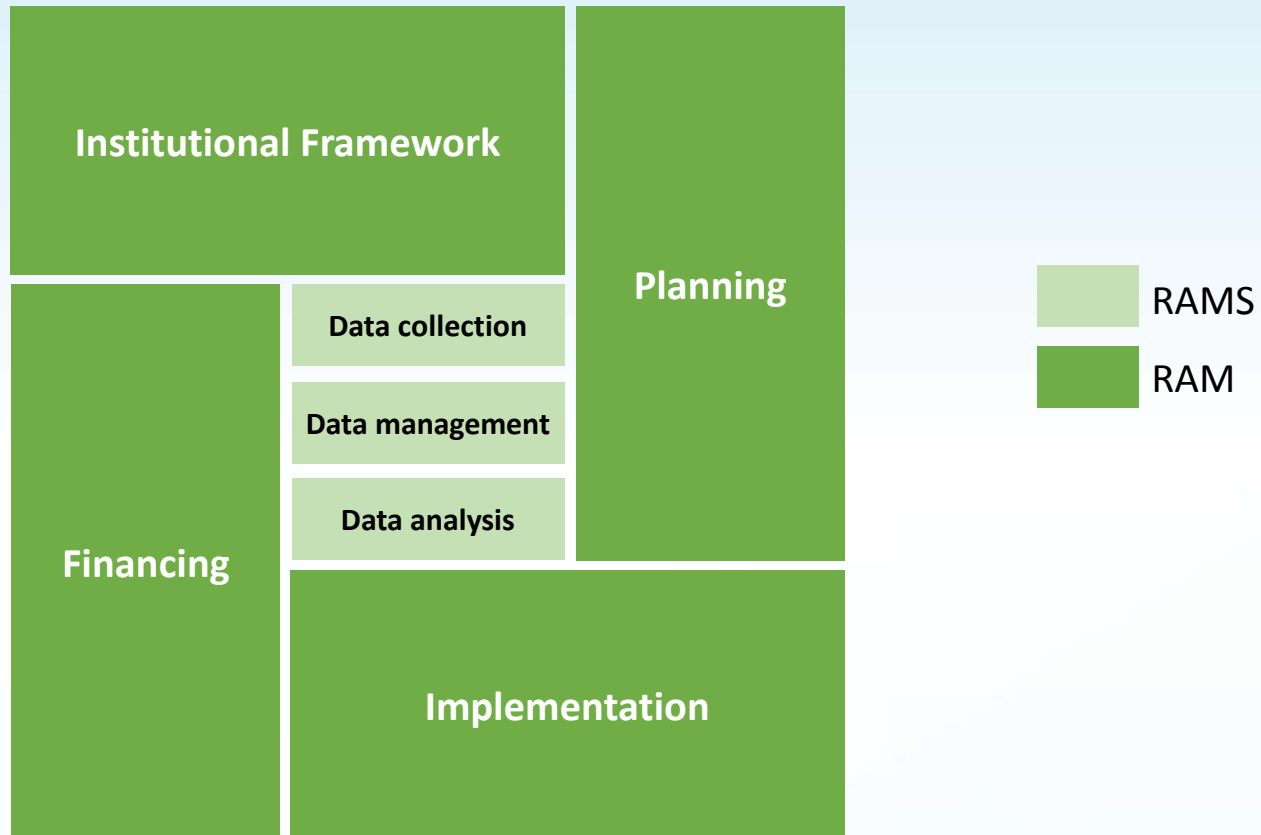
Road Asset Management Plan

- What we want to achieve in next 5 years (by year)
  - Data collection
  - Data management
  - Data analysis
  - Integration into the Institutional Framework
  - Integration into the Planning Procedures
  - Integration into the Financing System
  - Integration into the Implementation Modalities

- What this will cost (funding, staff, equipment)
- How this will be funded
- Who will lead/coordinate this

Example: Timor-Leste

	2020	2021	2022	2023	2024
Data collection	• Road data (inventory, condition and traffic) collected for all national and municipal roads (2,250km/$400,000/WB) • Road data (inventory, condition and traffic) collected for all core rural roads (1,975km/R4D)	• Bridge data collected (inventory and condition) for all national and municipal roads ($50,000/ADB) • Road condition data collected for national roads (500km/$10,000/DRBFC)	• Road condition data collected for national and municipal roads (1,000km/$15,000/DRBFC)	• Road + bridge inventory data collected for improved road segments (500km/$20,000/DRBFC) • Traffic data collected for important road links (500km/$5,000/DRBFC) • Road condition data collected for national, municipal and rural roads (1,500km/$20,000/DRBFC)	• Road condition data collected for national, municipal and rural roads (1,500km/$20,000/DRBFC)
Data management	• Data processed and entered into RAMS (DRBFC with WB/R4D support)	• Data processed and entered into RAMS (DRBFC with ADB support)	• Data processed and entered into RAMS (DRBFC with ADB support)	• Data processed and entered into RAMS (DRBFC with ADB support)	• Data processed and entered into RAMS (DRBFC)
Data analysis and planning	• Initial data analysis for national and municipal roads (WB using HDM-4) • Data analysis for updating Rural Road Master Plan (R4D)	• RAMS used as basis for 2022 budget request (DRBFC with ADB support) • Publish Annual Report 2020 (DRBFC)	• RAMS used as basis for 2023 budget request (DRBFC with ADB support) • Publish Annual Report 2021 (DRBFC)	• RAMS used in preparation of FYP 2024-2028 (DRBFC with ADB support) • RAMS used as basis for 2024 budget request (DRBFC with ADB support) • Publish Annual Report 2022 (DRBFC)	• RAMS used as basis for 2025 budget request (DRBFC) • Publish Annual Report 2023 (DRBFC)
RAMS Unit	• RAMS Unit created and staffed (DRBFC) • RAMS unit trained in data collection and processing (WB/R4D)	• Funding allocated to RAMS Unit ($20,000 OGE or RMF) • On-the-job training RAMS unit in data collection and processing (ADB) • RAMS unit trained in data analysis (ADB) • PD+MD trained in planning using RAMS (ADB)	• Funding allocated to RAMS Unit ($25,000 OGE or RMF) • On-the-job training of RAMS unit and PD+MD in RAMS operation (ADB)	• Funding allocated to RAMS Unit ($55,000 OGE or RMF) • On-the-job training of RAMS unit and PD+MD in RAMS operation (ADB) • Training of RAMS unit and PD+MD in FYP preparation (ADB)	• Funding allocated to RAMS Unit ($30,000 OGE or RMF)

Example: Tajikistan

	2020	2021	2022	2023	2024
Road Asset Management System	• Road survey equipment procured • RAMS equipment and software procured	• Data collection carried out for at least 1,000 km of international roads • RAMS database and GIS mapping developed • HDM4 analysis carried out	• Data for remaining international roads collected • RAMS database and GIS mapping reviewed • HDM4 analysis carried out	• Data for republican roads collected • HDM4 analysis carried out	• Condition data for at least 80% of international roads repeated • HDM4 analysis carried out
Institutional Framework	• RAMS task force identified	• RAMS task force members trained in data collection, management and analysis	• RAMS unit created and staffed • Budget for data collection allocated	• Budget for data collection allocated	• Budget for data collection allocated
Planning	• Detailed analysis of current planning procedures carried out	• Procedures for RAMS integration in planning and budget allocation agreed • 5-year rolling maintenance investment plan prepared	• RAMS results used as basis for budget request and allocation • 5-year rolling maintenance investment plan prepared	• RAMS results used as basis for maintenance plan • 5-year rolling maintenance investment plan prepared • Road network statistics published annually	• RAMS results used as basis for maintenance plan • 5-year rolling maintenance investment plan prepared • Road network statistics published annually
Financing		• Detailed analysis of maintenance funding needs and road user charges carried out • Tolling system developed and potential road sections for tolling identified	• Introduction of road user charges agreed with MOF • Required legislation for tolling pilots in place	• Agreed road user charges introduced • Tolling pilots initiated in at least two locations	• Road maintenance funding increased to at least 0.25% of GDP
Implemen-tation	• Detailed review of PBM pilots	• Identification of suitable locations for expanded PBM contracts including periodic maintenance	• Incorporation of best practices and periodic maintenance into PBM bidding documents • Procurement of new PBM contracts		• Mid-term review of new PBM contracts

Data collection

- What data to collect

- How to use that data

- How to collect it

- How often to collect it

- Who will collect it

- What resources are needed

- How to minimize the data collection needs/costs

Data collection

- Equipment and software
  - Smartphone app: $500 (RoadLab) to $5,000 (RoadRoid)
  - ROMDAS equipment: $50,000-$75,000 (excluding vehicle)
  - Fully automated survey vehicle: >$200,000 (including vehicle)

- Operation
  - Staff (driver + operator) + training
  - Per diems
  - Fuel (only one lane of road, or all lanes)

- Maintenance
  - Vehicle servicing and spare parts
  - Equipment servicing and repairs/replacement (service licence)

Data management

- Who will validate and process data

- What type of database we need (initially)

- Who will manage and operate the database

- Who can access data and how

- What in-house skills we need

Data management

- Equipment and software
  - Excel/Access: $10,000+ (including costs for developing structure)
  - Off-the-shelf: ROMDAS HIMS
    - Desktop $80,000-$250,000
    - Enterprise: $200,000-$750,000
    - Web version: $500,000-$1,250,000
    - Cloud version: $2,500-$7,500 per month
  - Custom-made: >$250,000
  - Server, computers, network equipment, printers, plotters

- Operation
  - Staff + training
  - Operational expenses (paper, ink, internet, etc.)

- Maintenance
  - Servicing and adjustments to software (service license)
  - IT staff

Data analysis

- What prioritization criteria to use

- How to combine the different prioritization criteria

- To use a detailed or basic analysis

- To have an integrated/separate analysis function

Data analysis

- Equipment and software
  - Off-the-shelf   HDM4 $4,000-$5,000 per license
  - Custom made   Depends on complexity

- Operation
  - Staff + training
  - Operational expenses (paper, ink, internet, etc.)

- Maintenance
  - Service license for off-the-shelf software/equipment
  - Service contract for custom-made software/equipment

Plenary

- What are the next steps in developing a RAMS?

- What is the timeframe for doing so?

- Who will lead this?

- How will this be funded?

- What kind of support is required (from development partners)?

Road Asset Management Plan

	2020	2021	2022	2023	2024
Data collection					
Data management					
Data analysis and planning					
RAMS Unit					