

Road Asset Management Systems + Performance-Based Contracting

Session 1.1: Introduction to RAMS

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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

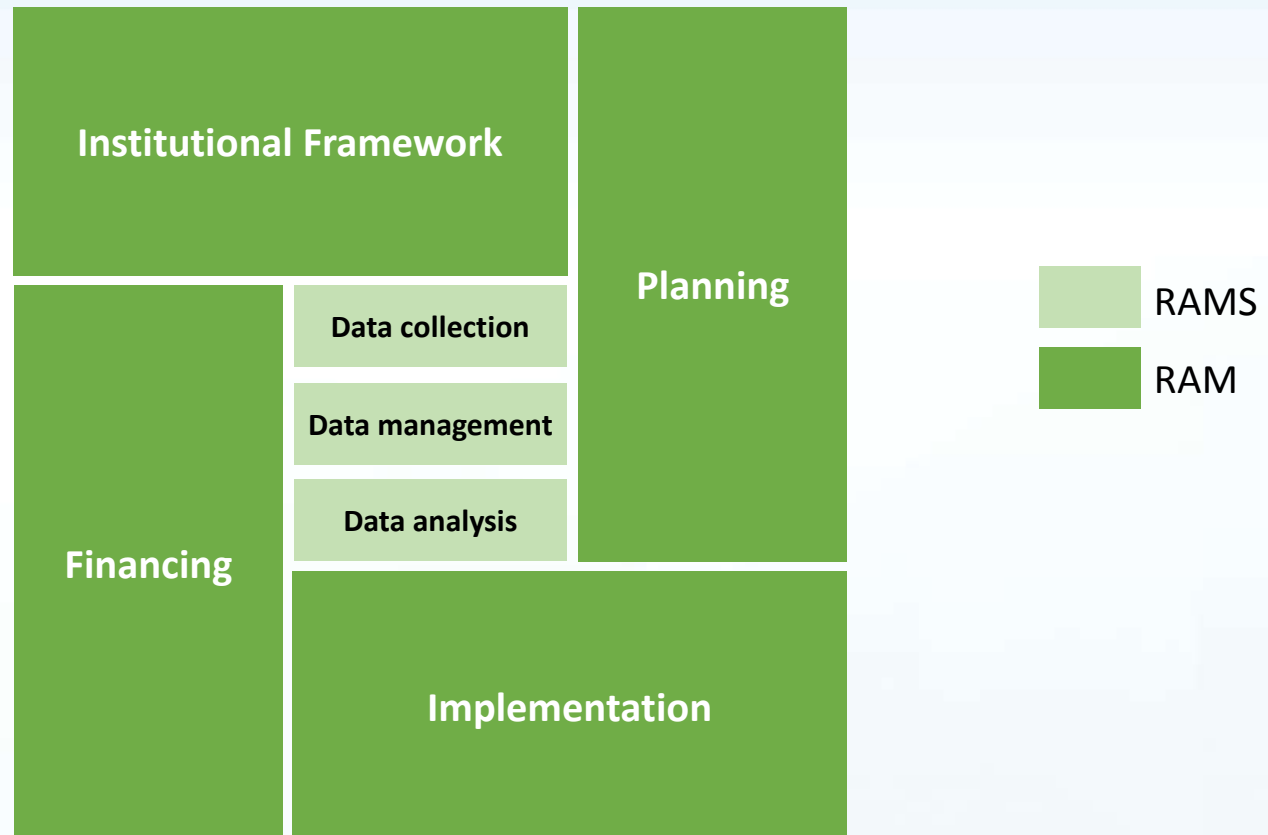


Agenda

Time	Road Asset Management System (RAMS)	Road Asset Management System (RAMS)	Performance Based Contracting (PBC)
09:00-10:30	<p>Session 1.1: Introduction to RAMS</p> <p><u>Presentation</u> – What a RAMS is, how it fits into road management, experiences in the CAREC region and beyond</p> <p><u>Plenary</u> – What experiences with RAMS exist in country? How is road management and planning done? What role could a RAMS play in this?</p>	<p>Session 2.1: Data processing and management</p> <p><u>Presentation</u> – Data validation and entry, data processing, data management, databases and GIS mapping, remote access, software</p> <p><u>Group Work</u> – Who will validate/process data? What type of database do we need? Who can access data? What in-house skills do we need?</p>	<p>Session 3.1: Introduction to PBCs</p> <p><u>Presentation</u> – Performance-based contracting, basis for payments, types of PBCs, benefits, risks, training needs, emergency maintenance</p> <p><u>Plenary</u> – How is maintenance contracted? What are the experiences with PBCs? Could PBCs function under current legislation/systems?</p>
10:30-11:00	Coffee break	Coffee break	Coffee break
11:00-12:30	<p>Session 1.2: Purpose and Functions of a RAMS</p> <p><u>Presentation</u> – Different functions and uses of RAMS, different complexities, data needs, gradual evolution of a RAMS</p> <p><u>Group Work</u> – Why do we want a RAMS? What functions should it fulfil? How do we want to use it? Who will use it?</p>	<p>Session 2.2: Data analysis and planning</p> <p><u>Presentation</u> – Statistics, standard reports, deterioration modelling, condition prediction, cost estimations, planning criteria, software</p> <p><u>Group Work</u> – What prioritization criteria should we use? How should the criteria be combined? Should the analysis be detailed or basic? Should the analysis function be integrated or separate?</p>	<p>Session 3.2: Performance standards</p> <p><u>Presentation</u> – Maintenance activities, SMART indicators, standards and thresholds, impact of thresholds on costs and conditions, emergencies</p> <p><u>Group Work</u> – What activities should be covered? What indicators and standards are appropriate? Are these SMART? How to deal with emergencies?</p>
12:30-13:30	Lunch	Lunch	Lunch
13:30-15:00	<p>Session 1.3: Data to be collected</p> <p><u>Presentation</u> – Minimum data requirements, network data vs project data, costs of data collection</p> <p><u>Group Work</u> – What data do we want to collect? What will we use that data for? How can we collect that data?</p>	<p>Session 2.3: Road asset management</p> <p><u>Presentation</u> – Integration with current planning procedures, linkage with financing and budgeting, implementation modalities and capacities</p> <p><u>Group Work</u> – How will the RAMS be institutionalized? How will the RAMS fit into planning procedures? What funding is available? How can we create implementation capacity?</p>	<p>Session 3.3: Inspections and Payments</p> <p><u>Presentation</u> – Inspection frequency, in-house or contracted out, payment deductions, response times, emergency work orders</p> <p><u>Group Work</u> – How will inspections be carried out? How will they affect payments? How to deal with response times? How to deal with emergencies?</p>
15:00-15:30	Coffee break	Coffee break	Coffee break
15:30-17:00	<p>Session 1.4: Method of data collection</p> <p><u>Presentation</u> – Data collection equipment, in-house vs contracting out, frequency, resource requirements, costs and budget needs</p> <p><u>Group Work</u> – How can we reduce data collection? How can we collect the data? Who will collect it? How often? What resources are needed?</p>	<p>Session 2.4: Conclusions and way forward</p> <p><u>Presentation</u> – Summary of past sessions and discussions, need to define a road asset management plan</p> <p><u>Plenary</u> – 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?</p>	<p>Session 3.4: Conclusions and way forward</p> <p><u>Presentation</u> – Summary of past sessions and discussions, need to develop a strategy for developing PBCs</p> <p><u>Plenary</u> – What do we want to achieve in the next 5-10 years? How will this be financed? What kind of support is required? Who will lead this?</p>

Road Asset Management (System)

- **Road Asset Management System:** Any system that is used to collect, manage and analyze road data for road planning and programming purposes
- **Road Asset Management:** Integration of the RAMS into the institutional framework, planning procedures, financing systems and implementation modalities





RAMS in the CAREC Region

- Compendium of Best Practice in Road Asset Management (January 2018)
- What is road asset management?
- Set of 11 best practices
- Road asset management in the CAREC region



Afghanistan

Aspect	Remarks
Road network	38,700 km
Road density	6 km/100 km ² (very low)
Trunk roads	17,900 km
Data collection	Network inventory in 2017 by ADB
Data analysis	Analysis using HDM4 – limited to project level
Planning	Planning mainly at project level, not network level
Financing	Highly dependent on donor funding, Road Fund being created
Institutional	Road Maintenance Unit dissolved. Road Authority being created
Implementation	Implementation mainly by force-account units (some PBCs)

- Security major issue for data collection and maintenance implementation

Aspect	Remarks
Road network	59,000 km
Road density	68 km/100 km ² (very high)
Trunk roads	19,016 km
Data collection	Full network inventory in 2012 by WB, replication in subsequent years
Data analysis	Road Network Databank – Analysis using HDM4
Planning	Planning still done by Azeravtoyol on visual basis
Financing	Road Fund restored in 2007 – earmarked road user charges
Institutional	Road Data Management Unit
Implementation	Azeravtoyol – force-account units

- Highly advanced database
 - <https://www.youtube.com/watch?v=ncJ1IUZywRE>
- No longer in use?




Aspect	Remarks
Road network	4,577,300 km
Road density	49 km/100 km ² (high)
Trunk roads	515,000 km
Data collection	Annual condition survey (equipment, visual)
Data analysis	China Pavement Management System (not widely used)
Planning	Largely based on visual assessments
Financing	National fuel tax main source
Institutional	Special units
Implementation	Largely force account units

- Large differences between provinces

Aspect	Remarks
Road network	21,800 km
Road density	31 km/100 km ²
Trunk roads	6,892 km
Data collection	Annual condition survey (ROMDAS equipment)
Data analysis	ArcGIS database + HDM4
Planning	HDM4 results complemented by other socioeconomic criteria
Financing	General budget (Road Fund abolished in 2004)
Institutional	Planning & Operations Unit (includes former RAMS unit)
Implementation	Private sector contractors – move towards OPRC



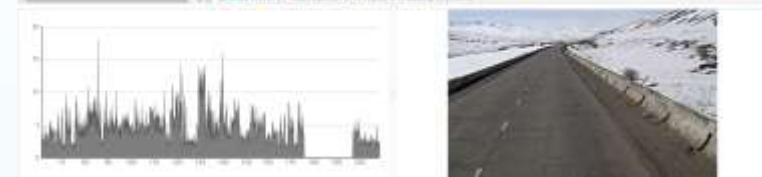
Rehabilitation of:		SH37 Sadakhlo-Tsopi-Aishhepi secondary road km3-km8 Section				
Project Description						
Following road section is part of rolling program for year 2008, section connects international road 507 Marneuli-Sadakhlo to Armenia border and provides access to local services to more than 1500 people. Road is considered important in terms of agriculture as well as providing minimum standard of mobility and integration.						
Key Indicators						
Traffic (AADT)	250	1	Total Capital Cost	3.0	Payment structure	n/a
Heavy Vehicles (%)	2.5	1	NPV	0.34	Bridge/Culvert structure	n/a
Condition	10.91	4	NPV/Cost Ratio	0.03	Traffic Safety	n/a
Population Density	227	4	Cost/Pop. Ratio	0.002	Environment	n/a
Key Objectives, Targets and Indicators						
Objective	Indicator		Unit			
Enhanced National Connectivity	Part of Secondary Road connecting two international roads.		N			
Enhanced Regional Connectivity	Distance from the centre of section to closest city centre.		34km			
Enhanced economic activities	Number of registered businesses in the district where the section is located.		347			
Population	Number of people living within 2km buffer along the road section.		1520			
Education	Number of schools within 2 km buffer along the road section.		7			
Tourism	Number of attraction within 2 km buffer along the road section.		2			
Poverty	Percentage of people receiving government support within district where road section is located.		n/a			
Life Line Road	The road is the only possibility for connecting the village to outside world.		y			
Project Area Map						
						
Description of Condition Classes (Good, Fair, poor and Bad) is found in Chapter 4, section 1.1						
Number of person/2km buffer from the homogeneous section divided by section length						

Aspect	Remarks
Road network	96,718 km
Road density	4 km/100 km ² (very low)
Trunk roads	23,485 km
Data collection	Spring/Autumn visual surveys – WB supporting retrofitting equipment
Data analysis	Under development
Planning	Results-based budgeting introduced
Financing	Republican budget – tolls being introduced
Institutional	Committee of Roads / Kazavtozhol / KazdorNII
Implementation	Kazakhavtodor / private contractors

- RAMS under development – links well with Results-based Budgeting
- Institutionally complex – who operates the RAMS vs who takes the decisions

Aspect	Remarks
Road network	34,810 km
Road density	18 km/100 km ²
Trunk roads	18,810 km
Data collection	Data collection international and national road network 5,800 km
Data analysis	Excel database with RNET, now web-based RAMS being developed
Planning	Visual assessments by DEPs, RAMS to include decision support tool
Financing	Republican Budget (Road Fund created in 1998)
Institutional	Road Management Department - PLUADs/UADs/SDs - DEUs/DEPs
Implementation	DEPs/DEUs + state-owned contractors

- Very complicated institutional structure **with many entities involved**





Mongolia

Aspect	Remarks
Road network	51,917 km
Road density	3 km/100 km ² (very low)
Trunk roads	15,469 km
Data collection	Road Research Institute: collection equipment + reduced data needs
Data analysis	dTIMS with Mongolian language front-end – no longer used
Planning	Visual inspections by RPICD/RTDC/AZZAs
Financing	Road Fund – limited revenue
Institutional	Road Policy Implementation and Coordination Department
Implementation	Road Transport Development Center (AZZAs) + private companies

- RAMS and its results not adopted
- Financing capped by limited revenue of the Road Fund

Aspect	Remarks
Road network	260,131 km
Road density	34 km/100 km ²
Trunk roads	12,131 km
Data collection	Instrumental surveys and visual inspections
Data analysis	HDM4 strategy and programme analyses
Planning	Based on HDM4 results
Financing	Road Maintenance Account – road user charges and other allocations
Institutional	National Highway Authority – Road Asset Management Directorate
Implementation	Competitive bidding to private contractors

- RAMS now being developed at provincial level





Tajikistan

Aspect	Remarks
Road network	26,767 km
Road density	19 km/100 km ²
Trunk roads	14,067 km
Data collection	Visual surveys by GUSADs – WB supporting survey vehicle
Data analysis	Highway Information System being updated, RAMS being developed
Planning	Based on needs assessed by GUSADs
Financing	State budget (Road Fund abolished in 2000)
Institutional	Economic Analysis and Forecasting Department
Implementation	GUSADs

- Interest in further developing RAMS capacity

Turkmenistan

Aspect	Remarks
Road network	58,592 km
Road density	12 km/100 km ²
Trunk roads	13,644 km
Data collection	Visual assessments
Data analysis	
Planning	Based on visual assessments
Financing	State budget
Institutional	Turkmenavtoyollary State Concern
Implementation	Turkmenavtoyollary force-account units

- **RAMS** not yet developed



Uzbekistan

Aspect	Remarks
Road network	183,724 km
Road density	43 km/100 km ² (high)
Trunk roads	42,530 km
Data collection	ADB and WB support to survey vehicle and data needs simplification
Data analysis	HDM4 – database with simple works analysis in Russian
Planning	Spring and Autumn surveys by State Committee for Roads (Uzavtoyul)
Financing	State budget
Institutional	State Committee for Roads / Republican Road Fund
Implementation	State Committee for Roads

RAMS in the CAREC Region



	AFG	AZE	GEO	KAZ	KGZ	MON	PAK	PRC	TAJ	TKM	UZB
Data collection frequency	Intermittent	Regular	Regular	Starting	Intermittent	Regular	Regular	Regular	Intermittent	-	Intermittent
Data collection extent	Pilot	Network	Network	Pilot	Pilot	Network	Network	Network	Pilot	-	Pilot
Database	-	Yes	Yes	-	Yes	Yes	Yes	Yes	Yes	-	Yes
Data analysis	-	Intermittent	Yes	-	-	Yes	Yes	Some provinces	-	-	Yes
RAMS unit	-	Yes	Yes	-	-	Yes	Yes	Yes	-	-	Yes
RAMS influencing planning	-	-	Yes	-	-	-	Yes	-	-	-	-
RAMS influencing financing	-	-	Partially	-	-	-	Yes	-	-	-	-



Plenary

- What experiences with RAMS exist in country?
- Which entity is responsible for planning road investments?
- How is road management and planning currently done?
- What role could a RAMS play in this?