

## **ROAD ASSET MANAGEMENT SYSTEM SUMMARY**

1. The project scope includes soft components to tackle sector-wide issues. One tool to improve transport sector performance in the Kyrgyz Republic is to improve efficiency of road asset management in the country. Road infrastructure is a major investment. The responsible agency must maintain, operate, improve, replace and preserve this asset. At the same time, the financial and human resources, needed to achieve the performance objectives, must be managed carefully. The main target of a Road Asset Management System (RAMS) is to maximize the value of the road infrastructure from available funds.

2. RAMS is needed to facilitate the decision-making, since it provides valuable information of optimal timing of maintenance works needed. RAMS enables managing of road assets in an effective manner that is, optimizing the budget for road network. The target is to minimize the total road transport costs, which are a summary of the costs of the road agency and road users. The term “asset management” contains all the processes, tools, data, and policies necessary to achieve the goal of effectively managed assets. One of the key features of asset management is integration. RAMS provided an integrated approach to all costs as well as the use of existing management data sources. International experience has shown, that optimal timing of maintenance works (right works in right locations) using modern RAMS brings 2–30% savings in total road life cycle cost. On the other hand, running fully operational RAMS is only 1–2% of the total costs.

3. It is important to understand that RAMS operates with different levels. Long-term forecasts of pavement performance or other assets’ behavior are typically conducted at the network level looking at a horizon between 10 and 20 years. The annual or multi-annual programs and budgets are carried out at the programming level with the time horizon between one to five years. At the project level, economic evaluation tools are used to determine the optimal alternative and assess the life cycle costs and benefits of the individual project. Road inventory and condition data are required at all levels but data needs in terms of magnitude, accuracy or robustness vary depending on what level analysis is to be conducted.

4. Several studies and RAMS related initiatives have been conducted in the Kyrgyz Republic by the Ministry of Transport and Roads (MOTR) and development partners in recent years. All study reports underline similar issues and problems in the road sector of the Kyrgyz Republic. These are evidenced by poor performance of the present system, and virtually all studies propose to implement significant reforms. The RAMS related problems which are raised repeatedly can be summarized as follows:

- (i) there is no proper asset management in place;
- (ii) roles of the MOTR and the Roads Management Department (DDH) as an Asset Manager and Asset Planner are not clear;
- (iii) there is a lack of transparency in the works allocations and the cost flows and expenditures at all levels;
- (iv) the road sector is overstaffed, in particular with duplication of administrative staff in Road Maintenance Organizations at local level (DEPs) and Highway Administration Management Units (PLUADs) at regional level and PLUADs for Corridors (UADs);
- (v) the equipment, including data collection equipment, are often out of order or not functioning properly;

- (vi) there is no clear division between Client and Supplier resulting unclear responsibilities and low accountability;
- (vii) staff is poorly motivated due to insufficient salary levels and turnover of the staff is high;
- (viii) there is no full buy-in from the senior management to proceed with the RAMS related reforms; and
- (ix) there is no sufficient budget for RAMS activities, including data collection.

5. Development partners have recommended several measures and actions to tackle these problems. One of the most urgent proposed measures is the institutional reform, which would establish formal Client-Supplier relationship and would enable better environment for RAMS.<sup>1</sup> There is also a need and potential to improve the efficiency and accountability of road maintenance activities including consolidation of local and regional road maintenance organizations. Finally, road sector is seriously underfunded resulting to several problems discussed above. The financing allocated covers roughly 40% to 45% of the needs according to several studies conducted. Road maintenance budget needs to be increased but there is also a big potential for increasing the efficiency and productivity of road maintenance. RAMS would provide appropriate tools and methods for this development.

6. The Kyrgyz Republic's road infrastructure is one of its most valuable public assets. To maintain this network systematically, efficiently, and effectively, it is necessary to (i) strengthen maintenance financing, (ii) improve road data collection and management, and (iii) optimize road maintenance works. To this end, the government should proceed with its efforts to introduce an appropriate RAMS. The RAMS should be aimed at an optimal allocation of resources for the management, operation, preservation, and enhancement of the road infrastructure. RAMS would enable MOTR to introduce more objective and rational approach to this exercise.

7. To introduce a comprehensive RAMS would require significant efforts in terms of data collection, training, and institutional development. Referring to the recent activities and experiences supported by development partners, these efforts may be, however, overwhelming for the MOTR given the present weak capacity of the Ministry.

8. Therefore, the overarching idea in the Kyrgyz Republic is to develop the RAMS incrementally, component by component, supported by a strong institutional development, training, and appropriate data collection. The initial road network to be included into the system will be limited in the beginning. This will allow MOTR to gain experiences and to plan and prepare the enhancement of the system using the lessons learnt. The aim is to incorporate both roads<sup>2</sup> and main structures (bridges and tunnels)<sup>3</sup> into one system, which would provide more benefits once implemented. One of the key objectives is also to demonstrate the benefits of the system with small-scale trial in order to achieve a buy-in from the senior management. The outline of the implementation plan for the RAMS is presented in the following table.

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<sup>1</sup> European Bank for Reconstruction and Development. 2014. *Commercialization of Road Administration–Draft Final Report. Consulting Services for Road Sector Reform*. Luxembourg.

<sup>2</sup> World Bank. 2014. *Implementing a Road Asset Management System (RAMS). User Manual for Pilot Road Database of MOTC. National Road Rehabilitation Project*. Washington, DC.

<sup>3</sup> JICA. 2016. Project Completion Report: *The Project for Capacity Development for Maintenance Management of Bridges and Tunnels in the Kyrgyz Republic*. Tokyo.

**Table 1: Implementation Plan**

Phase	Component/Task	Remarks
1	Selection of the network	CAREC roads (approximately 1,600 km) as a pilot network. Once this is successfully completed, RAMS can be extended to cover the whole road network under MOTR's balance.
2	Developing the Road Data Base	Combining the existing pavement and bridge management spreadsheets as a base for a new comprehensive database to be developed.
3	Organizing the data collection	Roughness data and basic road inventory with videos to be collected in the first phase. Once simple data collection practices have been adopted, they can be developed further.
4	Implementing the Budgeting and Planning Tool (HDM-4) <sup>4</sup>	Integrating HDM-4 as a maintenance and strategic optimization tool for the RAMS.
5	Implementing geographical information system or Map interface	Adding geographical information system as a visualization tool for RAMS.

CAREC = Central Asia Regional Economic Cooperation, HDM-4 = Highway Development and Management Model, km = kilometer, MOTR = Ministry of Transport and Roads, RAMS = road asset management system.

Source: Asian Development Bank.

9. It must be noted that a comprehensive RAMS is not only a group of selected software but involves also data collection activities and capacity building for the RAMS users. It is proposed that a dedicated RAMS unit will be established with committed and trained members under MOTR. A working committee should be established to oversee RAMS development and to ensure that RAMS will be used for its purpose in order to get the best benefit out of the system. In addition, continuous and careful coordination between MOTR and development partners is essential to avoid any overlapping or conflicting efforts during this development.

10. The best way to transfer knowledge is the continuous support by international experts during the implementation stage and first data collection rounds. Regular in-country training workshops shall be held for management level staff of MOTR and one or two international study tours for the committee and technical staff who are working on RAMS. It has been estimated that implementing of RAMS and technical support by international experts should continue for five years (2017–2021). Estimated budget for implementing fully functional RAMS with three years continuous support by experienced international and national experts is \$2.4 million. After the initial three years support under the proposed project, additional support may be provided under the additional financing of the project.

11. A terms of reference (TOR) for implementing RAMS for the Kyrgyz Republic has been developed during project preparation stage. It is envisaged that an estimated 47 international consultant person-months and 144 national consultant person-months by an international consulting firm, to be recruited and engaged in accordance with ADB's Guidelines on the Use of Consultants using the quality- and cost- based selection method with a quality-to-cost ratio of 90:10. Performance measures including key performance indicators has been developed and incorporated in the TOR to ensure the successful implementation of RAMS.<sup>5</sup>

12. There are four factors that make RAMS successful: processes, people, technology, and sufficient funding. These major success factors should be considered as evaluation criteria,

<sup>4</sup> World Road Association. 2002. *HDM-4 Version 2*. Paris.

<sup>5</sup> Project Administration Manual (accessible from the list of linked documents in Appendix 2).

which need to be assessed regularly in order to keep the RAMS development on track. “The institutional buy-in” of RAMS is the overarching factor covering processes and people and it is an issue, which shall be closely monitored especially in the case of the Kyrgyz Republic.

13. Furthermore, data collection is a critical component of this effort. In RAMS, a network-level approach should be applied to data collection. Data should be adequate, but not excessive, for preparation of annual maintenance planning and long-term strategy analysis. The basic idea of this approach is to use a limited network in a relatively good condition where selected data collection methodologies can be used as a pilot prior enhancing the RAMS to the whole network. Thus, better understanding of data collection costs and speed can be achieved and data collection can be planned in the most cost-effective way.