

## Summary of Terminal Evaluation

<b>I. Outline of the Project</b>	
<b>Country:</b> The Republic of Kenya	<b>Project Title:</b> The Project for Strengthening of Capacity on Road Maintenance Management through Contracting (Phase 2)
<b>Issue/Sector:</b> Infrastructure	<b>Cooperation Scheme:</b> Technical Cooperation Project
<b>Division in Charge:</b> Transport and ICT Group, Infrastructure and Peacebuilding Department	Total Cost: 220 million yen (as of Terminal Evaluation)
<b>Period of Cooperation</b>	November 2013 – November 2015 (24 months)
	<p><b>Partner Country’s Implementing Organization:</b>  Ministry of Transport and Infrastructure (MOTI)  Kenya National Highways Authority (KeNHA)  Kenya Rural Roads Authority (KeRRA)  Kenya Urban Roads Authority (KURA)  Kenya Wildlife Services (KWS)</p> <p><b>Cooperation Organization (Japanese side):</b>  <b>Hanshin Expressway Co., Ltd., Honshu Shikoku Bridge Expressway Co., Ltd., CTI Engineering International Co., Ltd.</b></p>
<b>1-1 Background of the Project</b>	
<p>In Kenya about 90% of all domestic transport relies on road transport. Road construction and maintenance is a key enabler for sustainable development, facilitating cross border and domestic trade as well as providing people with access to market and social services.</p> <p>The Kenyan government actively engages private contractors in road maintenance works, using traditional contract methods where road agencies instruct the details of maintenance work in tender documents and supervise the actual work. Contracting out road maintenance work to the private sector with a degree of authority within long time frame is one of the ways for road agencies to deliver efficient road services. Performance based contract (PBC) is one of such contracts in which a contractor is required to meet road maintenance levels and payment is contingent on their successful achievements. In Kenya pilot projects using performance based contracts started in 2010 on a pilot basis.</p> <p>During the phase 1 of the project JICA assisted in various activities to introduce performance based contracts for road maintenance works. This includes the tabulation of unit and productivity rates applicable to such contracts, introduction of term contracting, preparation of standard PBC tender document and application of the Vehicle Intelligent Monitoring System (VIMS, now DRIMS) to conduct an international roughness index (IRI) survey. In November 2013, the phase 2 of the project assistance commenced to further the capacity strengthening of road maintenance work with much focus on PBC.</p>	
<b>1-2 Project Overview</b>	
<b>(1) Overall Goal</b>	
To maintain the existing road network in good condition	

## (2) Project Purpose

The capacity of implementing agencies is strengthened on management of road maintenance through contracting

## (3) Outputs

- Output 1) The maintenance operation system associated with the performance based contract (PBC) is improved and implemented effectively.
- Output 2) Road conditions are periodically monitored by DRIMS (Dynamic Response Intelligent Monitoring System)<sup>1</sup> objectively and the annual road maintenance plan is formulated by the amalgamation of ARICS (Annual Road Inventory and Condition Survey)<sup>2</sup> and DRIMS.
- Output 3) To build sustainability of the PBC maintenance operation system, the training and certification system are formulated in the governmental organizations.
- Output 4) To build sustainability of the operation of DRIMS system, the training and certification system are formulated in the governmental organizations.

## (4) Inputs

### Japanese side

- a) Personnel: 2 long-term experts (38 M/M) and 9 short-term experts (18.07 M/M) , Total 56.07 M/M
- b) Training in Japan: 10 C/Ps      c) Local Cost: 7 million KES (about 9.4 million yen)

### Kenyan side

- a) Personnel: 19 main C/Ps      b) Office space was provided for the project at KeNHA

## II. Evaluation Team

<b>Members</b>	Leader/Evaluation Planning: Mr. Jitsuya Ishiguro, Advisor, Team 1 Transportation and ICT Group, Infrastructure & Peacebuilding Department, JICA Evaluation Analysis: Dr. Keiko WATANABE, Senior Policy Analyst, Mitsubishi UFJ Research & Consulting (MURC)		
<b>Period of Evaluation</b>	10-24 June 2015	<b>Type of Evaluation</b>	Terminal Evaluation

## III. Results of Evaluation

### 3-1 Achievement of Outputs

#### 3-1-1 Output 1:

**The maintenance operation system associated with the performance based contract (PBC) is improved and implemented effectively.**

Indicator 1-1: Number of PBC is increased and their improvements are identified.

Indicator 1-2: The manuals for the PBC are formulated

Indicator 1-3: The challenges of the public procurement system are identified.

Indicator 1-4: Pilot project is implemented to contribute the roads safety and alleviate the traffic jams.

<sup>1</sup> DRIMS is an equipment to monitor road conditions by measuring roughness of the roads (International Roughness Index (IRI)) from the tremble during driving. It is available at affordable price and simple for manipulation.

<sup>2</sup> ARICS is the survey system which is obliged to be updated annually by each RA. Roads condition is one of component of ARICS. Traditionally, roads condition has been monitored subjectively depending on engineer's judgment in Kenya.

The Team confirmed that the significant progress has been made under Output 1 judging from the level of achievement of the indicators below. However, it was also noted that the Project needs to make strong efforts to finalize cost estimation manual and its adaptation by training which is related to Output 3. The Team noted that the achievements of the Output 1 would be fulfilled if the Project period would be extended for some time for this reason.

- ✓ The Team confirmed that the Guidelines for Road Maintenance under PBC (PBC guidelines) and PBC Cost Estimation Manual, which would be one of significant outputs from the Project, have been drafted through interactive discussions between Japanese experts and Kenyan side under Sub-Working Groups (SWGs). Most of SWG members from C/P organizations attended every SWG meeting. It was identified that the knowledge and skills gained by counterparts through the project was used at the time of tendering and monitoring of the PBC projects. (Indicator 1-1 and 1-2)
- ✓ The PBC guidelines are expected to be finalized by August 2015. However, it was noted that the finalization of PBC Cost Estimation Manual will take additional time (most probably another 9 months, up to March 2016) since the project had to resurvey the productivity rates to produce reliable data by direct observation survey instead of questionnaire survey which was initially conducted (activity 1-7). (Indicator 1-2)
- ✓ The Project identified the areas to be improved for the public procurement through a seminar. The points were incorporated into the Chapter 4 of the PBC guidelines (Indicator 1-3).
- ✓ Several tools and measures, such as Cat's Eyes (reflecting/solar type road studs), lane markings, Do-nou technology, and YK pack (packed cold mixed asphalt) for emergency pot hole repair, for road improvement were demonstrated through mini pilot projects for Road Agencies (RAs) to have more idea on road maintenance through PBC. (Indicator 1-4).

### 3-1-2 Output 2:

**Road conditions are periodically monitored by DRIMS (Dynamic Response Intelligent Monitoring System) objectively and the annual road maintenance plan is formulated by the amalgamation of ARICS (Annual Road Inventory and Condition Survey) and DRIMS.**

Indicator 2-1: Periodical monitoring is conducted by DRIMS.

Indicator 2-2: DRIMS is correlated with ARICS and formulated as a monitoring system by the governmental authorities.

The Team observed the achievement level of Output 2 is sufficient judging from the level of achievement below.

- ✓ The Project with KeNHA engineers surveyed the conditions of KeNHA administered roads by DRIMS in July/August 2014. To date, 10,000 Km out of 14,000 Km of KeNHA's road network have been monitored by DRIMS, including the road sections which were surveyed in January/February 2013 by the Phase 1 project. The Phase 2 project used DRIMS with a drive recorder which was more effective to see road conditions not only by data but visually. (Indicator 2-1)
- ✓ The Project trained almost 50 technical staff of KeNHA on DRIMS; 4 technical staff each from 10 KeNHA regional offices and several technical staff from KeNHA Head office. The Japanese experts with the trained officials from Head office (technical staff and ICT officers) trained regional engineers by

conducting a two-day workshop at each regional office. (Indicator 2-2)

- ✓ The regional officers have learned how to monitor the road conditions using DRIMS, interpret the data (IRI), and analyze the information to report to the ARICS. At the workshop, not only the theory but the actual monitoring of roads conditions using DRIMS was practiced. The trainings were also given as to how drive recording data and IRI are uploaded to the main server of KeNHA. (Indicator 2-2)
- ✓ DRIMS system has been institutionalized in KeNHA. It was decided that from 2015/16 ARICS has to use IRI data acquired by DRIMS, which would be stipulated into the ISO 9001:2008 Quality Management System document of KeNHA in 2015/16 as a procedure. They have also established a budget line for DRIMS operation since 2014/15. (Indicator 2-1, 2-2)

### 3-1-3 Output 3:

**To build sustainability of the PBC maintenance operation system, the training and certification system are formulated in the governmental organizations.**

Indicator 3-1: A training course covering the maintenance operation by PBC is in place by the governmental authorities.

The Team recommends that the activities should be further strengthened under this output in order to make PBC widely understood. The achievement of this output is related to the development of Output 1, which includes the PBC guidelines and cost estimation manual. Considering the progress of Output 1 and planned activities including developing training materials and conducting training of trainers (TOTs) and pilot trainings under Output 3, the Team noted that extra time to achieve Output 3 is required.

- ✓ The Project has initiated the discussion with relevant organizations such as KIHBT and NCA for the operational mechanism to setting up the training courses and issuing a certificate on PBC.
- ✓ Since the PBC guidelines have not been completed yet, the training has not started yet.

### 3-1-4 Output 4:

**To build sustainability of the operation of DRIMS system, the training and certification system are formulated in the governmental organizations**

Indicator 4-1: A certification system of the DRIMS engineers is in place by the governmental authorities.

The Team confirmed the progress being made under Output 4, however, it needs to be further strengthened. The Project has initiated the discussion on the possible DRIMS training course with one of training institute under MOTI (KIHBT). The Team confirmed the KIHBT's willingness to conduct a DRIMS course including procurement of DRIMS system by their budget provided that the Project prepares training materials and trains trainers by conducting TOTs and pilot trainings. However, those activities would not be covered within the current project period. It would need extra months to conduct those activities. Therefore, the Team assumed that it is likely to achieve Output 4 once the Project is extended for some months.

- ✓ Training materials on DRIMS have been developed.
- ✓ The project has already identified some of candidates for trainers from KeNHA through the trainings on DRIMS.

### **3-1-5 Achievement of Project Purpose**

**The capacity of implementing agencies is strengthened on management of road maintenance through contracting.**

Indicator 1: Number of roads maintenance operation contract by PBC increase

Indicator 2: Proportion of Contract works completed on time increases

Indicator 3: Quality of road maintenance works improves

Indicator 4: Satisfaction of the road users

The Team found that the set indicators above were not appropriate to measure the achievement of the Project Purpose since there was no clear causal relationship between the indicators and Project Purpose. For example, although the number of PBC contract has been increased in all RAs especially in KeRRA (Indicator 1), the increase of PBC contracts in KeRRA was realized largely due to the financial and technical assistance by AFD. Therefore, the increase in PBC contracts in RAs was not necessarily an output from the Project. However, judging from the achievement of the four Outputs, the Team confirmed that the project has steadily progressing towards the project purpose. The project has already showed improvement of the road maintenance by upgrading capacity of the implementing agencies. The application of acquired knowledge and skills into PBC tendering and monitoring were already identified by the Team. The PBC guidelines and Cost Estimation manual for PBC are to be formulated soon. It was also confirmed that the monitoring of road conditions which is the basis for the maintenance planning has been improved by introduction of DRIMS system and its technical skills. 50-60 officers and relevant stakeholders were exposed to this system.

The project is still on the course of completing its activities especially under Output 3 and 4, therefore, the continuous efforts should be made by the Project for the rest of the project period. The Team concluded that the prospect of achievement of the project purpose was high given the project period extended for several months.

### **3-2 Implementation Process**

- (1)** PDM was revised three times during the Project to meet the actual needs and situation of the road sector of Kenya.
- (2)** Support staffs assigned for the Projects from KeNHA and local staff hired by the Project facilitated the project activities smoothly for coordination of multiple C/P organizations and utilization of their network.
- (3)** Close communication and information sharing between Japanese experts and Kenyan counterparts enhanced effectiveness of project management despite the presence of multiple counterpart organizations.
- (4)** The hands-on approach of transferring technologies such as on the job training through pilot projects and DRIMS roads condition surveys, and exposure to new technologies in Japan, facilitated the knowledge and skills enhancement of C/Ps. Instruction and guidance given at the actual fields by the Japanese experts was also appreciated by the C/P personnel.
- (5)** The Project inherited the assets from the Phase 1 project, which promoted the smooth implementation of the Project.

### **3-3 Evaluation Results by Five Criteria**

#### **(1) Relevance (High)**

The relevance of the project is highly relevant with following points.

The Project was well aligned with Kenya's National long-term development plan, "Vision 2030" as well as "First Medium Term Plan 2008-2012". Both prioritize infrastructure development. In particular, First Medium Term Plan stipulated capacity development for road maintenance as one of priority issues in road sector development. The Project was also in line with the Japan's Assistance policy to Kenya and priority issues of the TICAD V (2013). In addition, the intervention of the project was very timely when the Kenya government rapidly shifted the strategy of road maintenance from traditional approach to PBC.

#### **(2) Effectiveness (High)**

Effectiveness of the project is high. Although the Project needs further efforts towards the achievement of the objective, the progress of the project activities is steady and the C/P organizations recognizes its effectiveness.

The Team confirmed that the Project upgraded the capacities of RAs on PBC maintenance activities by interactive method of formulation of PBC guidelines and Cost Estimation Manual, as well as by getting C/Ps exposed to new ideas for road improvement through conducting mini pilot projects. One of the significant outputs from the Project was to produce PBC guidelines and Cost Estimation Manual which became useful reference for RAs which had to apply PBC to road maintenance without such document and tools. Practical training on DRIMS system also enhanced their skills. Procuring the DRIMS equipment by the Kenya's own budget and institutionalizing the procedure to incorporate DRIMS data (International Roughness Index (IRI)) into their system (ARICS) were the good signs of the Project intervention contributing to institutional capacity strengthening for better road maintenance management.

The Project was also effective in terms of coordination with other assistances. The mini pilot project for traffic safety to set out "cat's eyes" and lane marking was conducted along the Western Ring Roads which were built by the Japanese Grant Aid. By sharing information to other related organizations including relevant donors and inviting them to the seminars on DRIMS, KeRRA's road maintenance project assisted by AFD is likely to adopt the DRIMS system for the monitoring their road conditions.

#### Contributing Factor to achieve Project Purpose

Inclusion of Output 3 and Output 4 which develop training courses for PBC and DRIMS in the government system would ensure the project effect in a sustainable manner. Although the activities under these outputs have not been fully implemented but the inclusion of these outputs enhanced the process to achieve the achievement of the Project Purpose.

The training in Japan to expose Kenyan C/Ps to the Japanese administrative mechanism for road maintenance and improvement enhanced their understanding and awareness.

#### **(3) Efficiency (Relatively High)**

Efficiency of the project is relatively high. The activities regarding investigation of productivity rate delayed about 4 months since the method to estimate the rate had not established yet. This delay affected other outputs, as a result, the project outputs would not be achieved within the initial timeframe of the project.

C/P personnel were assigned as planned. Although some C/P personnel had to leave the Project due to personnel transfer, new C/Ps were assigned without delay. Those transfers did not create serious obstacles for

implementation of the Project.

Most of the inputs from the Japanese side including dispatching the experts, provision of training in Japan and local cost have been made as planned. The contents, numbers and timing of the trainings in Japan were rated as appropriate and effective by the Kenyan side.

#### **(4) Impact (High)**

Impact of the Project is evaluated as high.

There is a good prospect that the Overall Goal “to maintain existing road in good condition” will be achieved if the strong initiative from the Kenyan side continues to be demonstrated in a sustainable manner even after the project closure.

Already good signs of impact have been observed by the Team. The road conditions of Thika road maintained under PBC since May 2014 were significantly improved with close supervision and instruction by a KeNHA engineer who was trained by the Project. PBC contractors under guidance from the KeNHA engineer responded to traffic accidents and removed obstacles quickly, which contributed to eased traffic congestions. KWS improved its responsiveness to emergency repair on its road network, mobilising PBC contractor quicker than before for repair works. It was noted that road users also recognize improvement of the roads under PBC maintenance. These were made possible by improved instructions given to contractors by the RAs officers who were trained by the Project.

#### **(5) Sustainability (High)**

Sustainability of the project effect is high.

Organizational and technical sustainability is likely to be ensured. It was confirmed that the Project built firm foundation in each RA concerned on management of PBC and DRIMS system. The knowledge and skills transferred through the Project activities have already been used by many C/Ps. The guidelines and manuals developed by the Project are to be institutionalized in the RAs like the way the Standard Tender Documents for PBC and manuals developed under the Phase 1 project were authorized by the Kenyan Government. There is consensus among Kenyan stakeholders that the training courses on PBC and DRIMS be continuously organized by the Kenyan side utilizing the trainers and training materials developed by the Project.

Financial sustainability for the training courses on PBC and DRIMS will be ensured by utilizing some portion of finance from KRB (Road Maintenance Levy Fund) and collecting course fees. Operation and maintenance of DRIMS is likely to be financially sustainable, since KeNHA has already itemized DRIMS system into their budget line since 2014.

Policy aspects are sound since development of transport infrastructure including road maintenance continues to be one of the high priority areas in Kenya’s policy and strategies. In particular, the current Kenyan administration increasingly applies PBC to road maintenance as the best way forward.

### **3-4 Revision of PDM**

The Team suggested that the PDM should be modified since some of indicators do not reflect their objectives and outputs have to be rephrased to avoid ambiguity. The Team proposed a revised PDM.

### **3-5 Conclusion**

The Terminal Evaluation Team observed that the Project has been steadily progressing to achieve the Project Purpose. The Project has high prospect of achieving its objective given the project period extended

for several months. The Project was highly relevant with Kenya's policies as well as the development needs of the road sector. The Project achieved high effectiveness and impact through the capacity development on PBC and road conditions monitoring system (DRIMS). The production of guidelines and related manual on PBC for the first time in Kenya would be the most significant output, responding to the arising needs. The Team already observed the signs of impact. The PBC roads have been maintained in good condition through improved supervision by RA officers trained under the Project. Efficiency was relatively high although there were some delays in producing cost estimation manual. Sustainability of the Project is high in all aspects concerned.

Thus, the Team concluded that the extension of the Project is necessary to complete the remaining activities of the Project in order to achieve the Project Purpose.

### **3-6 Recommendations**

- (1) On-going and remaining planned activities should be completed. Major activities include the finalization of the PBC guidelines and cost estimation manual, development of training materials on PBC and DRIMS, conducting TOTs.
- (2) Efforts should be made to consolidate the individual capacities into institutional capacity.
- (3) It is necessary for Kenyan side to determine the responsible entities to initiate revision and update of guidelines and manuals developed by the Project.
- (4) Productivity rate and unit price in the PBC Cost Estimation Manual have to be updated every year to reflect the actual situation for the new PBC contract to be effective and efficient. It is recommended that a mechanism to update cost estimation should be considered among related organizations.

### **3-7 Lessons Learned**

- (1) Aligning the project activities with the partner institution's regular work contributed to attained effectiveness and prospective sustainability of the project interventions.
- (2) Consolidation of various PBC related road maintenance projects by Kenyan side led to enhanced impacts. Utilization of the Project outputs into KeRRA's Roads 2000 program which are assisted by AFD is one of the examples.
- (3) Careful assessment of local needs for road maintenance and flexibility allowed for the project activities contributed to delivery of effective project outputs.