

Terminal Evaluation Summary Sheet

(This is based on an actual evaluation study, but for this document, some changes and additions were made.)

I. Outline of the Project	
Country: Republic of the Philippines	Project title: Improvement of Quality Management for Highway and Bridge Construction and Maintenance
Issue/Sector: Infrastructure	Cooperation scheme: Technical Cooperation Project
Division in charge: JICA Philippine Office, JICA	Total cost (at the time of evaluation): 490 million yen
Period of cooperation	(R/D) 17/02/2007 – 16/02/2010
	Partner country's implementing organization: Department of Public Works and Highways
	Supporting organization in Japan: Ministry of Land, Infrastructure, Transport and Tourism
<p>1 Background of the Project</p> <p>Considering its importance for the country, the Government of the Philippines prioritizes condition and maintenance of infrastructure such as highways and bridges. However, the reality doesn't live up to the standard and budget deficit is not the only reason for the situation: lack of appropriate operational manuals, loose implementation of standards indicated in manuals and insufficient training for engineers in DPWH. Considering these issues, the Government of the Philippines requested technical cooperation to the Government of Japan. With the several study teams being dispatched and being in constant consultation with DPWH since 2005, JICA formulated the Master Plan for the above mentioned project. As a result of agreement between DPWH and JICA, Record of Discussion (R/D) was signed by both parties and the technical cooperation project (TCP) started in February 17, 2007.</p>	
<p>2 Project overview</p> <p>Overall Goal</p> <p>“Capability of engineers in the DPWH and Regional Offices in the quality management for road and bridge construction and maintenance is improved.”</p> <p>Project Purpose</p> <p>“Capability of engineers in the selected 3 Regional Offices (Baguio in CAR, Cebu in Region VII and Davao in Region XI) and district engineering offices in the quality management for road and bridge construction and maintenance is improved through application of issued technical manuals.”</p> <p>Output</p> <p>1) Capability of engineers who participated in the training program is enhanced. 2) DPWH technical manuals for construction supervision and road and bridge maintenance are prepared.</p> <p>Activities</p> <p><For Output 1></p>	

- 1-1 Conduct training needs analysis for different technical personnel (Project engineers, Project inspectors and Material engineers etc).
- 1-2 Formulate TCP training plan and follow-up scheme.
- 1-3 Develop training programs.
- 1-4 Conduct dry run of training modules with Central Office and the 3 Regional Offices.
 - * Conduct the trainings for trainers at Regional Offices to handle the equipment
- 1-5 Conduct pilot training.
- 1-6 Evaluate pilot training for road modules.
- 1-7 Evaluate pilot training for bridge modules.
- 1-8 Improve training modules and training program for road.
- 1-9 Improve training modules and training programs for bridge.
- 1-10 Conduct 2nd to 4th training programs.
 - * Conduct the field trainings to execute the series of repairs on Pilot Project at the selected field site.
 - * Establish the system for the quick access to the road status and for the early warning
- 1-11 Conduct regional technical conference.
- 1-12 Monitor and evaluate training follow-up schemes.

<For Output 2>

- 2-1 Review on the current state of the following items.
DPWH technical manuals/Department Orders/Procedural manuals/Works specifications/Quality Control, Quality Assurance manuals/Inspection manuals/Other manuals or guidelines on construction and maintenance
- 2-2 Formulate a plan for technical manual development and scheme for improvement and sustainability.
- 2-3 Develop technical manuals in collaboration with Central Office and the 3 Regional Offices.
- 2-4 Pre-test the technical manuals in pilot regions and include in training programs.
- 2-5 Submit technical manuals for review and comments of Technical Working Group.
- 2-6 Revision, refinement, reproduction of the technical manuals.
 - 2-6-1 Conduct trainings for daily routine maintenance (ex. Cleaning of bridges)
 - 2-6-2 Conduct surveys for monitoring of new load posting signs.
- 2-7 Issue technical manuals to pilot regions to be utilized on project sites.
 - * In order to increase the accessibility of manuals not only for those engineers in the model regions but also for those other regions, upload the manual in the intranet.
- 2-8 Monitor utilization of technical manuals and evaluate usefulness and relevance.

II. Evaluation team

Members of evaluation team	Leader: Mr. Susumu Ito, Senior Representative, JICA Philippine Office Planning of cooperation: Mr. Ken Inoue, Representative, JICA Philippine Office Evaluation analysis: Ms. Shinobu Mamiya, International Development Associates, Ltd.
Period of evaluation	04/12/2009 – 17/12/2009

III. Results of evaluation

1. Project Performance

The Team reviewed the results of activities and evaluated the achievements of Outputs and Project Purpose according to the indicators on PDM (PDM 3) and summarized the results as follows:

3-1 Results of the Activities

All planned activities were carried out accordingly. In the process of implementation, there has been the needs arose to conduct some activities which were not planned at the beginning. Both Philippine and Japanese sides discussed and agreed to conduct such activities. Eventually, this served to amplify the positive outcome for roads and bridges.

3-2 Achievement of the Inputs

1) Japanese Side

Most of the inputs from the Japanese side, such as dispatch of experts, training of C/Ps, provision of equipment and local cost support are executed as planned.

(1) Dispatch of Japanese experts

Three (3) long-term experts and twelve (12) short-term experts were dispatched in the four (4) subjects for road and nine (9) subjects for the bridge respectively.

(2) Counterpart Trainings

Total of six (6) C/Ps participated in the counterpart trainings in Japan. In addition, nine (9) C/Ps participated in the third-country trainings held in Vietnam and Indonesia.

(3) Provision of Equipment

Total amount of equipment for PHP56.2 million was provided by Japan and used to proceed the technical transfer. Most of the equipment were distributed to three Regional Offices (RO) to be used at On the Job Training (OJT). Some equipment were distributed to District Engineering Offices (DEO) and utilized for the routine maintenance and repairs.

(4) Local cost

In order to carry out the activities, the total amount of PHP10.9 million was disbursed from Japanese side. Details are given in the Annex 6.

2) Philippine Side

Inputs from the Philippine side were also provided as planned. The Philippine side additionally provided the cost of Pilot Projects for bridges. The cost of Pilot Projects for roads is expected to be disbursed in January, 2010.

(1) Counterparts (C/Ps)

Philippine side assigned seven (7) C/Ps from the Central Office (CO) of DPWH and fourteen (14) C/Ps from

the three (3) Regional Offices (RO). Some C/Ps in Cordillera Administrative Region (CAR) and the Region VII (RVII) left the project for unavoidable reasons., however, Philippine side immediately allocated the CP as replacement for smoothly taking over the work. Assigned C/Ps, especially those from three Regions have energetically carried out activities in collaboration with Japanese experts.

(2) GOP Counterpart Fund

In order to carry out the activities, Philippine side disbursed funds for PHP26.02 million as a operational cost. In addition, the amount of PHP20.0 million out of PHP100.0 million was disbursed from the Philippine side for the implementation of the Pilot Projects for bridges. Such Pilot Projects were used as the field trainings for bridge repair. It is expected that the budget for Pilot Project for roads will be disbursed in the beginning of the year 2010 to finalize the activities for roads and bridge (second batch).

(3) Project staff and office space for experts

The Philippine side also allocated the office space with utilities and some furniture for the Project in the Central Office as well as three Regional Offices. In addition, Philippine side allocated the project staff as administrative supports in each Office.

3-3 Achievement of the Outputs

The Team evaluated the achievements of Outputs according to the indicators on PDM (PDM 3) and summarized the results as follows:

Output 1: "Capability of engineers who participated training program is enhanced".

Objectively Verifiable Indicators:

- 1-1 Knowledge and skills of trainers are enhanced (C/P as well as other engineers)
- 1-2 Knowledge and skills of trainees are enhanced

The planned OJTs were successfully conducted for both roads and bridges. In the preparation stage, C/Ps and Japanese experts worked hard to develop the training programs by assessing the needs for different technical personnel. In order to enhance the understandings as well as to refine the contents of the draft of training modules, the dry runs and related workshops were conducted prior to the first OJT. Pivotal roles were taken to carry out such dry runs by those members of Counterpart Working Group (CWG) and Technical Working Group (TWG). Most of lectures at the first OJT were done by Japanese experts, however, with a considerable amount of effort to develop the knowledge and skills made by each C/P, the most of lectures at fourth OJT were conducted mainly by those C/Ps. Knowledge and skills of those C/Ps as trainers have been greatly enhanced in these processes and it is reassured by the Japanese experts that each C/P can now satisfactorily perform their duties as trainers in certain subjects at OJT.

As shown in the table 1, the total number of participants of OJT from the first to the fourth for both roads and bridges came to 706. The participants were also invited not only from 3 targeted regions but other

neighboring ROs and DEOs. The post examinations were conducted after the 3rd and 4th OJTs, Although it provides only one aspect of participants' performance, the average score of post examination for all participants reached over 75%.

Table 1 Quick overview of OJTs conducted up to Dec. 2009

Areas	Main Subjects	#	Regional Offices			Total	Training Period	# of Days
			CA R	VII	XI			
Road	Course Title : Enhancement of Road Construction/Maintenance Management Technique for Pavement, Road Drainage & Road slope	1st	34	37		34 37	Jul.15-19, 2008 Jul.28-Aug.2, 2008	5 6
		2nd	26	28			Feb.3-12, 2009 Feb.17-26, 2009	10 10
		3rd	31	36			Jun.16-2 2009 Jul7-16, 2009	9 10
		4th	25	39			Oct.6-15, 2009 Oct.20-29, 20 9	10 10
		Sub total		116	140		256	
Bridge	Bridge QC	1st		39	29		Jan.28-Feb.1, 2008 Feb.4-8, 2008	4 5
		2nd		30	20		Sep.8-12, 2 08 Sep 22-26, 2008	5 5
		3rd		27	23		May 25-29, 2009 Jun. 1-5, 2009	5 5
		1st		38	33		Jan.15-25, 2008 Feb.11-21, 2008	11 11
	Maintenance (B/M)	2nd		35	17		Oct. 20-31, 2008 Sep.29-Oct.10 008	12 12
		3rd		31	21		Aug. 11-21, 2009 Jun.30-Jul.10, 2009	12 11
		4th		37	35		Nov 3-13, 2009 Oct.20-30 ,2009	11 11
	B/M & QC			10			Dec. 1 - Dec. 4, 2009	4
	Long Span Bridge Inspection			25			Feb. 26 - 29, 2 0	4
	S Total		0	272	178	450		
Total		116	412	178	706			

According to the interviews of those participants from DEO conducted during the evaluation study, the OJT for both roads and bridges were highly appreciated for the following reasons.

The training provided them with the applicable technologies which made their routine maintenance work more effective and attractive. Especially they emphasized that the introduction of effective and handy equipment would make a big difference to improve the routine maintenance work. The perfect balance of lectures and field exercises which were timely scheduled to help them to reaffirm the theories into action is also noted as very useful. Especially, their knowledge and skills were greatly enhanced during the Pilot Project at which they repaired bridges by applying the knowledge and skills in the actual settings. The trainings have also helped them to re-recognize the original concept as well as the beauty of maintenance work. One of the participants mentioned that "I have realized that maintenance work, even the work itself is simple in the daily basis, can make a big difference in the long-term, because it surely extend the lifetime of roads and bridges if the maintenance work has been properly done."

Apart from planned OJTs, some other trainings and workshops were additionally conducted to meet the needs and requests of C/Ps and participants. Such trainings include the OJT for long span bridge inspection , calculation of load capacity on bridges and the special trainings of operating equipment, such as Bridge Inspection Vehicle.

Considering the achievements of two indicators, it can be said that the Output 1 has been "satisfactorily achieved."

Output 2:

"DPWH technical manuals for construction supervision and road & bridge maintenance are prepared."

Objectively Verifiable Indicators:

- 2-1 Completion of the development of manuals
- 2-2 Establishment of the revised system of the manuals

In the process of developing manuals, both C/Ps and Japanese experts first reviewed the existing manuals and guidelines available and examined in view of how to make these documents more applicable and user-friendly. Strenuous efforts were made by both C/Ps and Japanese experts in this process. Eventually, many C/Ps increased the knowledge on maintenance to make it more comprehensive. One of the C/Ps mentioned during the interviews of the evaluation study, "This process was very tiring and occupied much of my time, but this was awakening experience for me because it reminded me of the ethical concept, the obligation of maintenance engineers, that have easily been forgotten."

In order to make the manual more comprehensive and adaptable for users, research-type of studies, such as monitoring on new load posting signs for bridges and studies on road status/early warning information system were conducted. The results of those studies were analyzed and incorporated into the manuals. As a whole, six (6) kinds of manuals were developed for bridges and two (2) kinds for roads. Some of them were already authorized by the Department Order (DO). It is worth noted that the Bridge Repair Manual as well as Load Rating Manual have also contained the computer-based programs. This added-value has made them even more user-friendly.

Table 2 List of Manuals/Guidebooks/Handbooks produced by TCP

#	Manual/Guidebook/Handbook	Development Period	Date submitted to BRS	Status of Authorization (Date of DO)
1	Bridge Repair Manual	Jul, 2008-Nov, 2008	Nov, 2008	Sep. 23, 2009
2	Bridge Inspector's Handbook	Jul, 2008-Nov, 2008	Nov, 2008	Sep. 23, 2009

3	1st Mandaue Mactan Bridge Inspection Manual	Oct, 2007-Jul, 2008	Nov, 2008	Sep. 23, 2009
4	Marcelo Fernan Bridge Inspection Manual	Oct, 2007-Jul, 2008	Nov, 2008	Sep. 23, 2009
5	Load Rating Manual (Second Edition)	Jan, 2009-Mar, 2009	Mar, 2009	Waiting for approval
6	Quality Control Manual on Concrete & Steel Bridge Structures	Apr, 2007-Aug, 2009	Sep, 2009	Waiting for approval
7	Road Project Management and Supervision Manual	Jul, 2008-Nov, 2009	Dec,2009	Waiting for approval
8	Guidebook for Road Construction and Maintenance Management in the Republic of the Philippines	Mar, 2008-Nov, 2009	Dec,2009	Waiting for approval

Manuals and guidelines were distributed to each participant for their reference during the lectures as well as field exercises. Their comments and feedbacks collected and proactively followed-up at the end of each OJT were discussed among C/Ps and Japanese experts at the meetings of CWGs/TWGs. They have been eventually reflected on the manuals and guidelines. In the case of bridges, the draft manuals developed by those members of CWGs were first submitted to the TWGs for thorough reviews especially from the technical point of view. With the endorsement by TWGs, the draft manuals/guidelines were submitted to the JCC for approval. Upon the approval of JCC, they are to be put into the administrative process. Manuals and guidelines will be officially used upon the acknowledgement of the Department Order. (DO) This procedure of revision and refinement of manuals and guidelines has been gradually established in the process of TCP activities, and it is expected to be continued by the teamwork of CWGs and TWGs.

Considering the achievements of these two indicators, it can be said that the Output 2 has been "satisfactorily achieved".

3-2-2 Project Purpose:

"Capability of engineers in the selected 3 Regional Offices (Baguio in CAR, Cebu in Region VII and Davao in Region XI) and district engineering offices in the quality management for road and bridge construction and maintenance is improved through application of issued technical manuals".

Objectively Verifiable Indicators:

- 1 Knowledge and skills of engineers in the selected 3 regional offices are enhanced (Number of 3 Offices' engineers participate in the technical training and over 80% of the training participants pass training examination)
- 2 Number of good practices reported by engineers at the regional technical conferences
- 3 Establishment of the training system in the 3 selected Regional Offices by the key personnel using the manuals
Period from inspection/evaluation of defects to completion of repair and number of defects repaired

As explained in the achievement of Outputs, with the combined efforts of 3 ROs and CO assisted by the

Japanese experts, the manuals/guidelines were developed and planned OJTs for roads and bridges were successfully conducted. Capabilities of C/Ps as well as those engineers at DEO have been greatly improved. Some C/Ps has already performed the duties of trainers from the 2nd OJT for both roads and bridges. (Indicator 1) According to the interviews conducted during this evaluation study, some engineers at DEO have already put the lessons learned from the trainings into practice. Equipment introduced by the training, such as high pressure cleaner for bridges as well as the portable distance meter for roads have been fully utilized in the routine maintenance work. The trainings have also made them aware of importance of strenuous procedures of routine maintenance work and the significance of data objectively measured to detect the possible defects of roads and bridges.

As previously described, the OJT can be managed by those well-trained C/Ps by utilizing the training modules. Having been recommended by the Assistant Secretary of DPWH at the mid-term review, engineers from other Regions have already participated in the trainings from 3rd and 4th OJTs, so that more and more engineers have been familiarized with the trainings by TCP. However, for the nation-wide expansion of these trainings, well-thought-out strategies and procedures need to be fully developed among those C/Ps of three ROs under the strong leadership of CO, DPWH.

Good practices were reported as described under the indicator 2. However, it is too early to examine the time saved for the period of defect detection through the completion of repair. As for the number of repair work conducted so far is recorded as six (6) cases for roads and twelve (12) cases for bridges respectively.

Apart from the indicators set for the PDM2, the Team examined the achievement of the Project Purpose from the viewpoint, that is, the readiness for nation-wide expansion of OJT solely by those key C/Ps. Findings have positively confirmed their considerable level of readiness as follows. Firstly, the Project has prepared to upload manuals and guidelines in the PDF formats into the intranet. This will drastically increase the accessibility of such documents for engineers nation-wide. Secondly, the DPWH is now planning to set up the mechanism to pool such trainers as those trained through the TCP in register and provide necessary support to them, so that they can work as trainers at OJT whenever requested. Lastly, the DPWH is planning to secure the budget to purchase equipment, such as the Non-Destructive Test (NDT) and the Bridge Inspection Vehicle (BIV) which are in great demand and to distribute to each Region for their practical use.

Considering the achievement level of indicators set forth and additional points examined through the study, it can be said that the Project Purpose has been "satisfactorily achieved". In order to make full use of achievements by the TCP, it is strongly recommended that the DPWH should discuss the strategies for

nation-wide expansion and its practical procedures before the end of TCP.

2 Summary of Evaluation Results

4-1 Relevance

The relevance of the Project is considerably high.

According to the Medium Term Philippine Development Plan (2004-2010) of the Philippine Government, and the Medium Term Infrastructure Development Plan of DPWH, the enhancement of maintenance technique of main roads and bridges is one of the priority issues in the Philippine infrastructure development. And there is an increasing concern among those engineers on the maintenance and repair for sustainable development in the Philippines. In this respect, the project's overall goal and project purpose have been consistent with the policy of the Government of Philippine and its needs of the target people.

The project has also relevant with the policy of Japanese Development Assistance. JICA's Country-Specific-Assistance Program for Philippine as of July 2009 has put high priority on the enhancement of the maintenance and repair of roads and bridges to secure the sustainability of infrastructure development.

Currently, no other external donors have provided such technical assistance which focused on the maintenance and repairs and directly targeted to the ROs. Furthermore, the Japanese technologies, such as Road Slope Management System (RSMS) and Bridge Management System (BMS) have its comparative advantages and have greatly met the needs of the target population of the Philippine.

4-2 Effectiveness

The effectiveness of the Project is also high.

1) Project Purpose

As explained in 3-2-2, judging from the performance of indicators and the comments received during the Terminal Evaluation, the Project Purpose could be said as "satisfactorily achieved". However, in order to sustain the current level of achievements, it is expected that the DPWH (CO in collaboration with 3 ROs) should take initiatives to replicate the trainings to other Regions, so that the capacity of all engineers engaged in the maintenance and repair of roads and bridges will be further developed nationwide.

2) Contribution of each output

Two (2) Outputs have been effectively set to generate the synergy effects if both were progressed in a timely manner. Output one (1) was consisted of two components. The one component served to improve the capacity of engineers on the maintenance and repair works in the ROs and DEOs in the targeted regions. The other component is to help developing trainers of such OJTs throughout conducting the

series of OJTs as well as developing the training modules. Output two (2) was intended to develop the manuals and guidelines that were put in use during the OJT and to be revised and refined with the feedbacks from participants. As a whole, the OJT has fulfilled the multiple purposes not only providing trainings to enhance the knowledge and skills of engineers, but also serving as the base for the development of trainers as well as the manuals. Furthermore, added activities to meet the needs and requests of the C/Ps and participants, such as conducting the Pilot Projects, establishment of road status information/early warning system, and uploading the manuals/guidelines into the intranet, has generated the enormous creative synergy, increasing the level of effectiveness even higher.

3) Inhibiting factors to achieve the Project Purpose

According to the interviews and questionnaires, it was revealed that the project activities were restricted in some degree due to the delay of funds disbursement by the Philippine side in carrying out the Pilot Project

4-3 Efficiency

The efficiency of the Project is relatively high.

1) Japanese Side

Most of the inputs from Japanese side, such as dispatch of experts, training of counterparts in Japan and local cost support, were executed as planned. Counterpart trainings in Japan greatly encouraged the C/Ps to promote their motivation to improve the maintenance and repair works as well as to enhance their technical knowledge and skills. Equipment introduced by the Japanese experts attracted the attentions of most of participants as they greatly facilitate the maintenance and repair works for both roads and bridges. Some delays in delivery of equipment to the ROs and DEOs was identified which slightly affected the progress of some activities.

2) Philippine Side

Those C/Ps at three ROs worked very hard with the strong commitment and dedication to the TCP activities. Although some C/Ps left the TCP due to the unfortunate and unavoidable reasons, immediate action taken by the Philippine side to allocate the new C/P made the smooth take-over possible. Due to the budget constraint, it was regrettable that activities in the road construction control management have been set out from the scope of work.

3) Management of the Project

The establishment of CWG and TWG mechanism has greatly served to promote the communication among Philippine C/Ps not only for sharing the technical views, but also building the rapport among them. In order for the effective management of the Project, it is recommended that the monitoring results should be reflected on the PDM/PO on a timely manner.

4-4 Impact

Impact of the Project is expected to be relatively large and it is likely that the Overall Goals "Capability of engineers in the DPWH and Regional Offices in the quality management for road and bridge construction and maintenance is improved." will be achieved if the strong initiative of CO in collaboration of 3 ROs on their part is effectively demonstrated.

At the time of Terminal Evaluation, the following positive impacts by the Project have been observed. The effective network which connects the CO and three focal ROs of three main areas of Philippine has been established through the various project activities, such as OJT, TWG, CWG and exchange visits among ROs, etc. This is the first opportunity for those engineers of ROs to be connected with other ROs under the nationwide organization of DPWH.

The Project has its impact on the economical aspects. Emergency rehabilitation work completed in a timely manner by the Project based on the damage assessment has contributed to minimize the financial loss of those affected areas. Prompt action made by the DPWH as well as the objective assessment may have served well to avoid for Baguio city being isolated by the typhoon hit on October, 2009.

In order to introduce the environmental protection in the training program, the Project invited a lecturer from the Environmental and Social Service Office (ESSO). This serves for participants to enhance their understandings of environmental aspects to be considered in the maintenance and repair works.

The automatic rain gauge set at the toll gate in CAR by the Project has unintended positive impact for anyone who needs to pass through the gate. It gives out the information of early warning by measuring the rainfall. As the road status / early warning information is available at the website, people can access whenever needed to determine when they can pass through the road, or which roads they should take.

Although it is not tangible, but very important impact has been observed among key C/Ps. Most of them were impressed by the working ethics and attitude by the Japanese experts, their commitment and dedication to fulfill their responsibilities as well as self-reliant efforts to improve themselves. Time management is the key concepts for many C/Ps to be applied throughout the process.

No negative impact by the Project has been observed.

4-5 Sustainability

The sustainability of the Project can be secured through continuous efforts to expand the trainings to nation-wide with an initiative of DPWH.

1) Policy aspects

There is a pressing need to strengthen the maintenance and repair in the roads and bridges of Philippines. It is very likely for the Government of Philippine to continue the enhancement of the capacity of engineers with high priority. It is presumed that the likelihood of DPWH maintaining this policy will remain the same even with the political change after the presidential election in 2010.

2) Organizational aspects

The existing organizational committee for this project will continuously function to sustain the implementation and in the monitoring and evaluation of the project (5 years) For the continuity of the project, a Special Order will be re-issued for the purpose.

OJT program for the remaining 13 regions will be included in the regular annual training calendar of DPWH and/or incorporated in the annual Bridge Maintenance System (BMS) and Pavement Management System (PMS) training programs. DPWH will tap the TCP trained counterparts as resource speakers to similar training programs of the Department. Meantime, that the equipment are limited to the three (3) pilot regions and in order to fully utilize the Bridge Inspection Vehicle (BIV) and NDT apparatus, DPWH will advise those non- pilot regions to avail the usage of NDT equipment and technical assistance to the nearest pilot regions. DPWH will ensure the maintenance of all JICA donated equipment and laboratory apparatus. DPWH will regularly revisit/review the developed manuals and will update when necessary.

3) Financial aspects

In order to cope with the needs, the DPWH is planning to secure the budget to purchase equipment, such as the Non-Destructive Test (NDT) and the Bridge Inspection Vehicle (BIV) , and to distribute them to each Region for their practical use. As for the nation-wide expansion of OJT, the DPWH has currently been considering to obtain the loans from external donors. DPWH will also commit to provide adequate funds for the above-mentioned activities including the operational costs, monitoring and evaluation of the completed projects.

4) Technical aspects

It is confirmed that most of knowledge and technologies transferred through the Project activities are appropriate and timely in the context of Philippine and it has already been adopted in many of DEOs. If those engineers trained under the Project remained and to serve to expand the knowledge and skills for those at other regions, the technical sustainability will surely be secured. Furthermore, the accessibilities to the manuals and guidelines will be greatly improved as the Project is planning to upload such documents in the PDF format in the intranet. As a whole, it is quite likely that the technical adaptability will be sustained.

6. Recommendation

(1) To the Project

1) Before the end of the Project, the Project shall conduct a one day seminar inviting representatives from the other regions in order to disseminate the outputs of the Project.

2) Before the end of the Project, the Project shall utilize opportunities of "staff meeting" where the regional directors attend in order for them to understand the outputs of the Project.

3) The Project shall monitor its activities based on the PDM and PO until the end of the Project.

(2) To DPWH

1) DPWH shall incorporate the contents of the OJT (developed by DPWH) into regular training programs of DPWH

2) DPWH shall formulate a plan to conduct training programs (as referred in 1) above) nation-wide and secure necessary budget to implement it.

3) DPWH, through its Bureau of Research and Standards, shall recommend the list of trainers (Annex9) to the training division of CO so that the listed trainers could be designated as trainers for the trainings mentioned above. The Regional Directors of the ROs the trainers belong to shall allow them to go out of the respective regions.

4) DPWH shall formulate a plan to implement "pilot project" (as assisted by the Project) nation-wide and secure necessary budget to do it.

5) DPWH shall issue an order which allows the existing C/P staff to keep working on monitoring activities after the Project period. The existing C/P staff shall monitor the progress of dissemination of the trainings and Pilot Projects.

6) DPWH shall discuss with the pilot ROs and DEOs how to effectively and efficiently utilizes the equipment in the pilot regions, e.g. mechanism to share opportunities with DEOs to use NDTs, inventory system to make records.

(3) To JICA

1) JICA, together with the existing C/P staff, shall monitor the progress of the activities mentioned in (2) above.

2) JICA shall conduct ex-post evaluation of the Project to assess the sustainability and impact of the Project after three (3) years of the completion of the Project.

7. Lessons Learned

(1) It is deemed appropriate to implement the Project with three (3) regions, considering the targets of the Project are engineers at regional and district level. Throughout the Project, key regional counterpart staff were fostered as lecturers so that those staff will be able to deliver lectures in other regions after the end of the Project ("cascade"). In this sense, the commitment of DPWH to facilitate it shall be highly recognized in terms of sustainability.

(2) In order to foster "lecturers" from the regional counterparts, it is deemed appropriate that the Project took the following arrangements, namely Japanese experts prepared training materials and delivered actual trainings in the first batch of the trainings, while the regional counterparts have played more significant roles in the succeeding batches and Japanese experts have supported the counterparts.

(3) It is confirmed that the methodology of the "Pilot Project" has been very effective to let the targeted engineers really learn and understand the techniques transferred by the Project. The "Pilot Project" could provide the engineers with opportunities where they could have hands-on experiences through the whole process of maintenance works from inspection to actual maintenance by themselves. It is very different from arranged settings of trainings (OJTs). When conducting projects on capacity development of engineers, it is important to give them this kind of hands-on opportunities.

(4) When conducting projects on capacity development of engineers, it is very important to consider clear indicators to measure degree of improvement of participants' capacities. Although pre and post examination could be one of the means of verification, it should be noted to make it objective and consistent as much as possible.

(5) It should be also noted that it is important to have an organizational setting which allow counterpart staff to dedicate most of his/her working time to the Project. In this regard, it is worth considering assigning exclusive staff from both central and regional offices.