Ex-Post Project Evaluation 2011: Package II-5
(China, Vietnam)

October 2012

JAPAN INTERNATIONAL COOPERATION AGENCY

OPMAC Corporation

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Preface

Ex-post evaluation of ODA projects has been in place since 1975 and since then the coverage of evaluation has expanded. Japan's ODA charter revised in 2003 shows Japan's commitment to ODA evaluation, clearly stating under the section "Enhancement of Evaluation" that in order to measure, analyze and objectively evaluate the outcome of ODA, third-party evaluations conducted by experts will be enhanced.

This volume shows the results of the ex-post evaluation of ODA Loan projects that were mainly completed in fiscal year 2009, and Technical Cooperation projects and Grant Aid projects, most of which project cost exceeds 1 billion JPY, that were mainly completed in fiscal year 2008. The ex-post evaluation was entrusted to external evaluators to ensure objective analysis of the projects' effects and to draw lessons and recommendations to be utilized in similar projects.

The lessons and recommendations drawn from these evaluations will be shared with JICA's stakeholders in order to improve the quality of ODA projects.

Lastly, deep appreciation is given to those who have cooperated and supported the creation of this volume of evaluations.

October 2012
Masato Watanabe
Vice President
Japan International Cooperation Agency (JICA)

Disclaimer

This volume of evaluations, the English translation of the original Japanese version, shows the result of objective ex-post evaluations made by external evaluators. The views and recommendations herein do not necessarily reflect the official views and opinions of JICA. JICA is not responsible for the accuracy of English translation, and the Japanese version shall prevail in the event of any inconsistency with the English version.

Minor amendments may be made when the contents of this volume is posted on JICA's website.

JICA's comments may be added at the end of each report when the views held by the operations departments do not match those of the external evaluator.

China

Ex-Post Evaluation of Japanese Technical Cooperation Project
"The Japan – China Cooperation Science and Technology Center
for Forest Tree Improvement Project"

External Evaluator: Nobuyuki Kobayashi, OPMAC Corp. / Akinori Nishio, JAFTA

0. Summary

The project aimed at human resource development for the breeding of forest trees through measures such as the breeding of superior tree species and the plan of forest tree breeding. As the project purpose is in line with development policy and development needs, its relevancy is high. After project implementation, the counterparts acquired the capacity for forest tree breeding and the planning of breeding. As this project had several achievements, such as the advancement of techniques, systematic and sustainable forest tree breeding and contributions to forest tree breeding in southern provinces by developing technical training for forest tree breeding, its effectiveness and impact is high. There was no problem with the inputs, including equipment and experts. Nevertheless, an extension in the project period resulted in both a longer implementation term of cooperation and a larger project cost and, hence, the efficiency of the project is fair. No major problems have been observed in the structural, technical, financial aspects of the executing agencies, and therefore the sustainability of the project effects is high. The skills for forest tree breeding and the superior tree species are expected to be utilized in the future.

In light of the above, this project is evaluated to be highly satisfactory.

1. Project Description

Project Location


Woods for pest-resistant ability of poplar

1.1 Background

At the time of the establishment of the People's Republic of China (1949), forest coverage was less than 10% of the country. The Chinese government has increased forest areas since then. In the first half of the 2000s, China was one of the counties with a large forest area. Nevertheless, the country has vast territory and its forest coverage was below 20%. After a flood of the Yangtze River valley in 1998, further efforts were made for the protection of natural forest and an increase in afforestation. In order to carry out afforestation efficiently in various environments over its vast territory, it's very basic to breed superior tree species.

In consideration of the need for forest tree breeding, JICA implemented a technical cooperation project (Hubei Province Tree Improvement Project) from 1995 to 2001. Although

Hubei province is located in the southern part of China, its complex geographical environment and wide variety of flora, tree species originating in the northern area also can be planted here. Thus, Hubei province was selected as the project site. Since it takes a long time before forest tree breeding produces results, it was desirable to utilize breeding materials for forest tree breeding and advanced techniques for genetic improvement of forest tree, both of which were produced by the aforementioned project, and to promote forest tree breeding. Protection of the natural forest and an increase in afforestation created a strong demand for superior seeds and seedlings and, for this reason, diffusing techniques for forest tree breeding outside of Hubei province was an important policy agenda.

Under this situation, the Chinese government requested technical cooperation for the advancement of techniques for forest tree breeding and the dissemination of these techniques in the southern provinces. This project (The Japan – China Cooperation Science and Technology Center for the Forest Tree Improvement Project) was originally planned to be implemented from October 2001 to October 2006, but for better sustainability of the project effects, the period of cooperation was extended to October 2008.[1] While the Japan – China Cooperation Science and Technology Center for Forest Tree Improvement (JCCSTCFTI) implemented the project, the Center for Forest Tree Breeding in Hubei Province (CFTB-HP) and the Center for Breeding of *Pinus massoniana* against *Bursaphelenchus xylophilus* in Anhui Province (CBPMBX-AP) did the research.

1.2 Project Outline

Overall Goal		(Original Project) Bases for forest tree breeding are established in southern provinces of the People's Republic of China, through extension of technologies developed by the Project (Extended Project) Forest tree breeding is implemented systematically in Anhui and Hubei Provinces and plans for forest tree breeding are being formulated in some other provinces in the southern region. Super Goal: Plans for forest tree breeding are formulated and breeding is implemented in some other provinces in the southern region.
Project Objective		(Original Project) The Japan-China Cooperation Science and Technology Center for Forest Tree Improvement acquires technical capacity to sustain forest tree breeding. (Extended Project) The Japan-China Cooperation Science and Technology Center for Forest Tree Improvement acquires the capacity to conduct forest tree breeding in an independent and planned manner.
Output(s)	(Original) Output 1	Techniques for recurrent selection breeding[2] are developed (Hubei Province).
	(Original) Output 2	Techniques for resistance breeding are developed (Anhui and Hubei Provinces).
	(Original) Output 3	Techniques for introduction breeding are developed (Hubei Province).
	(Original) Output 4	Techniques for genetic resources preservation are developed (Hubei Province).
	(Original) Output 5	Techniques for improving seedling production are developed (Hubei Province).

[1] This project has a Project Design Matrix for both the original period and the extended period. Both periods had different goals. For this reason, this ex-post evaluation analyzes the original period and the extended period separately where necessary.

[2] Recurrent selection is one of the breeding techniques which establishes certain species with desirable genes by repeating selection and hybridization.

	(Original) Output 6	Techniques for forest tree improvement are disseminated among technical staff of southern provinces by training programs (Hubei Province).
	(Extended) Output 1	The plan for forest tree breeding in Hubei Province has prospect to be implemented systematically.
	(Extended) Output 2	In Anhui Province, breeding of *Pinus massoniana*[3] against *Bursaphelenchus xylophilus*[4] has prospect to be implemented systematically.
Inputs		Japanese Side: (Original Project) 1. Experts: 36 persons 11 persons for Long-Term, 25 persons for Short-Term 2. 29 Trainees received (Counterpart Training in Japan) 3. No Trainees for Third-Country Training Programs (total) 4. Equipment 107 million yen 5. Local Cost 137 million yen 6. Others (incl. dispatch of related missions) (Extended Project) 1. Experts: 8 persons 3 persons for Long-Term, 5 persons for Short-Term 2. 9 Trainees received (Counterpart Training in Japan) 3. No Trainees for Third-Country Training Programs (total) 4. Equipment 16.21 million yen 5. Local Cost 52.57 million yen 6. Others (incl. dispatch of related missions) Chinese Side: (Original Project) 1. 18 Counterparts 2. Land and Facilities, Project office and Laboratory, Nursery, Experimental forest, Tree seed orchard, Forest for conservation of genetic resources, etc. 3. Local Cost 239.02 million (RMB 17 million) (Extended Project) 1. 13 Counterparts 2. Land and Facilities, Project office and Laboratory, Nursery, Experimental forest, etc. 3. Local Cost 48.89 million (RMB 3.2 million)
Total cost		990.64 million yen
Period of Cooperation		(Original Project) October 2001 - October 2006 (Extended Project) October 2006 - October 2008
Implementing Agency		State Forestry Administration (including General Administration of State Forest Farms, Tree Seeds and Seedling State Forestry Administration), Center for Forest Tree Breeding in Hubei Province, Center for breeding of *Pinus massoniana* against *Bursaphelenchus xylophilus* in Anhui Province, Forestry Bureau of Hubei Province[5], Anhui Province Forestry Department
Cooperation Agency in Japan		Ministry of Agriculture, Forestry and Fisheries, Forestry Agency, Forestry and Forest Products Research Institute[6]
Related Projects		Japanese Technical Cooperation “Hubei Province Tree Improvement Project”, Japanese ODA Loan “Hubei Province Afforestation Project”

[3] *Pinus massoniana* is an evergreen needle‐leaved tree under *Pinus*, *Pinaceae.*

[4] *Bursaphelenchus xylophilus* is a type of vermin which proliferates, eats and moves in tree trunks of *Pinaceae* and causes decay.

[5] At the time of project completion. The agency was named Hubei Province Forestry Department after 2011.

[6] At the end of project completion. At the commencement of the project, the cooperation agency in Japan included the Forest Tree Breeding Center which merged with the Forestry and Forest Products Research Institute in 2007.

1.3 Outline[7] of the Terminal Evaluation[8]

1.3.1 Achievement of Overall Goal

The terminal evaluation report mentioned the conditions for the achievement of the overall goals. In order to achieve these, besides the development of the physical infrastructure, the State Forestry Administration was expected to play a leading role in the utilization of techniques, human resources and the practical knowledge of training of CFTB-HP and CBPMBX-AP.

1.3.2 Achievement of Project Objective

The terminal evaluation report mentioned that the achievement of the outputs was satisfactory and that the project objectives were to be attained within the original period (until October 2006). It was concluded that professional knowledge, experience and skills for forest tree breeding techniques were improved by this project.

1.3.3 Recommendations

The terminal evaluation report mentioned short-term recommendations to be implemented within the original period (until October 2006) and long-term recommendations after project completion. The recommendations were as follows:

- Short-term recommendations: completion of activities, synthesis of technical transfer etc., the establishment of managerial organization to implement the Hubei province plan for forest tree breeding, the establishment of implementation system for a training program for the southern provinces, a future plan for JCCSTCFTI, the formulation of overall goals and super goals

- Long-term recommendations: Continuation of technical development, the implementation of the Hubei province plan for forest tree breeding, the expansion of breeding species against *Bursaphelenchus xylophilus* in Anhui province, the expansion of forest tree breeding in the southern provinces, the establishment of organizational systems for forest tree breeding, support after the project completion both by China and Japan

2. Outline of the Evaluation Study

2.1 External Evaluator

Nobuyuki Kobayashi, OPMAC Corp. / Akinori Nishio, JAFTA

2.2 Duration of Evaluation Study

Duration of the Study: September 2011 – October 2012
Duration of the Field Study: January 4 – January 17, 2012 and May 6 – May 15, 2012

2.3 Constraints during the Evaluation Study

Quantitative targets were not selected for the project objectives and overall goals. For this reason, the attainment of targets is evaluated based on qualitative evaluation information. As the 12th Five year plans for forestry development in Hubei and Anhui provinces was not disclosed at the time of the ex-post evaluation, judgment is based on interviews with the counterparts.

[7] This ex-post evaluation analyses both the original project and the extended project. The terminal evaluation was not conducted for the extended project. For reference, this report mentions the results of the terminal evaluation of the original project.
[8] Conducted in April 2006

3. Results of the Evaluation (Overall Rating: A[9])

3.1 Relevance (Rating: ③[10])

3.1.1 Relevance with the Development Plan of China

At the time of project planning (2001), the long-term plan for the recovery and protection of the environment was the National Program for the Construction of an Ecological Environment, which was approved in 1999. The plan pursued the protection of an ecological environment and aimed at more than 26% Forest Coverage Rate by 2050. The Seed Law was approved and implemented in 2000 and stipulated that the Chinese government supported the protection of gene resources and the breeding of superior species.

At the time of project completion (2008), the National Program for the Construction of an Ecological Environment remained an important policy in the forestry sector and the Seed Law also was effective. The plan for the forestry sector at the time of the project completion put more emphasis on quality improvement of seed and seedlings. The 11th Five-year Plan for the forestry sector[11] planned an increase in the use of superior seeds from 43% in 2005 to 50% in 2010 and 65% in 2020. The development of supply stations for seeds and seedlings changed its focus from quantity to quality. The Hubei province 11th Five-year Plan for Forestry Sector Development (planning period: 2005-2010) emphasized the establishment of a comprehensive breeding site to integrate research, production, and marketing. From the view point of the protection of forest resources, the Anhui province 11th Five-year Plan for Forestry Sector Development (planning period: 2005-2010) attached great importance to the prevention of *Bursaphelenchus xylophilus* and regarded the breeding of species against *Bursaphelenchus xylophilus* as a priority implementation project.

Cooperation by this project in forest tree breeding was crucial for efficient and high-quality afforestation as well as for the development of human resources for the task. It contributed to the achievement of policy agenda (such as an increase in the forest coverage rate and quality improvement of seeds and seedlings) at the times of both project planning and project completion.

3.1.2 Relevance with the Development Needs of China

At the time of project planning (2001), forest area in China was 134 million ha[12]. The forest coverage rate improved from 12.7% in the 1980s to 13.9% in the 1990s and further improvement was aimed for. Based on this policy, six large key projects were formulated in 2001. The policy direction of the sector leaned more towards the protection of natural forest and an increase in afforestation, and developed efficient planting in a wide variety of natural environments. This was the background for forest tree breeding and development of human resources to carry out the task. There were forests damaged by *bursaphelenchus xylophilus* in 14 provinces/regions/cities at the time of project planning and the problem was particularly severe in Anhui province. Pine trees accounted for 40% of the forest area in Anhui province and the damage of *Bursaphelenchus xylophilus* reached 9,840 ha per year.

At the time of project completion (2008), forest area in China was 195 million[13]. The forest coverage rate had surged to 20.4% but this was still below the policy target. In 2008, all of the six large key projects had moved into new phases or remained on-going by the extension of their project periods and this created the demand for high quality seeds and seedlings. At the time of project completion, damage of *Bursaphelenchus xylophilus* had been reduced to 5,300 ha (approx. 80,000 mu in 2008) per year. Anhui province made great efforts to control *Bursaphelenchus xylophilus* by cutting down and smoking out affected trees and damaged areas

[9] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

[10] ③: High, ②: Fair, ①: Low

[11] The formal name of the plan is the 11th Five-Year Forest Plan and the National Plan for Long- and Medium-Term Forestry Development.

[12] Based on JICA internal documents

[13] Based on the 7th Survey on China's Forest Resources (2004-2009)

showed a decreasing trend. At the times of both project planning and project completion, efficient afforestation in a wide variety of environments still created several needs for the breeding of superior tree species and capacity development for forest tree breeding. This project implemented activities in line with these needs.

3.1.3 Relevance with Japan's ODA Policy

At the time of project planning (2001), Japan's former Official Development Assistance Charter (former ODA charter), which had been proved by the cabinet in 1992, referred to the close relationship between Japan and East Asia and emphasized assistance to the Asian region. In addition, the charter had the policy of supporting the efforts of developing countries for environmental protection. In line with the former ODA charter, the Country Assistance Program for China, which was prepared in 2001, regarded assistance in solving environmental issues as a priority. In particular, it stated that assistance for protection and afforestation would be made for preservation and recovery of the ecosystem. In the JICA country assistance plan for China in FY 2000, preservation of the environment was one of the priority areas in assistance.

The project contributed to the protection of forests and afforestation through assistance for genetic improvement of forest tree and, thus, it was consistent with Japan's ODA policy.

This project has been highly relevant with the country's development plan, development needs, as well as Japan's ODA policy, therefore its relevance is high.

3.2 Effectiveness and Impact[14] (Rating: ③)

3.2.1 Project Outputs

As mentioned in "1.1 Background", the period of cooperation was extended in this project. Analysis of effects was based on the achievement of outputs and project objectives at the end of the original project period (as of October 2006) for the original project, and the achievement of outputs and project objectives at project completion (as of October 2008) for the extended project. Outputs not achieved at the time of project completion were reassessed using information from the time of the ex-post evaluation.

3.2.1.1 Project Outputs

(1) Original project

Six outputs were set out as the immediate effects of the original project. The achievement of the outputs at the end of the original project period was as follows:

1) Original project - Output 1 "Techniques for recurrent selection breeding are developed (Hubei Province)"

Output 1 for the original project had three indicators (1. Formulation of specification sheet for superior trees, 2. Selection of superior trees for the next generation, 3. Preparation of a mating plan). As the achievement of the indicators show that the information and materials for recurrent selection breeding were collected and that the mating plan progressed, Output 1 was achieved. As for Indicator 1, specification sheets were made for superior trees of 132 *Cunninghamia lanceolata*, for 248 *Pinus massoniana* (including 145 clones[15]), and for 63 clones of poplars. Data such as tree heights, breast height diameter, amount of flowers, and material quality were mentioned in the sheets. As for Indicator 2, 32 *Pinus massoniana*, 50 *Cunninghamia lanceolata*, 3 clones of poplars with good material quality and 3 clones of fast-growing and pest-resistant poplars were selected as superior trees for the next generation. As for Indicator 3, mating plans were prepared and adequate breeding materials had been collected by the end of the project.

[14] "Effectiveness" is rated taking into account "impact".

[15] Clone is a group with the same gene organization generated by asexual reproduction.

2) Original project - Output 2 “Techniques for resistance breeding are developed (Anhui and Hubei Provinces)”

Photo 1:Pest-prone Pinus massoniana Lines

Output 2 for the original project had two indicators (1. Establishment of a testing site for poplars, 2. Selection of *Pinus massoniana* resistant to *Bursaphelenchus xylophilus*). As the achievement of the indicators show that both the establishment of a testing site for poplars and the selection of *Pinus massoniana* resistant to *Bursaphelenchus xylophilus* progressed, Output 2 was achieved. For indicator 1, 2 testing sites for 20 lines of poplars resistant to longhorn beetle and 2 testing sites for crossbreeds were established. As for Indicator 2, *Pinus massoniana* resistant to *Bursaphelenchus xylophilus,* 251 lines, were selected and 1 conservation forest, 3 testing sites and 2 seed orchards were established. Given the period for completion in the original project, Indicator 2 was appropriate. However, the selection of pest-prone lines was not sufficient for the spread of pest-prone seedlings and the establishment of pest-prone clones was also required. There was a possibility that the counterpart agency could not achieve this task. For this reason, the extended project continued activities for the establishment of pest-prone clones.

3) Original project - Output 3 “Techniques for introduction breeding are developed (Hubei Province)”

Output 3 for the original project had three indicators (1. Selection of clones of fast initial growth poplar and larch, 2. Establishment of a regional test site, 3. Formulation of specification sheet for the superior trees of *Eucommia*). As the achievement of the indicators shows that the selection of superior clones suitable for species origin, Output 3 was achieved. As for Indicator 1, 50 lines of fast initial growth larch and 50 fast growing clones were selected from a regional test site in Jianshi county, Hubei province. From the testing site of a research center in Qianjiang, 7 superior clones adaptive in the Jianghan plain and 10 fast initial growth clones adaptive in hilly and mountainous areas were selected. As for Indicator 2, 17 regional test sites (total 24.3 ha) for poplar (including crossbreed of *Populus suaveolens* and *Populus nigra as well as Populus nigra*) were established. Based on interviews at the Center for Forest Tree Breeding in Hubei Province, a specification sheet on superior trees of *Eucommia* was completed within the period of cooperation of the original project.

4) Original project - Output 4 “Techniques for genetic resources preservation are developed (Hubei Province)”

Photo 2: Regional Forest of *Liriodendron tulipifera*

Output 4 of the original project had three indicators (1. Completion of genetic structure research for *Pinus massoniana* and natural forests of *Quercus,* 2. Establishment of conservation forest and development of conservation techniques for *Liriodendron tulipifera* and *Sassafras variifolium,* 3.Research on the genetic variations and morphological characteristics of *Liriodendron tulipifera* and *Sassafras variifolium*). As the achievement of the indicators show that research activities produced useful results within the period of cooperation of the original project, Output 4 was achieved. The

counterparts acquired the skills for genetic resources analysis through participation in this research. As for indicator 1, genetic structure research of *Pinus massoniana* and natural forests of *Quercus* showed that the genes of *Pinus massoniana* had a relatively wide variation and that the genes of *natural forests of Quercus* had a wider variation than *Quercus* in general and *Dicotyledon*. As for Indicator 2, techniques to improve the regional survival rate of *Liriodendron tulipifera* and *Sassafras variifolium* were identified and forests for ex-situ conservation were established. As for Indicator 3, research on genetic variation and morphological characteristics was completed in forest for in-situ conservation of *Liriodendron tulipifera* and *Sassafras variifolium*.

5) Original project - Output 5 "Techniques for improving seedling production are developed (Hubei Province)"

Output 5 for the original project had two indicators (1. Formulation of standards for seedlings of *Cunninghamia lanceolata* and *Pinus massoniana*, 2. Development of techniques for the improvement of seed production). As the achievement of the indicators suggests that results could be utilized for forest tree breeding, Output 5 was achieved. As for Indicator 1, seedling standards and manuals for seedling nurturing techniques for *Cunninghamia lanceolata* and *Pinus massoniana* were prepared. As for Indicator 2, interviews at CFTB-HP showed that techniques to promote flowering and to improve the efficiency of seed collection (such as hormone management, ring stripping and training) were identified and that experiments were conducted on them. In order to improve the efficiency of seed collection, a miniature seed orchard was established.

6) Original project - Output 6 "Techniques for forest tree improvement are disseminated among technical staff of southern provinces by training programs (Hubei Province)"

It is difficult to clearly distinguish Output 6 from Indicator 3 of the project objectives. In consideration of the characteristics of indicators, this ex-post evaluation report analyzes the managerial organization and the implantation process for training in Output 6 as well as the effect of training in Indicator 3 of the project objectives.

Output 6 for the original project had two indicators (1. Development of training curricula and materials, 2. Establishment of managerial organization for training). As the achievement of the indicators suggests that the operational arrangements for training were fulfilled, Output 6 was achieved. As for Indicator 1, a five-year plan for training was prepared at project commencement and reviewed as required. During the period of cooperation for the original project, 58 types of training materials which covered a wide variety of topics (such as the progress trend of forest tree breeding in China and Japan, techniques for forest tree breeding, the breeding of certain forest tree etc.) were prepared. As for Indicator 2, Hubei province was the main venue for training and the counterparts planned and coordinated training programs. Depending on the course contents, counterparts, dispatched experts or researchers in China (university professors, etc.) acted as lecturers. Since the counterparts of this project accumulated an adequate level of capacity for training, training programs for relevant persons in the forestry sector in Hubei province were implemented under the Japanese ODA Loan "Hubei Province Afforestation Project". Training materials (13 types) were prepared and 164 persons participated in two training sessions in total.

(2) Extended project

Two outputs were set as the immediate effects of the extended project. The achievement of the outputs at the end of the project period was as follows:

1) Extended project - Output 1 "The plan for forest tree breeding in Hubei Province is expected to be implemented systematically"

Output 1 for the extended project had three indicators (1.Preparation of forest tree breeding

plans per breeding district[16], 2. Establishement of implementation plan by fiscal year, 3. Human resource development for the implementation of forest tree breeding plans). As the achievement of the indicators suggests that the counterparts became more knowledgeable about planning through the preparation of various plans, Output 1 was achieved. As for Indicator 1, in accordance with the Hubei Province Forest Tree Breeding Plan, which is explained in Indicator 2 of "3.2.1.2 Achievement of Project Objectives", the project divided Hubei Province into six breeding districts and established forest tree breeding plans for them separately. The wider variety of tree species in these plans implies that CFTB-HP had acquired the appropriate planning capacity. As for Indicator 2, an implementation plan by fiscal year was also made. Through the preparation of forest tree breeding plans by breeding district and the implementation plan by fiscal year, the staff of CFTB-HP obtained practical experience of planning. The forest tree breeding plans by breeding district included not only the tree species relevant to this project but also other species (such as *Pterocarya stenoptera* and Cork Oak). This proves that the counterparts gained a more sophisticated planning capacity.

2) Extended project - Output 2 "In Anhui Province, breeding of *Pinus massoniana* against *Bursaphelenchus xylophilus* expected to be implemented systematically"

Output 2 for the extended project had two indicators (1.Prospect for establishing clones of *Pinus massoniana* resistant to *Bursaphelenchus xylophilus*, 2. Preparation of a breeding plan for *Pinus massoniana* resistant to *Bursaphelenchus xylophilus*). Inoculation tests[17] on the clones of *Pinus massoniana* resistant to *Bursaphelenchus xylophilus* had not been completed at project completion and Indicator 1 had not yet been achieved. For this reason, Output 2 was partially uncompleted. Nevertheless, the inoculation tests had been conducted by the time of the ex-post evaluation and resistant clones had been identified. Indicator 1 had been achieved by the time of the ex-post evaluation. Indicator 2 had been achieved by project completion as the five-year action plan had been put together by that time.

3.2.1.2 Achievement of Project Objectives

(1) Original project

The Project Objective of the original project was "the Japan-China Cooperation Science and Technology Center for Forest Tree Improvement acquires technical capacity to sustain forest tree breeding" and there were the following three indicators for the assessment of achievement.

1) Original project - Indicator 1 "Staff of the Japan-China Cooperation Science and Technology Center for Forest Tree Improvement develops its capacity to conduct research autonomously"

The counterparts of the project led the whole process of research covering planning, implementation and reporting. As a number of published research papers suggest that they had obtained the capacity to autonomously conduct sophisticated research, Indicator 1 was achieved. Research plans were made every year during project implementation and the counterparts published 29 research papers in academic journals during the planned period of the original project. In 2005, Hubei province awarded a prize named Winner for the advance of science and technology for "Genetic improvement of Japanese larch and techniques for the nurturing of planted forest breeding", the subject of which was highly relevant to the project.

[16] A breeding district is an area based on the natural environment (climate, soil quality, flora) and administrative boundaries.

[17] This project inoculated *Bursaphelenchus xylophilus* into *Pinus massoniana*, to confirm outbreak and identify resistant clones.

2) Original project - Indicator 2 “By the establishment of a forest tree breeding plan, effective forest tree breeding is expected to be accelerated and implemented sustainably for major species”

The Hubei Province Forestry Bureau approved the Hubei Province Forest Tree Breeding Plan during the planned period of the original project and, thus, Indicator 2 was achieved. With the cooperation of dispatched experts, the counterparts of this project completed the provincial plan. Planning covered various items including assessment of the current status, target setting for forest tree breeding, directions of breeding for certain species, and the managerial organizations to implement breeding. The period was from 2007 to 2016. The provincial plan set the direction for the breeding of major tree species in Hubei province and provided guidance for the systematic implementation of forest tree breeding. The provincial plan recommended that breeding districts shall be confirmed combining with both the natural environment and administrative boundaries according to the existing research results. The extended project prepared forest tree breeding plans for the breeding districts.

3) Original project - Indicator 3 “Persons-in-charge for forest tree breeding and mid-level technical staff participated in training from southern provinces”

Indicator 3 was achieved as the number of participants and the content of training were desirable. As the number of participants does not provide sufficient information on project effects, the evaluation results reflected not only the achievement of the target for trainees but also the opinions of participants regarding the content of training. During the project period of the original project, 13 training sessions took place and 624 trainees participated in the training programs. At project planning, the target for the number of trainees had been 500 persons. The contents of training included trends in forest tree breeding and practical techniques for forest tree breeding. Trainees came mainly from the southern provinces but some from the northern and western provinces were also allowed to participate. A few from private companies providing seedlings were allowed in the training program. Based on the questionnaire survey in this ex-post evaluation[18], 90% of respondents replied that they had obtained new knowledge (see Table 1). About the contents of the training, 90% of the respondents chose “Very useful” or “Useful to some extent”. This result shows that most respondents recognized value of the training (see Table 2). The answers suggest that, for majority of the trainees, the training was new and useful.

Table 1: New knowledge obtained from training

Question: “Did you obtain new knowledge from training?”

	Yes	To some extent	No	Total
Respondents	95 persons	9 persons	0 person	104 persons
%	91.3%	8.7%	0.0%	100.0%

Source: Questionnaire survey in the ex-post evaluation

Table 2: Usefulness of knowledge obtained from training

Question: “Was knowledge obtained in training useful?”

	Very useful	Useful to some extent	Not so useful	Not at all	Total
Respondents	14 persons	83 persons	7 persons	0 person	104 persons
%	13.5%	79.8%	6.7%	0.0%	100.0%

Source: Questionnaire survey in the ex-post evaluation

[18] Out of all trainees (624 persons), 216 persons were selected by random sampling, 104 persons returned questionnaire sheets (respondent rate: 48.1%).

The original project has largely achieved its target indicators of project objectives.

(2) Extended project

The Project Objective of the extended project was “the Japan-China Cooperation Science and Technology Center for Forest Tree Improvement acquires the capacity to conduct forest tree breeding in an independent and planned manner” and there were the following three indicators for assessment of achievement.

1) Extended project - Indicator 1 “Staff of the Japan-China Cooperation Science and Technology Center for Forest Tree Improvement develops its capacity to conduct projects for forest tree breeding autonomously”

As, by the end of the project, research plans included the breeding of other species not assisted by this project, Indicator 1 was achieved. The counterparts of the project obtained techniques such as selection breeding and the analysis of gene resources and DNA. Through these techniques, the counterparts prepared research plans for the breeding of species such as *Metasequoia glyptostroboides*, *Camellia oleifera* and *Ginkgo biloba*, none of which were researched by the project

2) Extended project - Indicator 2 “Hubei province conducts projects for systematic and sustainable forest tree breeding autonomously and the research for forest tree breeding is expected to be developed for major species in a planned way”

Planning for forest tree breeding showed progress, though a budget had not been allocated by the time of project completion. For this reason, Output 2 was achieved to some extent. At the time of the ex-post evaluation, a budget had been allocated for the breeding of some species as part of the breeding district plans and, thus, the contents of the plans can be presumed to have been appropriate (see Indicator 2 of the extended project in “3.2.2.1 Achievement of the Overall Goal”). Staff at CFTB-HP prepared six forest tree breeding plans by breeding district up to the project completion (see Output 1 of the extended project in “3.2.1.1 Project Output”). Each of the forest tree breeding plans by breeding district selected 5-10 tree species and recommended actions for breeding projects, the assessment of market demands and the natural environment of the corresponding breeding district. No plan was implemented before project completion as the Hubei province did not allocate a budget for these plans.

3) Extended project - Indicator 3 “Anhui province autonomously conducts systematic and sustainable breeding of *Pinus massoniana* resistant to *Bursaphelenchus xylophilus*”

Based on answers of the counterpart agencies from the questionnaire and interviews, the Anhui Province Forestry Department approved the five-year action plan mentioned in the Output 3 of the extended project in “3.2.1.1 Project Outputs.” There was some prospect of a continuous allocation of budget. For this reason, Indicator 3 was achieved. From the long term perspective, the test on the *Bursaphelenchus xylophilus*-resistant clones, which was assisted by this project, aimed at a substantial supply of resistant materials.

The extended project has largely achieved the target indicators of project objectives.

3.2.2 Impact

In general, the impact of this project would be that the counterpart agencies obtain better capacity and systematically continue forest tree breeding, and that techniques and planning methods for forest tree breeding are spread outside the counterpart agencies, especially in southern provinces. The former impact means a greater sophistication in forest tree breeding and the later impact, the geographical extension of forest tree breeding. Both of the impacts are equally important as effects of this project. Assessment of the impacts also reflects the use of the outputs of this project.

3.2.2.1 Achievement of Overall Goal

The Overall Goal of the original project was "Bases for forest tree breeding established in the southern provinces of the People's Republic of China, through the extension of technology developed by the Project" and this had two indicators. Indicator 1 assesses the contribution to forest tree breeding outside the counterpart agencies, and Indicator 2 deals with the progress of technical development within the counterpart agencies.

(1) Original project

1) Original project - Indicator 1 "Forest tree breeding is boosted in southern provinces"

The questionnaire survey with trainees confirmed that knowledge obtained from training was applied to daily practices and shared with colleagues. The training presumably contributed to the improvement of daily practices. There were several contributions to forest tree breeding such as more efficient seedling production, shorter periods for breeding and the implementation of forest tree breeding in the light of regulations. On the use of knowledge in daily practice, those who answered "Frequently use" or "Use" accounted for more than 80% of the respondents (see Table 3).

Table 3: Use of knowledge in work

Question "Do you use knowledge obtained from training in your work?"

	Frequently use	Use	Use little	No at all	Total
Respondents	21 persons	67 persons	13 persons	3 persons	104 persons
%	20.2%	64.4%	12.5%	2.9%	100.0%

Source: Questionnaire survey in the ex-post evaluation

On knowledge sharing with colleagues, those who answered "Frequently teach" or "Teach Occasionally" accounted for approximately 80% of the total (see Table 4). In particular, knowledge of conventional techniques (grafting and planting a cutting, recurrent selection breeding, etc.), regulations in the forest sector and trends in forest tree breeding in China, were shared with colleagues. In addition, the major means of transfer of knowledge were presentations on training contents and advice on colleagues' daily practices.

Table 4: Sharing knowledge from training with colleagues

Question "Do you teach your colleagues knowledge obtained from training?"

	Frequently teach	Teach Occasionally	Seldom teach	Not at all	Total
Respondents	22 persons	65 persons	11 persons	6 persons	104 persons
%	21.1%	62.5%	10.6%	5.8%	100.0%

Source: Questionnaire survey in the ex-post evaluation

The questionnaire survey asked about how training contributed to daily practice. Contributions included more efficient seedling production by grafting and planting cuttings (Zhejiang province, Fujian province, Sichuan province and Jiangxi province), implementation of forest tree breeding in light of the regulations of the forestry sector (Hubei province and Fujian province), a shorter period for forest tree breeding (Zhejiang province) and improvement of afforestation programs (Hubei province). Interviews[19] with trainees confirmed more contributions such as the selection of superior lines of Japanese larch (Hubei province), the breeding of vegetables using DNA analysis (Hubei province), prevention of damage caused by *Bursaphelenchus xylophilus*, and the improvement of seedling production for rare species

[19] Out of the respondents of the questionnaire survey, two trainees were interviewed directly and, in addition, two were contacted by e-mail. Additional questions were asked about the expansion of forest tree breeding in detail.

(Jiangxi province).

CFTB-HP continued a training program for technicians in Hubei province and has conducted five large-sized training sessions since project completion. For the forest tree breeding project financed by the State Forestry Administration, the counterpart agency periodically provides technical assistance to superior species production sites for forest tree in Hubei province. Also, CBPMBX-AP trained technicians in Anhui province and has conducted five training sessions since project completion.

2) Original project - Indicator 2 “Technical development for forest tree breeding is accelerated”

Research activities relevant to the project have been on-going since project completion and research subjects have become more sophisticated. Research has been awarded prizes several times and this suggests that the project has obviously contributed to technical developments in forest tree breeding.

After project completion, CFTB-HP continued research in five subjects relevant to the project and published eight research papers in academic journals. In 2010, the Chinese Society of Forestry awarded a prize for research on the breeding of tree species with high carbon fixation.

After project completion, CBPMBX-AP published four research papers in academic journals. In 2009, a study on the establishment of a *Pinus massoniana* seed orchard with high density won a prize from Anhui province.

The overall goal of the original project was largely achieved for its target indicators.

(2) Extended project

The Overall Goal of the extended project was “Forest tree breeding is implemented systematically in Anhui and Hubei Provinces and plans for forest tree breeding are being formulated in some other provinces in the southern region” and had three indicators. While Indicator 1 and Indicator 2 deal with systematic and sustainable forest tree breeding in the project areas, Indicator 3 assesses improvement of plans and institutions for forest tree breeding outside the counterpart agencies.

1) Extended project - Indicator 1 “In Hubei province, forest tree breeding is developed in accordance with the implementation plan reflecting institutional, organizational, financial and technical considerations”

The forest tree breeding plans by breeding district were completed before project completion but no budget was allocated to the implementation of the plans. At the time of the ex-post evaluation, the State Forestry Administration was providing funding for several species (*Cunninghamia lanceolata*, *Larix kaempferi*, *Metasequoia glyptostroboides,* etc.). With this funding, the breeding of the corresponding mentioned in the forest tree breeding plans by districts was being implemented.

2) Extended project - Indicator 2 “In Anhui province, breeding of *Pinus massoniana* against *Bursaphelenchus xylophilus* is conducted in accordance with the implementation plan reflecting institutional, organizational, financial and technical considerations”

At the time of the ex-post evaluation, CBPMBX-AP was continuing forest tree breeding in accordance with the action plan prepared by this project. After a primary inoculation test and a secondary inoculation test were implemented in the period of the original project, an inoculation test on clones was carried out after project completion. In addition, a second inoculation test on clones was carried out. The actual number of tests (four) was beyond the initial plan (three – primary, secondary and on clones) but the purpose of the most recent inoculation test was changed to the assessment of change in resistance with tree age. By using some of the selected

resistant clones, a seed orchard for a clone of *Pinus massoniana* resistant to *Bursaphelenchus xylophilus* was established in March 2011.

3) Extended project - Indicator 3 "Forest tree breeding plans are formulated in several southern provinces"

At the time of the ex-post evaluation, a plan for forest tree breeding was formulated for a whole county, not by province. In interviews with the State Forestry Administration, planning which paid good attention to breeding districts was referred to as an impact on forest tree breeding by the project. The current plan for forest tree breeding was based on tree species and breeding districts were selected for each species.

However, the impact on planning and institutional building in each province was limited. Interviews with the State Forestry Administration revealed that, in accordance with the national plan, each province handled forest tree breeding within long- and medium- development plans for the forest sector, but no province formulated a plan solely for forest tree breeding. No activity of the extended project was directly involved with the diffusion of project results over other provinces. It was difficult to diffuse project effects over other areas without relevant activities. After the completion of the project, there was no opportunity to contribute to planning capacity and intuitional building in other provinces through training.

The overall goal of the extended project was largely achieved for the target Indicators 1 and 2, though Indicator 3 showed little progress after project completion. It was difficult for CFTB-HP to influence planning and institutional arrangements for forest tree breeding outside Hubei province. Therefore, the overall goal of the extended project was partially not achieved.

3.2.2.2 Other Impacts

Based on the questionnaires answered by the counterpart agencies and the interviews with project officials, there was no negative impact observed on the natural and social environments. The interviews with project officials suggested the following positive impacts:

(1) Use in afforestation

One of the project results is to provide superior species for practical afforestation. According to CFTB-HP, in Hubel Province, afforestation of the poplar (*Populus suaveolens* and *Populus nigra*) selected by this project was approximately 50,000 mu (3,300 ha) in total between 2008 and 2012. While *Populus suaveolens* was planted in the mountainous area in the western part of Hubei province, *Populus nigra* was planted in the plains of the province. A provenance test on *Populus nigra* was conducted in Chongqing city and Hunan province, an area with a similar climate outside Hubei province. In addition, the afforestation of *Liriodendron tulipifera* was started in 2012 and the afforestation area had reached 500 mu (approximately 33 ha) at the time of the ex-post evaluation.

(2) Use of outputs

3 clones for Poplar suitable to be planted in mountainous areas of high altitude region in Hubei Province was examined and approved by the Hubei Province Review Committee for superior species in 2011.

Data in the genetic structure research[20] of *Pinus massoniana* and natural forest of *Quercus* was also stored in the database for genetic resources established by the Chinese Academy of Forestry.

At the time of the ex-post evaluation, state forest farms were utilizing seedling standards and the manuals for the seedling nurturing techniques[21] of *Cunninghamia lanceolata* and *Pinus*

[20] See the Output 4 of the original project in "3.2.1.1 Project Output"
[21] See the Output 5 of the original project in "3.2.1.1 Project Output"

massoniana for the production of seedlings in Hubei province.

(3) Effective use of equipment

During project implementation, an electron microscope was frequently used for various research analysises. After project completion, the use of this equipment became less frequent. With the cooperation of a private company, CFTB-HP has provided rental services to researchers in the region (university professors, students, doctors, etc.) since 2011. The rental service for the electron microscope is expected to contribute not only to the revenue of CFTB-HP and but also to the advancement of research activities in the region.

This project has largely achieved its project objectives (acquisition of technical and planning skills). On the overall goals, advancements in the technical capacity for forest tree breeding in Hubei province and Anhui province has been in accordance with the expected targets and this suggests that the incidence of project effects is as planned. Therefore its effectiveness and impact is high.

3.3 Efficiency (Rating: ②)

3.3.1 Inputs

Inputs	Plan	Actual Performance
(1) Experts	(Original Project) 6 persons for Long-Term TBD for Short-Term	(Original Project) 11 persons for Long-Term 25 persons for Short-Term
		(Extended Project) 3 persons for Long-Term 5 persons for Short-Term
(2)Trainees received	(Original Project) Field(s) of training: TBD	(Original Project) Field(s) of training: Management of forest tree breeding research, Related techniques for forest tree breeding, Breeding of *Pinus massoniana* against *Bursaphelenchus xylophilus*
		(Extended Project) Field(s) of training: Planning for forest tree breeding, Breeding of *Pinus massoniana* against *Bursaphelenchus xylophilus*
(3) Equipment	(Original Project) Equipment relevant to breeding, nursery and genetic analysis, Vehicles, other necessary equipment	(Original Project) Equipment relevant to breeding, nursery and DNA analysis, office equipment, vehicles, etc.
		(Extended Project) Equipment relevant to DNA analysis, surveying instruments, etc.
Total Project Cost	Approx. 740 million yen	990.64 million yen
Total Local Cost	N/A	287.91 million yen

3.3.1.1 Elements of Inputs

The increase in the number of long-term experts was due to the replacement of experts and, so the areas of their expertise remained the same. Based on the questionnaires answered by the counterpart agencies and the interviews with project officials, there seemed to be no problem in the areas of expertise and the timing of expert dispatch. Considering the capacity of the staff of the counterpart agencies and local conditions, the equipment provided by this project was appropriate. As the arrival of equipment and materials was partially delayed, mainly due to

custom clearance and the shipment of chemical substances, substitution products were purchased in China.

Regarding inputs from the Chinese side, no serious problem was pointed out in the allocation of the counterparts. As the counterparts could speak Japanese fluently and communicated smoothly with the experts, the interpreter included in the initial plan was not assigned to the project. The facilities required for project implementation (such as laboratories, nurseries, experimental forests, conservation forests and seed orchards) were appropriate. In Anhui province, the nurseries were small. In Hubei province, the long trip from CFTB-HP to the nurseries and sites for breeding materials was inconvenient for frequent monitoring. However, these issues did not prevent the smooth implementation of the project and thus they were considered to be relatively marginal.

3.3.1.2 Project Cost

Project cost was higher than planned (134% of the original plan). The increase in the project cost was mainly due to the implementation of the extended project. It is difficult to compare the planned and actual allocation for the provision of equipment and local costs because there was no information on the amount of allocation in the project planning.

In order to enhance the sustainability of the project effects, the terminal evaluation recommended the continuation of this project, but limited to two subjects. One was the planning of forest tree breeding and human resource development and another was the breeding of species resistant to *Bursaphelenchus xylophilus.* As aforementioned in "3.1.1 Relevance to the Development Plan of China", the policy for the forestry sector changed its main focus from quantity to quality. In Hubei province, it was desirable that the institution to promote breeding through the preparation of the forest breeding plans by breeding districts in the extended project be enhanced. The terminal evaluation decided that technical development was still half-way in the breeding of species resistant to *Bursaphelenchus xylophilus*. Based on this assessment, the extended project continued to identify clones of *Pinus massoniana* resistant to *Bursaphelenchus xylophilus.* As the breeding of *Pinus massoniana* resistant to *Bursaphelenchus xylophilus* usually takes almost ten years, the project period of the original project was too short to confirm the incidence of the project effects and then transfer this breeding subproject to the counterpart agency.

3.3.1.3 Period of Cooperation

The period of cooperation was longer than planned (139% of the original plan). The implementation of the extended project was the main cause for the longer period of cooperation as it was for the increase in project costs.

The inputs were appropriate for producing outputs. Both project cost and period of cooperation exceeded the plan, therefore efficiency of the project is fair.

3.4 Sustainability (Rating: ③)

3.4.1 Related Policy towards the Project

At the time of the ex-post evaluation, both the long- and medium-term plans in the forestry sector pursued quality improvement in both afforestation and forest. To achieve this policy agenda, importance was attached to the breeding and supply of superior species and seedlings. Given these priorities in the national policy, techniques and planning capacity for forest tree breeding, both of which were enhanced by this project, will be required in the future. Similarly, the superior species bred by this project are expected to be applied to various afforestation projects. For these reasons, the sustainability of the project is high in terms of the policy aspects

The major sector plans at the time of the ex-post evaluation were the National Afforestation Planning Outline 2011-2020 and the 12th Five-year Plan of Forestry Development (2011-2015),

which also included a plan for the development of the forestry industry. The National Afforestation Planning Outline set targets for forestry areas and the forest coverage rate and, furthermore, aimed at the use of superior artificial seeds at 75% for the improvement of forest quality. During the plan period, it is planned that 300 sites supplying superior seeds (16,870 ha) and 100 sites collecting superior seeds (4,710 ha) will be established. The 12th five-year plan in the forestry sector also pursues quality improvement both in afforestation and forests and has the policy of accelerating the breeding of superior tree species.

According to the counterpart agencies, the Hubei Province 12th Five-year Plan for Forestry Development (2011-2015) maintains the policy of establishing a comprehensive station covering research to dissemination, and the Anhui Province 12th Five-year Plan for Forestry Development (2011-2015) also emphasized countermeasures for *Bursaphelenchus xylophilus*.

3.4.2 Institutional and Operational Aspects of the Implementing Agency

At the time of the ex-post evaluation, CFTB-HP and CBPMBX-AP, both of which played a vital role of this project, continued forest tree breeding. The research system pays good attention to the continuation of study in the case of staff rotation. For these reasons, sustainability of the project is high in terms of the institutional aspects.

CFTB-HP is a part of the Hubei Province Seed Administration Station and its staff also belongs to the above station. After project completion, the number of staff decreased (see Table 5). According to counterparts, because the State Forestry Administration paid attention to the development of *Camellia oleifera* Industry, Forestry Department of Hubei Province established Management Office for *Camellia oleifera* to take charge of relevant development matters and transferred some counterparts to arrange relevant tasks such as the breeding of *Camellia oleifera* and the afforestation for this management office. A research study is always conducted with two researchers (one with primary responsibility and another with secondary responsibility). In the case of staff rotation, one of the researchers remains in CFTB-HP and continues the study. The Hubei Province Seed Administration Station (mainly CFTB-HP) is in charge of the maintenance of the equipment provided. The management of experimental forests, conservation forests, and seed orchards is put in the hands of state forest farms and the research centers of city/district governments as the facilities are located on land owned by these organizations.

Staff of CBPMBX-AP holds additional posts at the Anhui Province Seed Administration Station or the Forest Research Institute of Anhui Province. The researchers who conduct breeding of species resistant to *Bursaphelenchus xylophilus* are engaged in research activities on a full-time basis. The number of staff in CBPMBX-AP remained the same after project completion (see Table 5). A research study is always conducted with two researchers (one with primary responsibility and another with secondary responsibility) as is the case in Hubei province. This arrangement is intended to ensure continuity of the study. Maintenance of the equipment provided is conducted by the Anhui Province Forestry Department or by CBPMBX-AP. Under similar arrangements in Hubei province, the management of experimental forests, conservation forests, and seed orchards is put in the hands of the government organizations which own the forest land.

Table 5: Number of employees at counterpart agencies

Counterpart agency	2008	2009	2010	2011
Center for Forest Tree Breeding in Hubei Province	10	10	9	8
Center for breeding of *Pinus massoniana* against *Bursaphelenchus xylophilus* in Anhui Province	9	8	8	8

Source: Questionnaire answers from counterpart agencies, interviews with counterpart agencies

3.4.3 Technical Aspects of the Implementing Agency

Researchers at both CFTB-HP and CBPMBX-AP have had opportunities to acquire

techniques for forest tree breeding after project completion. As the current situation enables them to maintain the capacity they obtained from the project, sustainability is high in terms of the technical aspects.

The staff of the counterpart agencies is mainly researchers, and they acquire new skills by participating in the presentation of research results and obtaining academic degrees besides joining in training programs. In CFTB-HP, opportunities to obtain new skills include participation in academic conferences in the Chinese Society of Forestry, joint research with other institutions, such as the Chinese Academy of Forestry and Nanjing Forestry University, and the acquisition of master's degrees and Ph.Ds. In CBPMBX-AP, staff obtains new skills through participation in presentations on breeding techniques, training on data analysis, and the acquisition of master's degrees and Ph.Ds.

After project completion, the JICA follow-up study was carried out, mainly focusing on the establishment (i.e. test on clones) and dissemination of species resistant to *Bursaphelenchus xylophilus* in Anhui province. The follow-up study conducted monitoring and provided technical guidance by visiting project sites for a short period several times a year. The equipment and materials used for the follow-up study (knives, plastic bags, etc.) are mostly inexpensive. Inputs from the follow-up study are small and, thus, the completion of the study is unlikely to negatively affect sustainability.

The Forestry and Forestry Products Research Institutes in Japan conducted an MOU on research cooperation with the Hubei Province Forestry Department and the Anhui Province Forestry Department and conducted several joint studies (i.e. on the breeding of tree species with high carbon fixation, gene resources of *Zelkova serrate* and *Quercus*, the establishment and the dissemination of seed orchards for species resistant to *Bursaphelenchus xylophilus*) between October 2008 and March 2011. Joint studies also continuously help the counterparts acquire breeding techniques.

3.4.4 Financial Aspects of the Implementing Agency

Since project completion, the budget allocation for forest tree breeding has been sufficient enough for the continuation of research. Sustainability is also high in terms of the financial aspects.

The Hubei Province Seed Administration Station is on a self-paying basis and its revenue comes from testing of seeds, the sales of trees for afforestation and gardening as well as from the government budget. CFTB-HP also obtains revenue from the provision of services (material testing on woods, etc.). As CFTB-HP is a part of the Hubei Province Seed Administration Station, the sustainability of forest tree breeding was a matter of concern at the time of the project completion. However, budget allocation has stayed at a certain level and, in fact, has increased by forest tree breeding commissioned by the State Forestry Administration since 2011 (see Table 6). According to CFTB-HP, funding is not a constraint on the implementation of forest tree breeding.

CBPMBX-AP has no budget allocation for personnel expenses as its staff belongs to other organizations. It is difficult to finance costly expenses such as the establishment of seed orchards but the budget for research is allocated with no problems. Budget allocation has been stable since project completion and the State Forestry Administration has allocated a research budget to CBPMBX-AP since 2010 (see Table 6).

Table 6: Budget allocation for forest tree breeding at the counterpart agencies

Unit: RMB

Counterpart agency	2008	2009	2010	2011
Center for Forest Tree Breeding in Hubei Province	1 mil.	0.8 mil.	0.8 mil.	2 mil.
Center for breeding of *Pinus massoniana* against *Bursaphelenchus xylophilus* in Anhui Province	0.2 mil.	0.2 mil.	0.38 mil.	0.49 mil.

Source: Questionnaire answers from counterpart agencies, interviews with counterpart agencies

No major problems have been observed in the policy background, the structural, technical, financial aspects of the executing agency, therefore, sustainability of the project effects is high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The project aimed at human resource development for the breeding of forest trees through measures such as the breeding of superior tree species and the plan of forest tree breeding. As the project purpose is in line with development policy and development needs, its relevancy is high. After project implementation, the counterparts acquired the capacity for forest tree breeding and the planning of breeding. As this project had several achievements, such as the advancement of techniques, systematic and sustainable forest tree breeding and contributions to forest tree breeding in southern provinces by developing technical training for forest tree breeding, its effectiveness and impact is high. There was no problem with the inputs, including equipment and experts. Nevertheless, an extension in the project period resulted in both a longer implementation term of cooperation and a larger project cost and, hence, the efficiency of the project is fair. No major problems have been observed in the structural, technical, financial aspects of the executing agencies, and therefore the sustainability of the project effects is high. The skills for forest tree breeding and the superior tree species are expected to be utilized in the future.

In light of the above, this project is evaluated to be highly satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

(1) Promote experiences based on an operational model for forest tree breeding

As a result of capacity building for forest tree breeding, Forestry Department of Hubei Province Forest and Seed Administration Station plays a more important role as a comprehensive station for the supply of seeds and seedlings, also covering research, production, and dissemination. In China, breeding research has been conducted mainly by research institutes and universities and there are few cases where a seed supply station has a research division for forest tree breeding. For this reason, knowledge from the establishment of a model for forest tree breeding (issues mentioned during intuitional building, advantages/disadvantages of a comprehensive supply station) is worth sharing widely with government organizations which conduct forest tree breeding. It is desirable that the State Forestry Administration promotes an operational model and relevant experiences for forest tree breeding in CFTB-HP among the southern provinces.

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

(1) Implementation period depending on specific contents of forest tree breeding

This project was for cooperation in forest tree breeding which means a long period before the incidence of project results. In particular, the breeding of *Pinus massoniana* resistant to *Bursaphelenchus xylophilus* needed an extension of the project period for the suitability of project results. This was one of the major factors behind a longer period for project implementation. It is appropriate that project formation for forest tree breeding assesses an approach which allows a longer project period even if this means a narrower scope of cooperation.

(2) Application of project effects needs to be strongly supported

The extended project assumed that the results of forest tree breeding in Hubei province and Anhui province would promote the planning and institutional building for forest tree breeding in the southern provinces. However, it had marginal effects on planning and institutional building in other provinces beyond the jurisdiction of the counterpart agencies. The regional and decentralized administration of the forestry sector in China allows provinces to be autonomous. The extended project did not have activities which directly dealt with the dissemination of project results in other provinces. The lack of the activities to disseminate project results presumably made this task difficult. In a similar project, which intended to disseminate project effects outside the project areas, it would be desirable to identity bottlenecks in the dissemination of project effects in the planning phase and to include activities to support the dissemination of project results. It is also desirable that information is obtained on the status of dissemination via monitoring in the implementation phase and that feedback is provided on project activities.

Vietnam

Ex-Post Evaluation of Japanese Technical Cooperation Project
"The Rehabilitation of Natural Forest in Degraded Watershed Area in the North of Vietnam"

External Evaluator: Nobuyuki Kobayashi, OPMAC Corp. / Akinori Nishio, JAFTA

0. Summary

This project aimed to develop silvicultural techniques for natural forest rehabilitation and, then, to apply these techniques to forestry sector policy and disseminate them in Hoa Binh province. The project reflects needs for technological development toward the rehabilitation of natural forest, in particular under the current situation where farmers play an important role in forest management. Therefore, the relevance of the project is high. As a result of project implementation, some effects were observed, such as, advancement in technical development and inputs in the guidance for afforestation activities in Program 661. On the other hand, dissemination outside of the project area did not attain its target. In the light of this, the effectiveness/impact of this project is fair. The inputs were appropriate, the project cost was within the plan and the period of cooperation was as planned. Therefore, the efficiency of the project is high. A national afforestation program is still on-going. However, the continuation of the On Farm Trial (OFT) activities and the dissemination of project results have faced a lack of funding in Hoa Binh province. Hence, the sustainability of the project effects is fair.

In the light of the above, this project is evaluated to be satisfactory.

1. Project Description

Project Location

Indigenous Species planted by the Project

1.1 Background

Vietnam runs from north to south and covers a total area of 329,241 km^2. The climate varies depending on the region, and the country is home to a wide variety of forestry flora. Forest coverage in Vietnam has decreased over a long period of time due to the influence of Vietnam War and the strong demands for forest resources and agricultural land because of increase in population. By the 1990s, it had fallen below 30% of the total land cover. At that time, the Vietnamese government began to focus on forest rehabilitation and "The National 5 Million Hectare Reforestation Program" (known as Program 661[1]) was initiated in 1998. The program was designed to deal with not only the rehabilitation of forest resources but with many other issues to be tackled in mountainous areas (such as to lessen the occurrence of natural

[1] Called Program 661 as it was implemented based on the PM Decision No. 661/1998.

disasters, the cultivation of water resources, the protection of biodiversity, and poverty reduction).

While a former afforestation program, that is, Program 327, placed too much importance on plantation, Program 661 attached importance to the rehabilitation of natural forest as well as to plantation[2]. There were several technical tasks for the rehabilitation of natural forest within Program 661. In the past, forestation activities mainly used imported fast-growing varieties instead of Vietnam's indigenous tree species, and thus there was a wide developmental scope for such species to grow in terms of silvicultural techniques. In particular, it has been important to find technically and economically feasible techniques which could be used by local farmers and forestry workers in both afforestation and forest protection.

Under this background, the Vietnamese government requested technical assistance in order to promote Program 661 and to develop appropriate and economical silvicultural techniques for the rehabilitation of natural forest in 2000. JICA started its study on project formulation in 2001, followed by the implementation of this project, "The Rehabilitation of Natural Forest in Degraded Watershed Areas in the North of Vietnam" from October 2002 to September 2008.

1.2 Project Outline

Overall Goal		Sets of technology for natural forest rehabilitation developed by the Project are applied by policy makers and by end users.
Project Objective		Sets of technically appropriate and economically affordable measures for natural forest rehabilitation are developed that can be used by forest enterprises, watershed management boards, and extension workers.
Output(s)	Output 1	Information on existing techniques and policies in relation to natural forest rehabilitation and on techniques developed by the Project is compiled and disseminated in a timely manner.
	Output 2	Silvicultural techniques for natural forest rehabilitation in watershed area are developed through research and on-farm trials
	Output 3	Farmland management techniques in watershed area are developed for Song Da FE[3], Song Da WMB[4], extension workers of AFE[5] and local farmers to apply in their localities
	Output 4	Examples of silvicultural techniques for natural forest rehabilitation and farmland management techniques in watershed area are demonstrated for technical officers and local famers to apply in their localities.
	Output 5	Monitoring system is established for assessing the achievements of each Output and for deriving the lessons of each Output to attain the Project Purpose.
Inputs		Japanese Side: 1. Experts: 21 persons 6 persons for Long-Term, 15 persons for Short-Term 2. 29 Trainees received (counterpart training in Japan) 3. 17 Trainees for Third-Country Training Programs (total)

[2] Forest land is classified as protection forest, special-use forest and production forest. Development in protection forests is highly regulated for important functions such as the protection of water sources, windbreaks and arresting sand.

[3] The formal name was Son Da Forestry Enterprise.

[4] The formal name was Son Da Watershed Management Board.

[5] AFE stands for agricultural or forestry extensions.

	4. Equipment 47.4 million yen 5. Local Cost 129.5 million yen 6. Others (incl. dispatch of related missions) Vietnamese Side: 1. 57 Counterparts 2. Land and Facilities (experimental forest, project office) 3. Local Cost (VND 3,533 million)
Total cost	483.73 million yen
Period of Cooperation	October 2003 – September 2008
Implementing Agency	Department of Forestry/Ministry of Agriculture and Rural Development (MARD/DOF), Forest Science Institute of Vietnam (FSIV), Sub-DOF of Hoa Binh province (Hoa Binh Sub-DOF)
Cooperation Agency in Japan	Ministry of Agriculture, Forestry and Fisheries, Forestry Agency, Forestry and Forest Products Research Institute
Related Projects	None

1.3 Outline of the Terminal Evaluation

1.3.1 Achievement of Overall Goal

The terminal evaluation report mentioned the conditions for the achievement of the overall goal, and stated that there would be some positive impacts, once the project objectives were achieved. Participating farmers' awareness of the need for forest protection was relatively high and the dissemination of the project-implemented activities beyond the target communes was expected.

1.3.2 Achievement of Project Objective

The terminal evaluation report mentioned that the preparation of the recommendation report, which is an indicator of the project objectives, would be completed by the end of the project period because the recommendation report was to be based on existing reports on various project activities. A hands-on manual on techniques for the rehabilitation of natural forests, another indicator of the project objectives, would be completed as well by the end of the project period.

1.3.3 Recommendations

The terminal evaluation report describes the following short-term recommendations for up to the completion of the project in 2008, and long-term recommendations for post project completion.

- Short-term recommendations: Revision of the project road map and completion of the recommendation report, information sharing of project results, establishment of a management system for the demonstration forest, and the development of a hands-on manual

- Long-term recommendations: Application of techniques to Program 661 and the improvement of sustainability in OFT activities, experimental forests and demonstration forests (budget and staff allocation, etc.)

2. Outline of the Evaluation Study

2.1 External Evaluator

Nobuyuki Kobayashi, OPMAC Corp. / Akinori Nishio, JAFTA

2.2 Duration of Evaluation Study

Duration of the Study: September 2011 – October 2012
Duration of the Field Study: November 24, 2011 – December 21, 2011 and
April 2, 2012 – April 14, 2012

2.3 Constraints during the Evaluation Study

Since some indicators on project effects could not be obtained, the assessment of the achievement of project targets depended partially on non-rigorous analysis. As financial data was based on hearings from the counterpart intuitions, it was difficult to prove the accuracy of these data. In addition to this project, other factors such as growth of overall economy also affect beneficiaries' livelihood. For this reason, it was difficult to assess changes in their livelihoods as project effect.

3. Results of the Evaluation (Overall Rating: B[6])

3.1 Relevance (Rating: ③[7])

3.1.1 Relevance with the Development Plan of Vietnam

At the time of project planning (2003), the "Forest Development Strategy 2001-2010", which was the forestry sector's long-term plan, aimed at forest coverage of up to 43% by 2010. In Vietnam, forest coverage, which was 43% in 1943, dropped below 30% in the early 1990s due to the influence of the war and strong demands for forest resources and agricultural land, which came with an increase in population and unregulated development. Therefore, measures against forest degradation were one of the top priority areas in government policy. In the above "Forest Development Strategy 2001-2010" six priority programs were selected including a large scale forestation program, the National 5 Million Hectare Reforestation Program (5MHRP). With the Prime Minister's decision No. 661, 5MHRP was carried out (now known as "Program 661"), with the aim of achieving the forestation of 3 million ha of production forest and 2 million ha of special use and protection forests. While the previous afforestation program (Program 327) had placed importance on plantation, Program 661 attached importance on the rehabilitation of natural forest as well as on plantation. Out of a total 2 million ha afforestation of special-use forest and protection forest, natural regeneration is expected to reach 1 million ha.

At the time of project completion (2008), the forestry sector's most comprehensive developmental policy was the Forestry Development Strategy 2006-2020 (approved in February 2007), which aims at forest coverage of 47% by 2020[8]. In the strategy, productivity and quality, as well as nature conservation and biodiversity are regarded as the direction of forestation research. Also the poverty reduction in the main forest regions is taken into consideration as one of the most pressing social tasks. Continuous efforts towards the expansion of community forest management were also incorporated into the strategy.

Both at the times of project planning and completion, the sector plan aimed to increase forest coverage, and its policy on project completion reflected more of the social aspects of forestry. At the time of planning, it was considered that the project was to contribute to quality

[6] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory
[7] ③: High, ②: Fair, ①: Low
[8] As of 2010, forest coverage is approximately 40% in the "Forest Protection and Development Plan in the 2011-2020 period".

improvement of forestation projects by applying the silvicultural techniques developed by the project into Program 661. The development of silvicultural techniques has been carried out through the project using indigenous tree species and through the OFT activities (forestation and income generation activities) of local farmers. These activities are in line with the direction of the Forestry Development Strategy 2006-2020. Therefore, the objective and the activities of the project are considered to be relevant to the development plan of Vietnam.

3.1.2 Relevance with the Development Needs of Vietnam

Vietnam experienced an improvement in forest coverage from the early 1990s, but fast-growing, foreign species such as eucalyptus and acacia were used for afforestation. It was more desirable to use indigenous tree species in order to maintain the quality of forests. At the time of the project planning (2003), however, existing silvicultural techniques was not organized and there were few opportunities to practice them. For this reason, the validity of these techniques was hardly proven. Farmers increasingly owned and managed production and protection forest and often conducted the management of special-use forest as the distribution of forest land progressed. In general, forest land belonged to the Vietnamese government but the distribution of forest land allowed formers to use the land for 50 years. In Hoa Binh province where the project site was located, distribution of forest land had been almost completed in the early-2000s. Farmers were playing a more important role in forest management but they did not have enough knowledge. Existing silvicultural techniques did not assume that farmers would use the techniques. At the time of project planning, there was a strong need to reorganize silvicultural techniques to utilize indigenous species and to develop silvicultural techniques at the appropriate level assuming farmers' practices. This project reorganized and tested silvicultural techniques on indigenous tree species and conducted OFT activities in which farmers participated. Thus, it is consistent with development needs.

At the time of project completion (2008), there was trend towards an improvement in forest coverage in Vietnam. Nevertheless, there was further need on improvement in the quality of forestation, as the portion of plantation forest lacking biodiversity was significant[9]. As mentioned in "3.1.1 Relevance to the Development Plan of Vietnam", sector policy continually supported community forest management. The National 5 Million Hectare Reforestation Program had a budget to subsidize farmers who managed forest land. This continuously created the need to use techniques which farmers could utilize. The project site was located in a mountainous area around a dam lake, and the land areas that could be cultivated were restricted. For this reason, long-term experts pointed out that it was necessary to form a practical approach for the use of limited land available and forest rehabilitation based on increased income from forestry products.

Hoa Binh province, with its easy access from Hanoi, was an appropriate location, as project design assumed the dissemination of the techniques developed by the project at the demonstration site at the time of project planning. At the time of project completion (2008), the Hoa Binh hydroelectric plant had a generation capacity of 1,920MW and accounted for more than 10% of the total capacity of Vietnam and, thus, the Hoa Binh dam played an important role. As forest protection around the Da River prevented inflow of sediments to the reservoir and protected the function of the dam, it was crucial to the economic welfare of the country. Thus, in terms of project location, the project had relevancy.

3.1.3 Relevance to Japan's ODA Policy

At the time of project planning (2003), Japan's Official Development Assistance Charter (cabinet approval in 2003) identified Asia as a priority area for support, and stated the importance of strengthening the Japan-Asia relationship through ODA, especially the

[9] The inspection of the project target areas at the time of the ex-post evaluation revealed that single species forestation using fast growing non-indigenous tree species was most common and the level of biodiversity remained low after the completion of the project.

prospective economic partnership with the East Asian region. The charter also listed "addressing global issues" as an important task, recognizing the need for international cooperation to deal with issues including environmental problems. Vietnam's Country Assistance Program was set out in 2000, and the environment was one of its five selected important areas. The aggravation of deforestation was listed as an issue in this area. The JICA Country Assistance Strategy included an assistance policy in the area of the environment, which focused on the protection and rehabilitation of forest along with the Country Assistance Program.

As described above, the project has supported the establishment and dissemination of silvicultural techniques in Asia through Japanese ODA.

This project has been highly relevant with the country's development plan development needs, as well as Japan's ODA policy, therefore its relevance is high.

3.2 Effectiveness and Impact[10] (Rating: ②)

3.2.1 Project Outputs

The development of practical measures for natural forest rehabilitation was regarded as a project objective of this project. For this reason, in the assessment of "Effectiveness", the achievement of project objectives is based primarily on how much the development of techniques progressed. In order to clearly show the attribution from this project, this section analyzes what kinds of techniques were developed from the outputs.

3.2.1.1 Project Output

Five outputs were seen as direct project outputs. The followings are the outputs achieved upon completion of the project.

1) Output 1: Information on existing techniques and policies in relation to natural forest rehabilitation and on techniques developed by the Project is compiled and disseminated in a timely manner.

The project has built a database of silvicultural techniques in order to obtain related information more easily. Three indicators were established for Output 1 (1. building a database of existing techniques, 2. internet and publication release, and 3.updates of the project development techniques). Although there was a delay, all three indicators were attained by the end of the project, therefore it is considered that Output 1 was achieved.

The original plan was to build the web database by March 2005, however, the database was set up on the FSIV homepage in April 2006, and from then it was regularly updated to the end of the project. The database included documents on silvicultural techniques, project research results, activity records, and newsletters. In addition, a TV program to promote the project was produced and aired.

2) Output 2: Silvicultural techniques for natural forest rehabilitation in watershed areas are developed through research and on-farm trials.

The project developed silvicultural techniques through experiments. Three indicators were established for Output 2 (1. silvicultural experiments in all activity areas, 2. identification of silvicultural techniques for forest rehabilitation in Program 661, and 3. introduction of new techniques for seedling production). All three indicators were attained by the end of the project, therefore it is considered that Output 2 was achieved. A total of 30ha of experimental forest was achieved in 7 areas[11] between 2004 and 2005. In addition, the thinning of nurse trees and the

[10] For the judgment for Effectiveness, the findings in Impact are also taken into consideration in the rating.

[11] Experimental subjects were (1) planting indigenous tree species in bare land, (2) sowing seeds of indigenous tree species directly in bare land, (3) enrichment planting of poor and exhausted forest, (4)assisting natural regeneration, (5) mixing indigenous tree species with dendrocalamus, (6) planting non-timber tree species, and (7) under planting

plantation of *Melaleuca* were tested. Based on the experimental results, techniques applicable to Program 661 were withdrawn and approved at a review meeting in which the relevant parties were present. Finally, out of the silvicultural experiments, some techniques (such as the mixed plantation of *Tephrisua Cndida* and indigenous species, the enrichment[12] of indigenous species and the under-plantation of indigenous tree species in *Acacia* plantations) were chosen in the recommendation report[13]. Out of the OFT activities, some techniques (the plantation of *Michelia*, mixed plantation with foreign species and the earlier procurement of seedlings) were additionally selected. Seedling production techniques using air pruning and container trays were introduced explanatorily as a new technique[14]. Through the results of this improvement, methods for container tray materials were examined.

3) Output 3: Farmland management techniques in watershed areas are developed for Song Da FE, Song Da WMB, extension workers of AFE and local farmers to apply in their localities.

Photo 1:Goats introduced by the Project

The project carried out technical experiments in which local farmers participated to develop more practical techniques. Two indicators were established for Output 3 (1. OFT sites established in which over 250 households from 10 villages participated, 2. farmland management techniques identified from the OFT activities). Output 3 is considered to have been achieved, as it was confirmed that each indicator have been almost attained. As for Indicator 1, OFT activities were implemented in 5 communes and 10 villages, and a total of 1470 households had participated by 2007. As there was no data collected for newly participating households, the measurement of achievement was not strictly accurate. However, it was estimated that approximately 60% of the total households from the target villages participated (*See Table 1)*. OFT activities consisted of supporting activities, forestry activities and non-forestry activities (*See Table 2*). Supporting activities include study tours and training. The recommendation report mentioned that study tours were effective in improving the managerial capability of farmers and the attainment of new techniques. Most of the forestry activities involved plantation, but enrichment and supplemental planting were also carried out (*See Table 3*). For non-forestry activities, there was a high demand for animal husbandry[15] from local residents, and this took approximately 80% of the non-forestry activities budget. In home gardens, forage plants, bamboo and fruit trees were planted. As it takes a long time for farmers to obtain the benefits of forestry activities, non-forestry activities focused on activities that generate profits in a short period.

of indigenous tree species in Acacia plantations.

[12] A technique of planting seedlings in thinly forested areas. This technique is utilized in natural forest.

[13] This project prepared the recommendation report for Program 661. Further details are mentioned in Indicator 1 of "3.2.2.1 Achievement of the Overall Goal."

[14] Air pruning and container trays are techniques that improve the growth of nursery trees, make the planting period more flexible and raise work efficiency.

[15] This project redefined farmland management techniques as ones to complement forestry activities and not to prevent forest rehabilitation in mountainous areas where arable land is scarce. Animal husbandly, the activity with less constraint from arable land, falls within this definition.

Table 1: Number of household participating in OFT activities

	FY 2004		FY 2005		FY 2006		FY 2007		Average	
	Total HH	Participating HH	Total HH	Participating HH	Total HH	Participating HH	Total HH	Participating HH	Total HH	Participating HH
Number of HH	276	195	705	464	741	331	749	480	618	368
Participation %	71%		66%		45%		64%		59%	

Source: Expert's project completion report

Table 2: Outline of OFT activities

Category	Activities	Cost*	%
Supporting Activities	study tours, training, veterinary medicine and tool kit	USD 15,257	6%
Forestry Activities	seedling production, afforestation, enrichment, supplemental planting	USD 78,327	29%
Non-forestry Activities	agriculture, animal husbandry, small infrastructure, provision of equipment, micro credit, etc.	USD 178,328	66%
	Total	USD 271,912	100%

Source: Expert's project completion report
Note: * Total amount from April 2004 to March 2008

Table 3: Breakdown of forestry activities

Type / Amount	Plantation	Enrichment	Supplementary Planting*	Total**
Area Planted (ha)	183	49	NA	232
Number of Trees	286,395	35,355	53,176	374,926
Amount in USD	56,043	12,312	9,972	78,327

Source: Expert's project completion report
Note 1: * including planted trees for home gardens
Note 2: ** Total from April 2004 to March 2008

As for Indicator 2, as means of income generation, the project reconsidered farmland management techniques as complement forestry activities, which do not prevent forest rehabilitation in mountainous areas where arable land is scarce. This approach is based on the idea that creating a means of livelihood which does not rely on the land itself is essential, when farmers become the main actors in forest management in mountainous areas. "Core non-forest activities for the improvement of livelihoods" was put together, as verified were increased revenue opportunities and improved financing through non-forestry OFT activities during the implementation of this project. As a result, the recommendation report selected animal husbandry as a desirable activity because animal husbandry was relatively free from problems of land restriction and seasonality

4) Output 4: Examples of silvicultural techniques for natural forest rehabilitation and farmland management techniques in watershed areas demonstrated to technical officers and local famers so that they can be applied in their localities.

The project prepared demonstration forest to show the techniques for natural forest rehabilitation to visitors. Three indicators were established for Output 4 (1. the creation of 93ha of demonstration forest, 2. reaching out to 110 households participating in the demonstration forest, 3. a total of 500 visitors to visit the demonstration forest). At project completion, Indicator 1 was attained, Indicator 2 was considered to be almost attained, and for Indicator 3, a

steady number of visitors was confirmed although the exact number was not collected. It was considered that Indicator 3 had been practically attained. However, it should be noted that the establishment of the demonstration forest requires a long period and needed to be commenced from an early stage of this project. For this reason, the demonstration forest displayed conventional techniques collected and reorganized by this project and, hence, the demonstration effects of this project (the experimental forest and the OFT activities) were limited. The 93ha demonstration forest was created in the Dan Chu commune outside of Hoa Binh between 2004 and 2006. The site was easily accessible from Hanoi City. During the project, 125 households participated in the demonstration forest[16]. Participating farmers were given training in plantation and forestry techniques. By the time of the terminal evaluation (May 2008), there had been approximately 300 visitors (of which 133 were foreigners) to the site. Because there were various ways to arrange site visits, the accurate number of the visitors was not available, however continuous visitors to the site had been observed[17].


Photo 2: Demonstration Forest

5) Output 5: Monitoring system is established to assess the achievements of each Output and to derive lessons of each Output to attain the Project Purpose.

The project created an overall implementation roadmap and planned the monitoring based on it. Two indicators were established for Output 5 (1. periodical monitoring reports, and 2. derivation of lessons for every output). Monitoring was carried out but it did not show progress as originally planned. As the achievement of the output took a long time, it was difficult to obtain project feedback from the assessment of output. Because of this, it was impossible to derive lessons for each output from the roadmap. For this reason, monitoring activity was reported in the biannual progress report for JICA along with that for regular practice of other technical cooperation projects.

3.2.1.2 Achievement of Project Objectives

In order to measure the achievement level of the project objective ("Sets of technically appropriate and economically affordable measures for natural forest rehabilitation are developed that can be used by forest enterprises, watershed management boards, and extension workers"), three indicators were established. The following is the achievement status for each indicator.

1) Indicator 1: By 2008, the recommendation report on methods for the application of silvicultural techniques for natural forest rehabilitation and farmland management techniques in watershed areas had been submitted to Program 661.

Based on the results of each trial of OFT activities and the demonstration forest, the report intended to establish practical and comprehensive systematized techniques while adding technical feasibility, as well as economic and social incentives, to cease slash-and-burn agriculture. As the recommendation report was completed in August 2008, this indicator reached its target.

The recommendation report introduced the results of various activities and drew out promising techniques and a proper direction for sector policy. As the recommendations were based on actual practices, they presumably had validity. Except for those activities which

[16] The response from Hoa Binh province Sub-DOF stated that the participating households numbered 105. However, strictly speaking, some parts of households were counted as one, and there is no change in the total demonstration area.

[17] According to a hearing with the People's Committee of the Dan Chu commune, there were approximately 100 visitors annually at the time of the post-ex evaluation.

farmers could start voluntarily (such as income generating activities), the implementation of recommendations required support from the government sector. It would have been preferable for the report to have assessed what kinds of organizations and institutions were required for these recommendations to be implemented continually.

No problems related to technical feasibility were pointed out at the hearings with counterpart institutions. However, it was pointed out that no clear understanding was shared among related personnel on the issues to be solved on existing techniques for natural forest rehabilitation or on approaches to these issues. This interfered with the focus of experiments and OFT activities. For example, both cost efficient techniques through a reduction in manual labor (smaller planting holes, small-scale production of seedlings, etc.) and high cost techniques with the use of the container trays were experimented with. The recommendation report also introduced both cost-saving and expensive techniques. While the direction for plantation costs was not clearly shown, the report contained methods for utilizing both silvicultural techniques and farmland management techniques.

2) Indicator 2: By 2008, a manual had been prepared on hands-on techniques for the sets of silvicultural techniques for natural forest rehabilitation and farmland management in watershed areas targeting local technical officers and farmers.

Based on the results of experiments and OFT activities, the manual had been prepared as approximately 200 pages booklet by the end of the project and thus this indicator reached its target. The manual is an easy to carry, and it includes not only silvicultural techniques but also guidance on non-forestation issues such as animal husbandry. In a hearing with the Da River Watershed Management Board, it was pointed out that swine breeding includes something not appropriate in the current situation, however other aspects (participatory approach, planting techniques and fruit cultivation) were acknowledged.

3) Indicator 3: 80 technical officers from FE, WMB, and AFE learn new techniques through technical seminars.

By the time of terminal evaluation (May 2008), a total of 81 technical officers had participated in seminars on the new techniques developed by the project. This indicator reached its target. In September 2006, a seminar where the results of OFT activities were shared was conducted in Hoa Binh province. Of 50 participants 45 were technical officers. Another technical seminar was conducted in March 2008 targeting related organizations and local staff. Of 76 participants, 36 were technical officers.

In regards to the project objectives, each indicator was achieved.

3.2.2 Impact

The project objectives are the development of practical measures for natural forest rehabilitation. The development of practical measures itself does not produce clear benefits. However, the utilization of practical measures would generate benefits after project completion. For this reason, this criterion shows actual use of the measures. Value judgments for “Effectiveness and Impact” are based primarily on use of the measures.

3.2.2.1 Achievement of Overall Goal

In order to measure the level of achievement of the overall goal: “Sets of technology for natural forest rehabilitation developed by the Project are applied by policy makers and end users”, three indicators were established. While Indicator 1 deals with policy makers’ application of the developed techniques to policies, Indicators 2 and 3 deal with prospective users’ use of the developed measures in Hoa Binh province. The following is the achievement status for each indicator.

1) Indicator 1: By 2009, the recommendation report submitted by the Project has been reviewed by MARD/DOF for application to Program 661.

A part of the recommendation report was referred to upon the establishment of policy direction for Program 661. The report included the plantation cost of the demonstration forest (VND 12-33 million per ha) and emphasized that an increase in the investment amount is necessary. At the time of the ex-post evaluation, forestation cost showed an upward trend. PM Decision No. 164/2008/ increased investment in forestation of special-use forest from VND 6 million/ha/year to VND 10 million/ha/year. The recommendation report also introduced various kinds of demonstration forest models with different ratios of fast growing and indigenous tree species. Mention was also made of the experiment of planting acacia trees one year prior to the indigenous tree species[18]. In line with the recommendation report, plantation guidance for protection and special-use forests under Program 661, which was a part of Document No. 1992 of MARD/2008, alternated the ratio of fast growing and indigenous tree species that had been fixed. In cases where the soil condition of protection forests is not ideal, the planting of fast growing trees is encouraged 6 to 12 months prior to the planting of the indigenous tree species. It was proven that these techniques accelerate growth and increase the survival rate.

2) Indicator 2: By 2010, the techniques developed by this project were applied to 80% of new plantation areas and areas of new highly-assisted natural regeneration were being established annually in the 20 communes.

The practical manual "A manual on hands-on techniques" (mentioned in 3.2.1.2 Achievement of Project Objectives 2), was distributed to 20 communes under the jurisdiction of the Da River Watershed Management Board in 2010. The manual has also been used as reference material by staff in a branch office of the Da River Watershed Management Board. According to the Da River Watershed Management Board, afforestation with *Canarium Album* and *Dendrocaramus Membranaseues* and soil improvement are frequently referred to in the manual. Although it is difficult to provide an accurate judgment, as data on the plantation areas within the 20 communes was not obtained and the definition of the technical adaptation presumed by the project was not clear. The below are details of the plantation area of the protection and production forests in Hoa Binh province for reference[19]. Based on interviews with Hoa Binh sub-DOF, the selection of tree species, mixture and density are in line with the aforementioned guidance for Program 661 (Document No.1992 of MARD/2008). These are reflected in the annual program for implementation. If the protection forest is considered as the adopted area for the developed techniques, since the above 611 program guidance was adapted for the protection forests, the project has presumably been applied to 20-30% of the overall Hoa Binh province. As Program 661 ended in 2011, plantation areas have declined in general.

Table 4: Planted area for Protection and Production Forests

Unit: ha

Year	2008	2009	2010	2011
Planted Area for Protection Forest (A)	787.90	1,092.90	1,670.15	80.94
Planted Area for Production Forest (B)	3,070.80	2,996.80	3,483.16	372.35
Total (A)＋(B)	3,858.70	4,089.70	5,153.31	453.29
(A)/((A)+(B))	20.4%	26.7%	32.4%	17.9%

Source: Hoa Binh Sub-DOF

[18] It should be noted that in the recommendation report, this technique (the planting of fast growing trees 6-12 months prior to the indigenous tree species) is not selected as a recommended technique. There are other techniques with a faster growth rate which were experimented with simultaneously. However, it is easier to implement this method.

[19] According to a hearing with Hoa Binh province Sub-DOF, no forestation of special use forest has been carried out since 2005.

3) Indicator 3: By 2010, the number of households in the 20 communes applying the techniques developed by the Project had reached 700.

This project financed OFT activities during project implementation. The terminal evaluation recommended that, in order to improve sustainability, both DARD and sub-DOF in Hoa Binh province allocate budget for the continuation and dissemination of OFT activities. Upon completion of the project, however, no budget for the dissemination of OFT results had been distributed and attempts to support technique introduction were not being made. Although it was expected that the project would produce effects within Hoa Binh province, the dissemination of developed techniques has been facing budget restrictions. Given that the techniques were introduced in five communes where this project implemented (participating households: 368 HH/year at average and 480 HH/year at maximum), it is concluded that this indicator did not reach the target (20 communes, and participating households 700 HH). In regards to non-forest OFT activities, the activities themselves were barely continued as they were beyond the responsibility of Hoa Binh province Sub-DOF (agriculture and animal husbandry). Nothing more than a public meeting between the Da River Watershed Management Board staff and staff of other organizations was conducted.

Although the overall goal was partly achieved for target indicator 1, the achievement of indicator 2 was difficult to assess and that of indicator 3 was less than the plan because of a lack of funding. Therefore, the overall goal was only partially achieved.

3.2.2.2 Other Impacts

The results of the interviews with project officials and surveys from OFT participating farmers suggested the following positive impacts. No negative impact was observed on the natural and social environments during the site survey and hearings.

(1) Continuation of livelihood activities in the OFT target areas

A questionnaire survey for farmers participating in OFT activities[20] revealed that approximately 90% of the participating households "continued" or "continued to some extent" with OFT activities at the time of the ex-post evaluation (*See Table 5*). After completion of the project, farmers participating in OFT activities received official technical support for both forestry and non-forestry activities, but no financial support (*See Table 6*). Interviews with OFT participants revealed that income generating activities (animal husbandry, bamboo cultivation, etc.) continued in many cases. Animal husbandry is considered to be relatively easy for participating farmers to continue as land-use constraints are not severe, and it is easy to carry it out along with natural forest rehabilitation and receive cash within a short time period. At the time of the ex-post evaluation, farmers participating in OFT continued to raise goats and cattle, however, swine husbandry had been discontinued due to disease in many households. In a good practice that income from non-forestry activities supported the implementation of forestry activities, a farmer earned cash by breeding goats provided by the project and with it purchased seedlings of indigenous tree species for afforestation. Before the implementation of this project, he was engaged in shifting cultivation. At the time of the ex-post evaluation, he reduced 'slash and burn' cultivation area and reduced his farmland improving productivities by the use of fertilizer.

[20] At the time of the ex-post evaluation, a survey was conducted with OFT participating farmers (a total of 124 people) in the 10 communes where OFT activities were implemented.

Table 5: OFT activities at the time of the ex-post evaluation

Type of Activities		Continued	Continued to some extent	Not much continued	Not at all continued	Do not know	Not valid	Total
Forestry	Respondents	54	55	12	1	0	2	124
	%	43.5%	44.4%	9.7%	0.8%	0.0%	1.6%	100.0%
Non-forestry	Respondents	54	40	19	6	1	4	124
	%	43.5%	32.3%	15.3%	4.8%	0.8%	3.2%	100.0%

Source: questionnaire survey for the ex-post evaluation

Table 6: Official assistance for continued activities at the time of the ex-post evaluation

Type of Activities	Type of Support		Official Assistance Available	Official Assistance Not- vailable	Total
Forestry	Technical	Respondents	88	36	124
		%	71.0%	29.0%	100.0%
	Financial	Respondents	1	123	124
		%	0.8%	99.2%	100.0%
Non-forestry	Technical	Respondents	90	34	124
		%	72.6%	27.4%	100.0%
	Financial	Respondents	2	122	124
		%	1.6%	98.4%	100.0%

Source: questionnaire survey for the ex-post evaluation

(2) Application to other programs and technical trainings

The hearings with counterpart organizations confirmed that the techniques developed by this project were applied to other programs and technical training. A part of the practical manual, which is mentioned in Indicator 2 of "3.2.1.2 Achievement of the Project Objectives", is also applied to afforestation activity (forestry activities for forest products in production and protection forests) supported by a poverty reduction program (as known as the 30a program[21]). In addition, some of the techniques developed by the project (afforestation with indigenous species, enrichment methods, etc.) are applied to projects supported by other donors. Program 661 and forest ranger training have also used the plantation techniques and enrichment methods developed by the project.

This project has somewhat achieved its objectives, therefore its effectiveness/impact is fair. In regards to the project objectives, indicator 1-3 was achieved. As for the overall goal, the number of beneficiaries could not be expanded as the dissemination of OFT activity results has been obstructed due to budget deficits.

[21] Carried out based on the Resolution 30a/2008.

3.3 Efficiency (Rating: ③)

3.3.1 Inputs

Inputs	Plan	Actual Performance
(1) Experts	· 3 persons for Long-Term · TBD after the commencement of the project for Short-Term	· 6 persons for Long-Term · 15 persons for Short-Term
(2) Trainees received	Field(s) of training: TBD after commencement of the project	Field(s) of training: silvicultural techniques, forest management, rural economy, agricultural products marketing, etc.
(3) Third-Country Training Programs	Field(s) of training: TBD after commencement of the project	Field(s) of training: participatory forest management, silvicultural techniques
(4) Equipment	Office equipment, equipment for research, equipment for nurseries, vehicles, etc.	Office equipment, equipment for research, equipment for nurseryies vehicles, etc.
Total Project Cost	Approx. 500 million yen	483.73 million yen[22]
Total Local Cost	N/A	24.69 million yen[23]

3.3.1.1 Elements of Inputs

An increase in the number of long-term experts was due to rotation, and there was no additional field added from the time of planning[24]. Shot-term experts were sent to 13 fields during the project period[25]. The skills of these experts were related mainly to forestry, and no expert on animal husbandry was sent, even though this was the main component of non-forestry OFT activities. However, it should be noted that staff from the livestock related division of the Hoa Binh province Department of Agriculture and Rural Development (DARD) implemented livestock disease prevention trainings for farmers in the target communes of OFT activities, and supplemented the otherwise insufficient inputs. Because the input amounts and budget were not clearly established at the time of project planning, it was difficult to compare the planned and actual inputs. However, the counterpart organization concluded that the quality of input (experts and provision of equipment) was generally appropriate in light of the project scope. Nevertheless, it was pointed out that some found it confusing to see differences of opinions among experts, as there were many short-term experts sent to the project. At the time of project planning, it was planned that the demonstration forest would be on public land within Dan Chu commune of Hoa Binh province. However, the land had already been distributed to local farmers and there was no appropriate public land left, except for the supplementary planting plot (18ha). For this reason, an invitation was extended to farmers interested in participating in the demonstration forest. The forest was created on land where long-term rights of use were owned by those farmers who agreed to conduct forest management after plantation and to accept restrictions on logging.

3.3.1.2 Project Cost

The total project cost was lower than planned (97% of the original plan). The approximate portions of administration, OFT activity and demonstration forest over local cost were 30%, 30% and 20%, respectively, and these were the main expense items[26]. Since approval of the

[22] Based on internal documents in JICA

[23] Calculated based on the monthly currency exchange rate (143.06VND/JPY) during the project.

[24] The assignment areas for long-term experts were Chief advisor / Natural forest rehabilitation, Silvicultural technique development, and Participatory forest management / Project coordinator.

[25] The assignment areas for short-term experts were Planning of research and OFT (silvicultural technique development), ditto (Forestry soil), ditto (community-based forest management), Silviculture (planning of research), Seedling and nursery experiments, Economic analysis, Non-timber forest products, Soil analysis, Silvicultural technique, Silvicultural technique / Natural regeneration, Distribution and marketing, Planning-monitoring-evaluation, and Farm household economic analysis

[26] Based on the project termination report.

project by the Vietnamese Prime Minister's Office was delayed until May 2005, the Vietnam counterpart fund was not distributed in 2003 and 2004. Therefore operating costs (such as travel expenses) which were supposed to be paid by the Vietnamese were borne by the project.

3.3.1.3 Period of Cooperation

The project period was as planned (100% of the original plan). As the dispatch of experts in charge of silvicultural technique development was delayed for more than 6 months, the selection of experiments for the experimental forest was impeded. However, with the support of short-term experts with some knowledge of forestation, other long-term experts from different fields were able to take charge of this task temporarily. The database on the FSIV website (related to Output 1) was completed in April 2006, which meant one year of delay.

The inputs were appropriate for producing outputs and achieving the project objective, and project cost and period of cooperation were as planned, therefore efficiency of the project is high.

3.4 Sustainability (Rating: ②)

3.4.1 Related Policy towards the Project

The long-term plan of the forestry sector at the time of the ex-post evaluation was the "Forestation Development Strategy 2006-2020". As mentioned in "3.1.1 Relevance to the Development Plan", the above strategy regarded poverty reduction as one of the social tasks in forest areas. It adopted trials on the continuation of community forest management and its expansion in the policy for management of forest and forestland. The strategy does not clearly mention the use of indigenous tree species in forestation programs, but biodiversity is considered as one of the most important tasks in forestation research. An afforestation method focuses more on biodiversity than on existing mono-cultural forestation which depends on non-indigenous tree species.

Program 661 was extended until the end of 2011, and a new forestry program, based on the "Forest Protection and Development Plan for the period 2011-2020", will be launched in 2012. The 30a program also implements a forest rehabilitation program focused on poverty reduction and applies community forest management to forest protection[27].

The proposal for "forest rehabilitation based on the participation of local residents" from the recommendation report is in line with the policy of the forestry sector. From the point of view of biodiversity, research on the use of indigenous tree species is also expected to be given higher priority. The techniques developed by the project are generally in line with sector policy. There are further opportunities for the techniques developed by the project to be applied to specific issues.

3.4.2 Institutional and Operational Aspects of the Implementing Agency

As for the institutional structure of the forestry sector pre and post project implementation, the biggest change was that the Vietnam Forest Administration (VNFOREST) was established under MARD. This structure change has not harmed the sustainability of the project. On the other hand, Hoa Binh Sub-DOF remains in charge of forestation and forest management. Considering that the number of its staff has slightly decreased, while the number of staff in Da River Watershed Management Board who supports farmers remains at similar level, it can be concluded that afforestation according to the guidance of Program 661 and the thinning of the demonstration forest can be conducted in Hoa Binh province. However, further activities for the dissemination of developed techniques in Hoa Binh province might be difficult. The following is the roles of the counterpart organizations in forestry administration at the time of the ex-post

[27] Under the 30a program, a subsidy is granted when the public administration and local residents agree on a forest protection and management contract, and when the local residents patrol the forest and strictly observe the rule of no firing, etc.

evaluation.

(1) VNFOREST

After the completion of the project, DOF was merged with the Forestry Protection Department (FPD) in 2010 and VNFOREST was established. VNFOREST supervises the responsibilities of the former DOF (forest management with an emphasis on afforestation, use and development of forest land) and the former FPD (forest protection and the enforcement of laws relevant to the forestry sector). VNFOREST sets out policy directions on the development and dissemination of silvicultural techniques through regulations and planning.

(2) FSIV

There has been no change in the administrative role of FSIV since the planning phase of this project. At the time of the ex-post evaluation, FSIV carried out research and training on forestry techniques under the supervision of MARD.

(3) Hoa Binh Sub-DOF

There has been no change in the administrative role of Hoa Binh Sub-DOF since the planning of this project. At the time of the ex-post evaluation, Hoa Binh Sub-DOF which lays under DARD, was preparing annual afforestation program and making budget proposals. It is in charge of both long-term and short-term strategies and of coordination within the province according to sector policy set by VNFOREST. Although a single administrative organization takes charge of both forestation and forest protection at central government level, these two areas are not merged at provincial level. In addition to the above, other divisions of the province take charge of non-forestry OFT activities (agriculture and animal husbandry). This is an issue for the further dissemination of the results obtained from OFT activity. In Hoa Binh Sub-DOF, the number of staff had decreased from 17 in 2008 to 15 at the time of the ex-post evaluation.

(4) Da River Watershed Management Board

The Da River Watershed Management Board is in charge of the forestation and forest management of the Da river watershed. The board provides technical guidance to local farmers who have the right to use the forest or who are commissioned with forest management. Before afforestation, the board makes agreements with farmers who have the right to forest use, demarcates afforestation areas and prepares an afforestation program within its jurisdiction. As it is farmers who actually practice afforestation and forest management, the board gives them advice on activities such as plantation and thinning. The board took over the two forestry public corporations in 2007 and expanded its territory to cover Hoa Binh city and four other regions (Da Bac, Mai Chau, Tan Lac, Cao Phong) that are located in the Da river watershed. At the time of the ex-post evaluation, there were 33 staff members (of which 22 were technical staff).

3.4.3 Technical Aspects of the Implementing Agency

Upon achievement of the overall goal (technical application for policy decision makers and end-users) after completion of the project, (1) the dissemination of techniques in the neighboring communes of Hoa Binh province, and (2) the effects on sector policy of the demonstration forest, succeeding research and the database are considered to be important in the achievement of the project effects. The staff of Hoa Binh Sub-DOF, Da River Watershed Management Board and FSIV play a vital role in this dissemination. For this reason, the project trained them in a wide range of silvicultural forest management techniques during the implementation phase. At the same time, farmers who managed the demonstration forest received training on planting techniques and nurturing. Skill maintenance for the above counterparts and farmers in charge of the demonstration forest after completion of the project has included the following:

- ✓ FSIV Staff: since the FSIV staff are researchers, their technical skills are maintained through participation in other, similar projects (the JICA technical corporation project "A Sustainable Forest Management Project in the North Western Water Resource Areas", etc.) rather than through formal training.

- ✓ Hoa Binh province Sub-DOF staff: staff frequently receive training on regulatory matters from MARD as they are in charge of the administration of afforestation and forest management. Training on monitoring and evaluation was carried out once with the support of a foreign donor.

- ✓ Da River Watershed Management Board: although trainings on silvicultural techniques are implemented, these trainings are infrequent. The number of participants is rather limited.

- ✓ Farmers in Charge of the Demonstration Forest: there is no exclusive support for farmers in regards to forest management. However, the Da River Watershed Management Board advises them on thinning techniques.

After completion of the project, training opportunities for counterparts has been limited in general and yet they are still provided to some extent for the maintenance of skills in routine tasks.

3.4.4 Financial Aspects of the Implementing Agency

At the time of the ex-post evaluation, the budget for Program 661, the financial situations of FSIV and the Hoa Binh province Sub-DOF, and financial support for the farmers in charge of the demonstration forest were as follows:

(1) Budget for Program 661

Budget allocation for Program 661 since project completion has declined since its peak in 2010 (*See Table 7)*. As mentioned above, the Program 661 ended in 2011 and a new forestation program based on the "Forest Protection and Development Plan for the period 2011-2020" will be launched from 2012. The hearing with VNFOREST and Hoa Binh Sub-DOF revealed that VND 15 billion out of the overall budget for Vietnam (VND 1,200 billion) will be distributed to Hoa Binh province in 2012 as the succeeding program budget. The budget for afforestation declined because of the gap between the two programs.

Table 7: Budget for Program 661

Unit: VND

	2008	2009	2010	2011
Program 661	1,200 bn	1,200 bn	1,500 bn	700 bn
To Hoa Binh province	20.1 bn	35.2 bn	41.4 bn	18.0 bn

Source: interviews at VNFOREST and Sub-DOF

(2) FSIV Research Budget and Database Maintenance Budget

Sufficient budget for the continuation of the experimental forest was allocated and data (diameter, breast height, tree height, bole height, etc.) has been consecutively collected. However, budget allocation for succeeding research is limited and there is no budget for database maintenance. Although the database is open to the public, there has been no database update since the completion of the project and flaws (such as the impossibility of downloading attached materials) have been found.

(3) Hoa Binh Sub-DOF

At the time of project completion, it was recommended that DARD and Sub-DOF in Hoa Binh province allocate budgets for the expansion of OFT activities and the management of the demonstration forest. However, these had not been allocated at the time of the ex-post evaluation. For this reason, the conducting of afforestation activities in accordance with the guidelines for Program 661 has been a major means for the dissemination of the techniques developed by the project.

(4) Local Farmers In Charge of the Demonstration Forest

At the time of the ex-post evaluation, farmers are in charge of the management of the demonstration forest. Visitors continually come to the demonstration site. A living standards improvement program was provided to the farmers in charge of the demonstration forest during project implementation, but no further financial support exclusively targeting these farmers has been available since project completion. Even for Acacia, one of the fast growing species, it takes more than five years from planting to harvesting. Therefore, there is no forestation income during this period, although there is a constant workload for forest management. Since the demonstration forest is categorized as a protection forest, logging is restricted and farmers can barely earn an income. This is an issue in the management of the demonstration forest.

For the sustainability of the project effects, financial constraint is an issue to be solved. Afforestation is expected to be implemented on a certain scale. However, budget allocation for activities except for afforestation (the maintenance of the database, OFT activities, management of the demonstration forest) for the use of developed techniques has been very small. FSIV faces difficulties in allocating budgets to succeeding research and database maintenance. Even before the completion of Program 661, there was no budget to sustain and disseminate the OFT activities in Hoa Binh province. In addition, financial support for the farmers in charge of the demonstration forest has been very limited.

Some issues have been observed in the structural and financial aspects of the implementing agency, therefore, sustainability of the project effects is fair. This project assumed two project effects after its completion: (1) application of developed techniques to policies and (2) practice of developed techniques in Hoa Binh province. The sustainability of the later effect has issues to be concerned.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project aimed to develop silvicultural techniques for natural forest rehabilitation and, then, to apply these techniques to forestry sector policy and disseminate them in Hoa Binh province. The project reflects needs for technological development toward the rehabilitation of natural forest, in particular under the current situation where farmers play an important role in forest management. Therefore, the relevance of the project is high. As a result of project implementation, some effects were observed such as advancements in technical development and inputs in the guidance for afforestation activities in t Program 661. On the other hand, dissemination outside of the project area did not attain its target. In the light of this, the effectiveness/impact of this project is fair. The inputs were appropriate, the project cost was within the plan and the period of cooperation was as planned. Therefore, the efficiency of the project is high. A national afforestation program is still on-going. However, the continuation of the OFT activities and the dissemination of project results have faced a lack of funding in Hoa Binh province. Hence, the sustainability of the project effects is fair.

In light of the above, this project is evaluated to be satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Implementing Agency

(1) Harvesting the demonstration forest

Financial support for the local farmers in charge of the demonstration forest management is very limited. This issue cannot be ignored, as it has increasingly become a burden. Some of the fast growing species can be logged today. Hoa Binh Sub-DOF, Song Da WMB conducted the site survey of the thinning of households and sent documents to concerning agencies. The relevant organizations (Da River Watershed Management Board, Hoa Binh province Sub-DOF, etc.) need to continue this effort and to process administrative procedures necessary for logging as promptly as possible in order to make sure that the local farmers can earn income at an earlier stage.

Planted acacia trees sometimes decay after 10 years, and therefore it is necessary to harvest them and re-afforest the demonstration forest before this happens.

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

(1) Defining issues to be solved by the development of techniques

The target of this project was “Sets of technically appropriate and economically affordable measures for natural forest rehabilitation to be developed that can be used by forest enterprises, watershed management boards, and extension workers”. However, the questions of which economic efficiency should be stressed, or in which geographical areas the techniques should be applied, were not clearly addressed. For this reason, it was difficult to agree on a specific subject for technical development and it was also difficult to focus on activities along with some of the specific tasks. If technical development is set as a project goal, the areas and its directions are to be refined, and it is desirable that issues are identified and shared among key stakeholders at an early stage with a good attention to a variety of local needs.

(2) Involvement of relevant government agencies

This project regards dissemination of the results from OFT activities in the Hoa Binh province as a path to realize project effects, and included a deputy director of DARD in Hoa Binh province, which was in charge of agriculture, forestry and animal husbandry, as one of the counterparts. Among OFT activities, farming and animal husbandry saw a strong demand during project implementation, but the relevant agencies in charge of these activities were not sufficiently involved. The dissemination of results has faced difficulties as non-forestry OFT activities are not within the responsibility of the counterpart agencies. Forest management by farmers requires various activities beyond those relating to forestry. It is desirable that, in consideration of activities to be implemented after project completion, the necessity of involving relevant government agencies and that of selecting a counterpart from these agencies are regularly assessed during project implementation.

Vietnam

Ex-Post Evaluation of Japanese Technical Cooperation Project
"The Project on the Improvement of Port Management System"

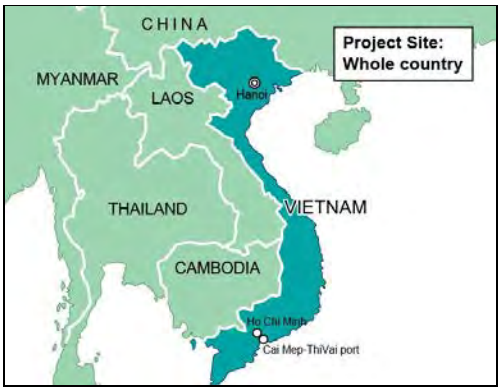
External Evaluator: Nobuyuki Kobayashi, OPMAC Corporation

0. Summary

This project aimed at capacity building of the counterparts and the participation of the non-government sector in the operation of a cargo terminal, leading to the improvement of port administration and port management. The implementation of this project was in line with Vietnam's development policy and needs as well as with Japan's ODA policy and, thus, its relevance is high. At the time of project completion, the capacity improvement of the counterparts had been confirmed. Due to delays of construction of Cai Mep-Thi Vai International Port, the documents for tender had not yet been utilized for the port. At the time of the ex-post evaluation, however, the selection of cargo terminal operators for the port was ongoing and reform of the port administration was also progressing. For these reasons, the effectiveness of the project is high. On the other hand, due to additional activities that were not in the original plan, both the project cost and period exceeded the plan and, therefore, its efficiency is low. Because of some financial restrictions, neither full-time staff allocation nor a large-scale research was implemented and the sustainability of this project is fair.

In light of the above, the project is evaluated to be partially satisfactory.

1. Project Description



Project Location

Cai Mep Terminal under construction

1.1 Background

Vietnam has a shoreline of approximately 3,300km as well as navigable rivers/canals of approximately 14,000km in length, and water-borne transport is an important mean of logistics. Along with the economic development of the country's market together with greater market freedom, domestic freight volume in Vietnam has showed a rapid expansion. Freight volumes at the southern ports, centered around Ho Chi Minh, doubled between 1996 and 2000. The Vietnamese government has been working on port construction and rehabilitation in order to meet the increases in traffic demand, and Japan has supported the port infrastructures of Hai Phong port, Cai Lan port, and Da Nang port through the provision of loan (ODA loan) since the mid 1990s. In the early 2000s, Japan International Cooperation Agency (JICA) executed a study for the construction of Cai Mep-Thi Vai port, a deep seaport for the Southern Vietnam, and an ODA loan was approved for the project in March 2005 based on this study. The ODA loan

project, “Cai Mep-Thi Vai International Port Development Project”, provides assistance for the construction of the Cai Mep container terminal, the Thi Vai general cargo terminal and other infrastructures (Procurement and installation of cargo handling equipment and the dredging of a navigation channel).

In the mid 2000s, while the modernization of port infrastructure was progressing, the improvement of intangible aspects, such as the optimization of port management, had also started to be widely noticed. As a global trend, at international container ports, government sectors were taking on facility ownerships and operation monitoring while cargo terminal operation was entrusted to non-state operators. The attempt to separate the ownership holders (government sector) and operators (non-state sector) also started in Vietnam. During the construction of Cai Mep-Thi Vai port, the same policy of separating the two roles and optimizing cargo terminal operation was adopted.

With this background, the Vietnamese government requested technical cooperation in order to legislate towards the participation of the non-state sector in port operation, to prepare documents for the selection of operators, with Cai Mep-Thi Vai port as a model case, and to create a concession plan.

1.2 Project Outline

Overall Goal		Port administration and management system is improved.
Project Objective		Project Objective 1: Capacity of VINAMARINE on port administration and port management is strengthened. Project Objective 2: Terminal operating system for gateway ports is established.
Output(s)	Output 1	VINAMARINE prepares the draft policy on non-state sector’s participation in the operation of gateway ports & the draft plan on promotion of the gateway ports, taking CM-TV ports as a model case.
	Output 2	VINAMRINE drafts and proposes the rehabilitation of the roles (authorities, powers, etc.) on port management and operation among governmental agencies, other public sectors and private sector to promote the non-state sectors’ participation to the operation of gateway ports.
	Output 3	VINAMARINE prepares the draft regulatory framework to promote the non-state sectors’ participation to port operation.
	Output 4	VINAMARINE prepares the draft plan for port administration and management with the assistance and cooperation with JICA expert team.
	Output 5	VINAMRINE prepares the draft documents necessary for the selection of port operator and the concession plan of CM-TV Port as a model case.
Inputs		Japanese Side: 1. Experts 21 Persons 21 persons for Short-Term 2. 12 Trainees received (counterpart training in Japan) 3. 4 Trainees for Third-Country Training Programs (total) 4. Equipment 2.13 million yen 5. Local Cost 81.85 million yen 6. Others (incl. dispatch of relevant missions)

	Vietnamese Side: 1. 27 Counterparts 2. Facilities, except project office 3. Local cost VND 1 billion
Total cost	628.29 million yen
Period of Cooperation	February 2005 – November 2008
Implementing Agency	Ministry of Transport / Vietnam Maritime Administration (VINAMARINE)
Cooperation Agency in Japan	Overseas Coastal Area Development Institute of Japan
Related Projects	Japanese ODA Loan "Cai Mep-Thi Vai International Port Development Project" (planned in appraisal from March 2005 to November 2013)

1.3 Outline of the Terminal Evaluation

1.3.1 Achievement of Overall Goal

In the terminal evaluation report, efficient coordination among Vietnam's relevant organizations was considered necessary in order to achieve the overall goal. Laws (including legislative bills) to improve port management were legislated as one of the project's outputs. However, the report mentioned that the implementation of the laws required coordination among the relevant authorities, and that this coordination was time consuming as Vietnam's maritime administration was not centralized.

1.3.2 Achievement of Project Objective

In the terminal evaluation report, it was considered that the project objective had been achieved since staff skills were definitely strengthened in regards to VINAMARINE port administration and port management. According to the terminal evaluation report, regarding the establishment of a system for the terminal operation in gateway ports, draft tender documents, draft policy and concession plans, those which could be applied to Cai mep-Thi Vai port were prepared. However, these documents had not been applied at the time of the ex-post evaluation due to delays in construction at the port.

1.3.3 Recommendations

In the terminal evaluation report, short-term recommendations for pre-project termination up to 2008 and long-recommendation for post-project termination were made. The recommendations mentioned are as follows:

<u>Short-Term Recommendations</u>

- To finish preparing the necessary draft plans/proposals by the completion of the project and to continue with the technical transfer in relation to the preparation of the national port master plan at the end of the project.
- To start selecting terminal operators at Cai Mep-Thi Vai port at the earliest possible time.

<u>Long-Term Recommendations</u>

- To make a continuous effort to improve port administration and port management. Due to the rapid expansion of port activities, it is expected that the port management system will face the need for a reform because of more coordination among plans and port usage. It is recommended that efforts on reform continue, using the knowledge and skills obtained by the project.

2. Outline of the Evaluation Study

2.1 External Evaluator

Nobuyuki Kobayashi, OPMAC Corporation

2.2 Duration of Evaluation Study

Duration of the Study: September 2011 - October 2012
Duration of the Field Study: November 24, 2011 - December 21, 2011 and
April 2, 2012 - April 14, 2012

2.3 Constraints during the Evaluation Study

At the time of the ex-post evaluation, since the operation of Cai Mep Thi Vai port had not yet been initiated and since the establishment of the Port Management Body (PMB) had also been delayed, an investigation of the appropriateness of the activities and port operation efficiency, based on a specific case, was not available. In addition, personal expenses, training costs, and research expenses on port sector reform could not be obtained from VINAMARINE and so the evaluation of sustainability was carried out based on indirect evidence.

3. Results of the Evaluation (Overall Rating: C[1])

3.1 Relevance (Rating: ③[2])

3.1.1 Relevance with the Development Plan of Vietnam

At the time of project planning in 2005, Vietnam's national development plan "The Five-year Socio Economic Development Plan 2001-2005 (SEDP2001-2005)" was in place, necessitating investment in the transport sector. In "The National Port Development Master Plan" published in 1999, the construction of deep seaports, container ports, and international hub ports in the main economic regions had been listed as a specific area for investment. The Vietnamese government also looked at the participation of the non-state sector for the better efficiency of port operation. From a global perspective, cases where private operators took charge of cargo terminal operation under concession agreements with the state sector were increasing, and this was becoming one of the most common models of non-state sector participation in port operation. However, the legal framework to conclude concession contracts for port operation with private or foreign operators had not been developed in Vietnam. Nevertheless, a pilot scheme for the separation of port ownership and operatorship was implemented based on the Prime Minister's decision, and the port infrastructure of Cai Lan port in Northern Vietnam was leased.

At the time of project completion in 2008, "The Five-year Socio Economic Development Plan 2006-2010 (SEDP2006-2010)" mentioned the enhancement of cargo handling capacity through modernization of the port system, the construction of deep seaports, and the renewal of cargo handling facilities. Leasing of the port infrastructure at Cai Lan port was continuing. The preparation of legislation to allow leasing of port facilities was accelerated. The MOT Decision No. 57/2005 made it possible for the existing Maritime Administration (MA) to lease the port facilities developed by the national budget. Decree No.71/2006 determined the framework for the selection of leaseholders (in principle, open tender in new ports) and the management of leasing fees.

During the implementation of the project, there was no change seen in the commitment of the Vietnamese for port infrastructure. During this time, the participation of the non-state sector in port operation was promoted as a measure to optimize port operation. System modernization

[1] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory
[2] ③: High, ②: Fair, ①: Low

for efficient port operation had been acknowledged as a policy agenda by the end of the project. This project improved capacities and established a system to introduce the non-state sector, using Cai Mep-Thi Vai port as a model. This deep seaport is behind the country's biggest city Ho Chi Minh. For these reasons, its relevance to the development plan of Vietnam is high.

3.1.2 Relevance with the Development Needs of Vietnam

At the time of project planning in 2005, the Vietnamese port management/operation system did not include a clear distinction between facility owners and terminal operators in a cargo terminal, and port operations in Vietnam, such as cargo handling, were conducted by the relevant government agencies and state-owned companies. As described in *3.1.1 Relevance with the Development Plan of Vietnam*, if the system whereby private operators capable of carrying out more efficient port operation take charge of cargo terminals was implemented in Vietnam, it would be necessary to separate the ownership and operation of port facilities, set clear responsibilities for both parties and, then, finally, to introduce non-state sector participation in cargo terminal operation. However, such a system has not yet been fully established in Vietnam. In addition, as a precondition for the participation of the non-state sector in port operation, it is necessary to clearly distinguish the state and non-state port management/operation roles and to prepare a set of regulations. In order to encourage the non-state sector to participate in port operation, it is crucial that sufficient cargo demand is attracted by comprehensive development of ports and their surrounding areas, marketing cargo owners and ship operators, guaranteeing appropriate maintenance of port facilities and a one-stop service for paper work. For this reason, it was desirable to establish a PMB, which integrates several functions of port management, as the main body to supervise operators. For the construction of the cargo terminal in Cai Mep-Thi-Vai port, it was planned that a PMB would be established at the port so that the operator from the non-state sector could continue to operate and maintain the terminal.

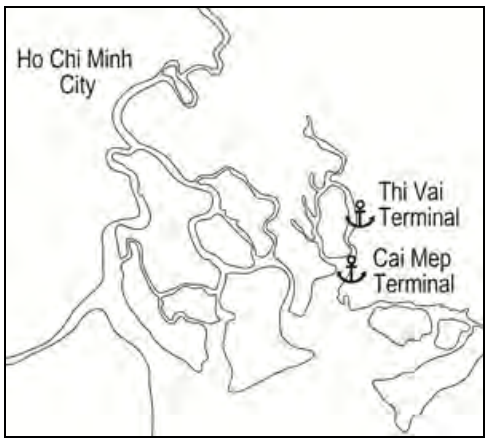


Figure 1: Location of Cai Mep Thi Vai Port

At the time of project termination in 2008, although no port had selected a cargo terminal operator by public tender, Cai Mep-Thi Vai port sustained its port development policy to do this on the presupposition that the legislation would be in effect. Since PMB would be taking over the responsibilities of several government agencies, coordination was difficult with the relevant organizations. As a result, the PMB had not been established at the time of project completion. However, it is desirable that the development of the areas surrounding ports (warehouses, roads, etc.) is integrated in order to carry out efficient port operation, and thus the need for the establishment of a PMB which would coordinate with other agencies and plan comprehensive infrastructure development has continued to be high[3]. It is difficult for MA to carry out this task.

During implementation of the project, the cargo volume of Vietnam's eight major ports increased, from 38,328,000 tons in 2005 to 52,063,000 tons in 2008[4]. The overall cargo volume for all Vietnamese ports also increased during the same period, from 139,161,000 tons in 2005 to 196,586,000 tons in 2008[5]. The location of Cai Mep-Thi Vai port near Ho Chi Minh meant that efficient operation of the port was an urgent matter in order to ensure smooth freight distribution as the cargo demand rapidly increased.

[3] The 2010 Prime Minister's decision, "Master Plan on Development of Vietnam's Seaport System" stated the intention for overall port development and its need were recognized by the Vietnamese government.
[4] General Statistics Office "Statistical Year Book of Vietnam 2009"
[5] Based on data provided by VINAMARINE.

During the project implementation period, the development of Cai Mep-Thi-Vai port progressed along with the policy of introducing the participation of the non-state sector in port operation. The project is responsible for promoting this participation in port management through the capacity building of VINAMARINE and improvements in the port system, and this necessary support is in line with the country's development needs.

3.1.3 Relevance with Japan's ODA Policy

Japan's Official Development Assistance Charter, which was a cabinet decision in 2003, identified Asia as a priority area for assistance, and stated the importance of strengthening Japan-Asia relationships through ODA, especially for prospective economic partnerships with the Eastern Asia region. The Country Assistance Program for Vietnam, established in 2004, included "Promotion of Growth" as one of its three main areas, and the importance of basic infrastructure in economic activities was stressed. In accordance with this policy, JICA's Country Assistance Strategy also stressed the establishment of economic infrastructure, and indicated that infrastructure development such as electrical power and transportations was a priority area,

The project contributed to trade promotion and the economic revitalization of Vietnam. For these goals, this project aimed at optimization of port operation in Asia region, specifically efficient operation in Cai Mep-Thi Vai port constructed with the provision of an ODA loan, and the institutional building for the basic infrastructure for economic activities.

This project has been highly relevant with the country's development plan, development needs, as well as Japan's ODA policy, therefore its relevance is high.

3.2 Effectiveness and Impact[6] (Rating: ③)

3.2.1 Project Outputs

The Evaluation of effectiveness reflects two viewpoints: the achievement of the Outputs and Project Objectives at the time of project completion and the contribution of the Outputs in the achievement of the Project Objectives. As this project had two Project Objectives, this section shows which output contributed to which project objectives.

3.2.1.1 Project Output

In the Project Design Matrix (PDM[7]) at project completion, the project had five outputs as its immediate project effects. Capacity building for the Master Plan on the Development of Vietnam's Seaport System was added to the project scope and Output 6 was included in an implementation plan. For this reason, the Output 6 has been added in the ex-post evaluation[8]. Outputs 1-3, and 5 were highly relevant to the Project Objective 2 and they have directly contributed to the introduction of the non-state sector to cargo terminal operation. On the other hand, Output 4 was highly relevant to Project Objective 1, focusing on VINAMARINE's acquirement of the administrative capacities necessary to supervise and guide PMB as the central government agency during the process of achieving Output 4. Although the relationship between the Output 6 and the Project Objectives was not clearly documented, Output 6 can be presumed to be related to Project Objective 1. The followings are the outputs achieved upon termination of the project.

1) Output 1 "VINAMARINE prepares the draft policy on non-state sectors' participation in the operation of gateway ports and the draft plan on promotion of the gateway ports, taking CM-TV ports as a model case"

Two indicators were established for Output 1 (1. Development of a draft policy for the

[6] To judge Effectiveness, the findings in Impact are also taken into consideration in the rating.
[7] PDM is a summary sheet organizing and presenting the relationship between the project goals and means.
[8] The reason that Output 6 was added is explained in *3.3.1.1 Elements of Inputs.*

participation of the non-state sector in port operation, and 2. Development of a draft plan for the promotion of Cai Mep-Thi Vai port). Both indicators were attained by the end of the project, and thus Output 1 is considered to have been achieved. The draft policy of Indicator 1 showed the process of the selection of cargo terminal operator, from the expressions of interest to contracting, and suggested the formation of a tender evaluation team and a contract negotiation team based on the organizational structure of VINAMARINE. The draft of the promotion strategy from Indicator 2 was developed during the project. The draft estimated cargo demand and conducted SWOT analysis of Cai Mep-Thi Cai port through an overall port sector analysis in Vietnam and its SWOT analysis[9]. The recommendations for the promotion of Cai Mep-Thi Vai port were made based on these analyses.

2) Output 2 "VINAMRINE drafts and proposes the rehabilitation of the roles (authorities, powers, etc.) on port management and operation among governmental agencies, other public sectors and private sector to promote the non-state sectors' participation to the operation of gateway ports"

One indicator (1. Development of draft guidelines for a public private partnership of port management and operation) was established for Output 2. The draft guidelines were developed during the project implementation, thus Output 2 has been achieved. The drafts showed a framework for a regulatory system for non-state sector participation; specifically dealing with responsibilities of the government and non-government sectors, the consultation procedures with relevant agencies, pricing methods, bidding methods, etc.

3) Output 3 "VINAMARINE prepares the draft regulatory framework to promote the non-state sectors' participation to port operation"

One indicator (1. Development of a regulation system for the promotion of the participation of the non-state sector) was established for Output 3. The regulatory system was developed during project implementation. The draft guidelines mentioned in Output 2 showed the framework of the regulatory system, and the participation policy draft mentioned in Output 1 outlined the selection procedures for cargo terminal operators. Thus, Output 3 has been achieved.

4) Output 4 "VINAMARINE prepares the draft plan for port administration and management with the assistance and cooperation with JICA expert team"

One Indicator (1. Development of a plan for port administration and management) was established for Output 4. During project implementation, the studies, proposals, and recommendations were instigated in 11 areas, and thus, Output 4 was achieved. The activities implemented for Output 4 were mainly relevant with the preparation of regulations on port management in general (such as the development of a long-term plan, maintenance/management, and statistical services). The followings is the investigation, planning and recommendations for Output 4.

1. Port facility security plan
2. Review and analysis of the present condition on management and operation of Vietnamese ports
3. Analysis of the roles and the classification of all ports in Vietnam
4. Proposal on the port management system by each category of the ports
5. Proposal of the basic policy on the port and navigation channel development and preservation
6. Proposal on the appropriate port statistics system
7. Proposal of the guideline for port planning and technical standards for port facilities

[9] SWOT is an analysis method used in developing a management strategy. SWOT stands for Strength, Weakness, Opportunity and Threat.

8. Proposal of model rules and regulation on port water area and port land premise
9. Proposal on financial reporting and auditing system for PMB
10. Proposal of the system on compilation of port facilities ledger
11. Proposal of introduction of an Electric Data Interchange (EDI) system

The above items from 5-11 were not included in project planning. The items were added because their necessity became clear when project activities were reviewed in the mid-term evaluation. At the time of the ex-post evaluation, items 1, 3, and 11 were reflected in port administration and port management (see *3.2.2.2 Other Impacts* for the actual use of these items).

5) Output 5 "VINAMRINE prepares the draft documents necessary for the selection of port operator and the concession plan of CM-TV Port as a model case"

Two indicators (1. Development of draft tender documents and draft contracts for the selection of cargo terminal operators for the Cai Mep-Thi Vai port, 2. Development of draft concession plans for the same purpose) were established for Output 5. During project implementation, a taskforce established within VINAMARINE completed the draft tender documents, draft contracts and a draft concession plan with the support of dispatched experts. Thus, Output 5 has been achieved. The draft tender documents and the draft contracts were important in order that public tender might be smoothly carried out and a draft concession plan was necessary for the approval process of the Vietnamese government preceding operator selection. The concession plan included port design, investment costs and a forecast for demand and profit and became the basic document for the decision making related to the lease contract.

6) Output 6 "Consistency between a nationwide port master plan prepared by VINAMRINE and basic policies and port management system introduced by this project is maintained"

As Output 6 was not included in the PDM, its indicators are not clear and, thus, it is difficult to assess the achievement of Output 6. Output 6 was not included at the project planning stage, but was added in May 2008. Preparation of the Master Plan for the Development of Vietnam's Seaport System required capacity development at VINAMARINE. During project implementation, experts were dispatched to carry out the capacity development of VINAMRINE staff for demand forecast and estimations of the handling capacity of ports. VINAMARINE staff utilized the above capacity, selecting the ports to be developed during the period of the master plan, and drafting the master plan. After the completion of the project, the master plan, based on a draft plan prepared by VINAMARINE, was approved by the Prime Minister in December 2010.

3.2.1.2 Achievement of Project Objectives

The project established two project objectives in its PDM. There were two indicators for Project Objective 1 and one indicator for Project Objective 2, in order to measure the level of achievement. Project Objective 2 has one indicator only (the preparation of documents to be used in the tendering of cargo terminal operators) but the use of these documents relied on the legislation to allow the selection of a port operator. Therefore, "the status of the legislation relevant to the selection of a cargo terminal operator" was added as an additional indicator. The following is the achievement status of each Project Objective at the time of project termination.

<u>Project Objective 1 "Capacity of VINAMARINE on port administration and port management is strengthened"</u>

1) Indicator 1 "Results of the capacity-monitoring tests for the taskforce team reach to sufficient level"

The project matched capacities for port administration/port management and project

activities, periodically monitored the progress of activities and capacity development, and attempted to strengthen the activities of areas behind schedule (such as revising the curriculum). The Work Breakdown Structure (WBS) segmented the project activities into 5 monitoring categories[10] at primary level, 17 at secondary level and 32 at tertiary level.

The project had specific administrative tasks for the participation of the non-state sector in the operation of Cai Mep-Thi Vai port and the establishment of PMB. In line with the above tasks, the administrative skills to be monitored were concretely refined. This allowed WBS-based monitoring.

For the verification of progress and skill improvement, dispatched experts conducted written and oral tests with the taskforce and evaluated them in 5 grade levels. The target was to obtain level 5 in all categories by the final year. Although most categories in the primary level only received 1-2 points during the first year of the project, they were receiving 4-5 points by the end of the project, and thus it was considered that the project objective had been almost achieved[11].

2) Indicator 2 "Necessary documents for the promulgation of the port administration and management plan are drafted"

During project implementation, a Draft Decree on the Management of Seaport Infrastructure Operation was developed mainly by the taskforce of this project. The draft determined the rights and obligation of a lessor (port ownership holder) and a lessee (operator), pricing, PMB establishment, etc., and was mainly based on the draft participation policy from Output 1 and the draft guideline from Output 2.

According to hearings with VINAMARINE, the project taskforce was involved in the preparation of the original bill for Decree No.71/2006, while dispatched experts gave technical advice on the MOT Decision No.57/2005 (the improvement of the port management system assisted by these regulations will be mentioned in *Project Objective 2, Indicator 2* in the next section).

The taskforce members contributed to the draft preparation of various regulations which suggests the improvement of capacities in VINAMARINE and thus the objective can be considered to have been almost achieved.

<u>Project Objective 2 "Terminal operating system for gateway ports is established"</u>

1) Indicator 1 "The project drafts and proposes standard bidding and contract documents , and concession plan for the selection of terminal operator in Vietnam port system, that can be applied to Cai Mep-Thi Vai Port as a model case"

As mentioned in Output 5, the draft tender documents, draft contracts, and a draft concession plan that applied to Cai Mep-Thi Vai port were completed during implementation of the project. In the original plan, consultants hired for the ODA loan project "Cai Mep-Thi Vai International Port Development Project" were to select a port operator while this project would prepare these documents to be used for tender in the port. However, since the selection of the operators had not begun by the end of the project due to the delay in the ODA loan project,

Photo 1: Thi Vai Terminal under construction

[10] Five monitoring categories (Promotion of gateway ports and the participation of the non-state sector , the establishment of PMB at CM-TV port and port management to realize PPP, a regulatory framework for the participation of the non-state sector in port operation, capacity for port administration and management, preparation of documents for the selection of port operators) were set at Level-1

[11] Based on the project ex-post evaluation.

no improvement was made on these documents via feedback coming from actual use. In the original plan, the consultants for the ODA loan project would have completed the selection of port operators by May 2009. However, in fact, the selection of the consultants was not completed, and the selection of the operators could not be initiated at the end of the project (November 2008). There was no opportunity to refine the quality of the draft tender documents, the draft contracts and the draft concession plan in order that they could be used as standard documents for gateway ports in general.

2) Indicator 2 "The status of the legislation relevant to selection of cargo terminal operators"

Regarding the achievement of Project Objective 2, it is necessary to consider the status of legislation, which is the basis for the selection of terminal operators in gateway ports. At the time of project planning, it was anticipated that a PMB would be established in Cai Mep-Thi Vai port and that management of leasing of the cargo terminal would be carried out by PMB. The Draft Decree on the Management of Seaport Infrastructure Operations mentioned in the *Project Objective 1, Indicator 2* was developed based on this anticipation, but it had not been approved by the completion of the project. Because there were a wide range of port ownership holders, including central government ministries and agencies, local government and state-owned enterprises, the port management function of which PMB was in charge could have been in collision with the administrative functions of other government agencies. For this reason, the establishment of PMB required coordination with the relevant organizations. This, however, was difficult and the establishment of PMB was therefore not allowed. Nevertheless, the project has strengthened the functions of MA under VINAMARINE and supported the institutional improvement for MA's management of port facility leasing. The framework of leasing fee management was presented and MOT Decision No. 57/2005 approved MA leasing of port facilities developed by the national budget while Decree 71/2006 determined that these port facilities should be leased using open tender. As the result of project support for the legislation of port facility leasing, legal grounds for management of leasing contract by the MA was established. Thus, the indicator was considered to be almost achieved.

This project has largely achieved its objectives except the indicator 1 for the Project Purpose 2.

3.2.2 Impact

Through the project, attempts were made to improve port administration and port management systems, focusing on the participation of the non-state sector in port operation. For this reason, the evaluation of Impact attaches importance to the continuation and progress of the participation of the non-state sector in port operation bearing in mind the Overall Goal "Port administration and management system is improved."

3.2.2.1 Achievement of Overall Goal

One indicator was established in order to measure achievement of the overall goal, "Improvement of port administration and management systems." Achievement of this goal was measured based on the improvement of the port management system by the time of the ex-post evaluation. The achievement status of the indicator is as follows:

1) Indicator 1 "Port administration and management system in Vietnam is regulated and executed mainly based on the port administration and management plan to be prepared by the Project."

At the time of the ex-post evaluation, the Draft Decree on Management of Seaport Infrastructure Operations developed by the taskforce had not yet been approved; therefore PMB had not been established. However, as the selection of the cargo terminal operators at Cai Mep-Thi Vai port progressed, more detailed regulations for port facility leasing was being

developed. Decree No. 21/2012 was approved in March 2012, and details of port facility leasing (such as pricing, conditions for the lessees, items of the leasing contract, expenditure of income from leasing facility) were determined.

Table 1: Port administration and management at Cai Mep - Thi Vai port (plan and actual)

	Situation of ports in general at project planning	Goal for Cai Mep - Thi Vai Port at project planning	Actual situation of Cai Mep - Thi Vai Port at project completion	Actual situation of Cai Mep - Thi Vai Port at the ex-post evaluation
Port administration	MA has limited responsibility such as for navigation, environment, etc.	It was expected that PMB would be responsible for daily administration, port promotion, etc.	It was expected that MA would have a wider range of responsibilities including management of the port facility leasing.	Same as left
Ownership holders of cargo terminal	Ministry, SOEs, Local government, JV of the Private and Public sectors	VINAMARINE (planned)	Same as left	Same as left
Operators of cargo terminal	Ownership holders or affiliated SOEs	Non-state sector selected by open tendering (planned)	Same as left	Selected from non-state sector by open tendering

Source: JICA internal documents and interviews with relevant agencies

At the time of the ex-post evaluation, the selection of the cargo terminal operators for Cai Mep-Thi Vai port was continuing as the port construction progressed. This was taking place with open tender as originally planned (*See Table 1*). As in the draft plan of the promotion strategy mentioned in Output 1, the selection process of cargo terminal operators allowed foreign operators to participate in the open tender. Although the draft tender documents, the draft contracts and the draft concession plan were already in use for the selection of operators, contract terms and preconditions were revised where necessary. The cargo demand of the port in the foreseeable future was not expected to reach the demand forecast in the project planning. In this environment, it was necessary to present conditions that were more advantageous to bidders.

Port administration by MA is feasible in the current situation. However, the Master Plan on the Development of Vietnam's Seaport System (Prime Minister Approval in 2010) recognizes the necessity to integrate port development/management with that of surrounding areas and recommends experimental efforts for the reform of port management systems. In line with the policy of the Vietnamese government, VINAMARINE established a task force to study the establishment of PMB at Van Phong port and then to continue with efforts to establish a PMB.

Overall goal was largely achieved for its target indicators, therefore its impact is high.

3.2.2.2 Other Impacts

The results of the questionnaire answers from VINAMARINE and interviews with relevant personnel revealed no negative impacts on the natural or social environments. It was conjectured that the following positive impacts were emerging:

(1) MA Functional Enhancement

As mentioned in *Project Objective 2, Indicator 2* in *3.2.1.2 Achievement of Project Objectives,* the project worked on the improvement of port management systems in order to enhance MA functions. At the time of the ex-post evaluation, this attempt to expand MA functions was continuing, allowing MA to possess the functions necessary to manage the

facilities. Based on interviews at the counterpart agency, Seaport Infrastructure Management Divisions were established in three places; Quang Ninh MA managing Cai Lan port, Hai Phong MA managing Hai Phong port (including the outer port, Lach Huyen port), and Ha Tinh MA managing Vung Anh port. Quang Ninh MA and Ha Tinh MA are either currently involved in the management of port facility leasing, or planning to be so in the future. The Quang Ninh MA was engaged in the management of port facility leasing at Cai Lan port, and a joint venture in charge of cargo terminal operation at Vung Anh port was established by state-owned enterprises in both Vietnam and Laos.

(2) Reflection on port administration and port management

At the time of the ex-post evaluation, some of the activities from Output 4 were reflecting on port administration and port management. Based on VINAMARINE's answers in a questionnaire, the Project Completion Report, interviews with counterpart staff and dispatched experts, the following changes in port management was confirmed:

- Analysis of the roles and the classification of all ports in Vietnam: Port classification proposed by this activity was reflected in PM Decision No.16/2008. Before the preparation of this classification, mismatching between port class and allocation of investment budget occasionally occurred. The port classification is adapted to the sector's investment planning, and contributes to investment planning and allocation of capital in accordance with port class.

- Proposal of introduction of an EDI system: The introduction of the EDI system makes it possible to submit at one time several documents that various government agencies request when a ship calls at a port. The EID system is mainly introduced to container terminals. It contributes to improvements in the operation of shipping companies and ports as anchoring time becomes shorter due to the improvement in administrative efficiency. According to VINAMARINE, the formats and processing procedures developed by this proposal for the submission of application documents are now in routine administrative work. In consideration of this proposal, JICA has collected relevant information by a study on Port EDI System since 2012.

- Port facility security plan: The International Convention for Safety of Life at Sea (the SOLAS convention) was revised in 2002 and the revised convention became effective in 2004. Based on the revised convention, international regulations, the "International Security Port & Shipping Code (ISPS Code)", were prepared and it became necessary for signatory countries including Vietnam to comply with the regulations. In accordance with the plan prepared by this project, regulations for port security in Vietnam were revised so that these regulations could have been consistent with ISPS Code.

The project has largely achieved its Project Objectives such as improvement of VINAMARINE capacity for port administration and management and the establishment of terminal operation systems for gateway ports. Although PMB had not been established at the time of the ex-post evaluation, the project enhanced the function of MA and enabled the leasing of port facilities. After project completion, legislation for the leasing of port facilities was continuously improved and the selection of cargo terminal operators is on-going at Cai Mep Chi Vai Port. As for the Overall Goal, port management systems have been improved and this suggests that project effects are emerging as planned. Therefore, its effectiveness/impact is high.

3.3 Efficiency (Rating: ①)

3.3.1 Inputs

Inputs	Plan	Actual Performance
(1) Experts	12 persons for Short-Term[12]	21 persons for Short-Term[13]
(2) Trainees received	Field(s) of training: N/A	Field(s) of training: Management and operation of gateway ports, Planning for port development and preservation, Port security, etc.
(3) Third-Country Training Programs	Field(s) of training:N/A	Field(s) of training: Port operation procedures in major port in Asia, and Roles of port management in Asia
(4) Equipment	N/A	Office equipment (PCs, printers, projector, etc.)
Total Project Cost	350 million yen	628.29 million yen
Total Local Cost	N/A	6.98 million yen[14]

3.3.1.1 Elements of Inputs

Regarding the items for which the input amount was clearly stated at the time of project planning, it has been revealed that the actual input amount has largely exceeded the planned amount. While the M/M of experts was planned as 100M/M, the actual figure increased to 157.59 M/M. The number of trainees to be received in Japan was 8 in the plan, but the actual number was 12 in Japan and 4 in a third-country. According to interviews with dispatched experts, the difference between "administrative tasks and capacities to supervise PMB as a central government agency" and "PMB's tasks and capacities relevant to the administration and operation of individual ports and terminals" was not sufficiently acknowledged by VINAMARINE at the time of project planning. The later capacity was not reflected in a cooperation request by VINAMARINE. For this reason, additional activities were requested by VINAMARINE in order to improve their capacities in supervising and providing guidance as a central government agency, and this led to the increase in inputs (Output 4, Item 5-11). In addition, some activities were added for the preparation of the Master Plan on the Development of Vietnam's Seaport System and dispatched experts carried out capacity development in skills for the selection of port development projects for VINAMARINE staff for Output 6. So that VINAMARINE staff could prepare investment plans, skills in demand forecast, estimation of port handling capacity, and project evaluation were enhanced. In accordance with a direction of the Prime Minister's Office, VINAMARINE was preparing a draft for the master plan by the end of 2008 and this project attempted the capacity development necessary for an earlier preparation of the master plan. The counterpart agency considered that the input contents (experts and machineries provided) were appropriate.

3.3.1.2 Project Cost

The project cost was significantly higher than planned (180% of the original plan). As described in *3.1.1.1 Elements of Inputs*, (1) Improvement of the capacities on for supervision and guidance of PMB, which was not included in the original plan, and (2) Improvement of capacities for the preparation of the port system development master plan were both implemented, and these were the two causes of the increase in project cost. Inflation in Vietnam, especially labor costs, was also one of the factors behind the increase in the project costs.

[12] The ex-ante evaluation shows 12 fields: Chief advisor, Non-state sector's participation, Port management, Port operation, Port facilities maintenance and management plan, Maritime business administration, Financial analysis/project finance, Concession contract, Legal system, Port information system, Port security, and Coordinator

[13] Four fields (Port planning, Port engineering, Port statistics, and Port accounting system) were added during project implementation.

[14] Converted according to the monthly average exchange rate (143.2 VND/JPY) during the project period.

3.3.1.3 Period of Cooperation

The period of cooperation was slightly longer than planned (110% of the original plan). Upon the preparation of the draft tender documents, the draft contract documents and the draft concession plan for the selection of cargo terminal operators at Cai Mep-Thi Vai port, it was necessary to clearly define the preconditions. This task resulted in a delay in the progress of Output 5. For this reason, an extension of 4 months was decided on at the time of the mid-term evaluation. At the time of the final evaluation (September 2008), all the documents relevant to the above tender had been completed.

Given the production of the Outputs of the project, the element of the inputs was appropriate. However, the project cost significantly exceeded the plan and the period of cooperation slightly exceeded the plan, therefore efficiency of the project is low.

3.4 Sustainability (Rating: ②)

3.4.1 Related Policy towards the Project

The sector's long-term plan at the time of the ex-post evaluation, the Master Plan on the Development of Vietnam's Seaport System, laid out the sector investment plan from 2010 to 2020 as well as development policy up to 2030. The plan focused on the development of deep seaports in the northern, middle and southern areas of Vietnam, and it came up with a policy for the development of an international port attractive to other neighboring countries. It also laid out a policy to continue with research relevant to port management systems and to carry out experiments of the new system in ports with the necessary conditions. In addition, in terms of the legislative system, details of the regulations of port facility leasing will be determined as mentioned in *3.2.2.1 Achievement of Overall Goal*. The selection of the terminal operators at Cai Mep-Thi Vai is progressing in line with this regulation.

At the time of the ex-post evaluation, the Master plan on the Development of Vietnam's Seaport System explicitly suggested efforts towards the reform of deep seaport development and port management systems. Cai Mep-Thi Vai port, which is the model port for this project, is a deep seaport in the southern region, and its importance from the aspect of policy is acknowledged. It is expected that reform of the port management system will be sustained. The establishment of regulations for port facility leasing supports the non-sector participation in port operation that was aimed at by the project.

3.4.2 Institutional and Operational Aspects of the Implementing Agency

At the time of the ex-post evaluation, VINAMARINE superintended the overall administration of maritime transportation and was also involved in port management and operation through the relevant organizations. VINAMARINE is under the supervision of the Ministry of Transport, and its organization roughly consists of a head office (including a financial planning department, an investment planning department, a human resource department, etc.), local offices (Hai Phong City, Ho Chi Minh City, etc.), subsidiary organizations (relevant state-owned companies), and the MA of each port. No PMB had been established in Vietnam at the time of the ex-post evaluation.

The number of staff in VINAMARINE staff increased from 112 in 2008 (the final year of the project) to 120 in 2011 (at the time of the ex-post evaluation) (*See Table 2)*. According to interviews with the counterparts, out of all the taskforce members of the project (27 in total), 21 persons still worked at VINAMARINE at the time of the ex-post evaluation. Ten of these participated in the taskforce of the development of Cai Mep-Thi Vi port, which was established in May 2011. In March 2012, a new taskforce was organized within VINAMARINE to research on the establishment of PMB at Van Phong port[15] and 12 staff member were selected as

[15] Van Phong port is located in Khanh Hoa province and it is planned that an international container transship port will be developed there.

members. According to the counterparts, VINAMRINE recognizes the necessity for comprehensive port development including that of the surrounding areas to be administrated by PMB. However, although the members of the taskforce for the embellishment of PMB in Van Phong port are involved in studies on the establishment of PMB, their commitment is not on a full-time basis. There are no full time staff assigned for the reform of the port management system.

Table 2: Number of employees in VINAMARINE

2008	2009	2010	2011
112 persons	115 persons	120 persons	120 persons

Source: VINAMARINE

At the time of the ex-post evaluation, no change had been observed from the institutional aspect that may impede the sustainability of the project. VINAMARINE has been in charge of the overall port administration as well as individual port administration since the completion of the project. The number of staff is stable and some of the taskforce members of the project are now involved in the development of Cai Mep-Thi Vai port.

3.4.3 Technical Aspects of the Implementing Agency

As described in *Project Objective 1, Indicator 1 of 3.2.1.2 Achievement of Project Objectives,* taskforce members of the project improved their capacity for port administration and port management in general and, thus, the targets set at the time of planning were almost achieved.

At the time of the ex-post evaluation, trainings in the technical field was continuously provided for VINAMARINE staff, and trainings on routine works such as the procurement of equipment, the EDI system were held regularly. Staff have the chance to join in training programs at the World Maritime University. However, there is no training provided in fields directly relevant to port system reform (such as the development of draft concession plans, the selection of cargo operators and leasing contract administration). As contract management of leasing at Cai Mep-Chi Vai port will be required consistently, this area requires further capacity development for the efficient management of the port.

VINAMARINE has been involved in the overall port administration, port management and operations since its establishment in 1992. Its staff members are considered to be proficient in the routine works of port management and operations. They have attended training programs and have been in charge of relevant tasks. It is expected that their work on the contract management (such as the tender process, the conclusion of contracts, monitoring of commissioned assignment) will increase together with the promotion of the participation of the non-state sector in port operation. However, the training opportunities for the contract management have been limited after project completion. For this reason, maintenance of capacities in the future is a subject for concern.

3.4.4 Financial Aspects of the Implementing Agency

The terminal evaluation report mentioned the project's sustainability and its chronic shortage of workers, stating that budgetary measures are necessary in order to allocate full time staff to work on this matter so that the project can develop independently in the future. The report also said that if no budgetary measures were taken, there would be no full time staff allocated for the participation of the non-state sector in port management following project termination. The implementation of this project revealed that coordination with relevant government agencies is unavoidable for reform of the port management system. It is considered that the enhancement of resources, such as the number of staff in charge of the coordination and research budget, is appropriate.

The ensured budget is not large enough to cover the allocation of full time staff and to conduct a large-scale research on the reform of port management systems. VINAMARINE thus faces financial restrictions on its task on the port sector reform such as the establishment of PMB, which requires complicated coordination among government agencies. As mentioned in *3.4.2 Institutional and Operational Aspects of the Implementing Agency*, no full time staff have been allocated for the reform of port management systems. The budget for the taskforce for the study on the establishment of PMB has been approved, but not the budget for the large-scale research necessary to hire consultants.

The ex-post evaluation could not obtain financial data (allocation of general budget, training fees). Although there is no direct proof of the budget amount, the allocation of general budget is considered to be relatively stable as far as what can be seen from the transition of staff.

Some problems have been observed in the technical and financial aspects of the executing agency, therefore, sustainability of the project effects is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project aimed at capacity building of the counterparts and the participation of the non-government sector in the operation of a cargo terminal, leading to the improvement of port administration and port management. The implementation of this project was in line with Vietnam's development policy and needs as well as with Japan's ODA policy and, thus, its relevance is high. At the time of project completion, the capacity improvement of the counterparts had been confirmed. Due to delays of construction of Cai Mep-Thi Vai International Port, the documents for tender had not yet been utilized for the port. At the time of the ex-post evaluation, however, the selection of cargo terminal operators for the port was ongoing and reform of the port administration was also progressing. For these reasons, the effectiveness of the project is high. On the other hand, due to additional activities that were not in the original plan, both the project cost and period exceeded the plan and, therefore, its efficiency is low. Because of some financial restrictions, neither full-time staff allocation nor a large-scale research was implemented and the sustainability of this project is fair.

In light of the above, the project is evaluated to be partially satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

Progress has been made towards efficient port operation as this project contributed to the strengthening of the MA function and the legislation for the participation of the non-state sector in port operation. However, some restrictions (for example, the port administration of MA does not allow comprehensive port development including that of surrounding areas) has remained and it is difficult to carried out comprehensive port promotion. The port ownership holders are diverse and include government agencies. In addition, port management functions that should be managed by PMB conflict with the administrative functions of other government agencies. For these reasons, more time is required for coordination among the relevant government agencies. However, it is appropriate that PMB is established for effective port promotion in the long run.

Under these circumstances, it is recommended that efforts are continued for the improvement of contract management on leasing of port facilities by MA within the existing system, while maintaining the administrative capacities necessary for the reform of port management systems. The establishment of PMB requires cooperation among the relevant government agencies. It is advisable that an on-going study on the establishment of PMB

introduces a mechanism to encourage the participation of other agencies in the study.

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

(1) Refining the scope of institutional and capacity building

In order to promote the participation of the non-state sector in port operation, the project required not only the preparation of regulations in the field relevant to port facility leasing, but also capacity development for supervising and guiding PMB and the preparation of regulations for overall port management. Nevertheless, these needs were not sufficiently recognized by the relevant government agencies. Fair supervision of PMB and institutional design for that purpose were not well reflected in the project scope. For this reason, activities were largely extended during implementation of the project and this resulted in an increase in the project cost. Through a case study on deregulation in other countries, it was pointed out that when new market-entry and competition are promoted in highly regulated industries, regulations contrarily increase and a supervising agency may take a more important role[16].

In a similar project promoting new market-entry for port operation, it is recommended that consideration is made not only of institutional arrangements or capacity development directly relevant to market-entry, but also of the possibility that more extended institutional building and broader capacities need to be assessed at the time of project planning.

(2) Timely revision of PDM

In the preparation of the Master Plan on the Development of Vietnam's Seaport System, this project improved the capacity of VINAMARINE staff in the area of the assessment and selection of port development projects. Output 6 and its relevant activities were added to the implementation plan dated on May 2008, but not to the PDM. The terminal evaluation, which was held in September 2009, did not assess this output. PDM is essential for assessing the achievement of a project and for coordinating activities. For this reason, it is desirable that the PDM is revised in timely manner for better project management.

[16] Emmons III, William (2000), *The Evolving Bargain: Strategic Implications of Deregulation and Privatization*, Harvard Business Review Press.

Vietnam

Ex-Post Evaluation of Japanese Technical Cooperation Project
"Utilization of Intellectual Property Information"

External Evaluator: Nobuyuki Kobayashi, OPMAC Corporation

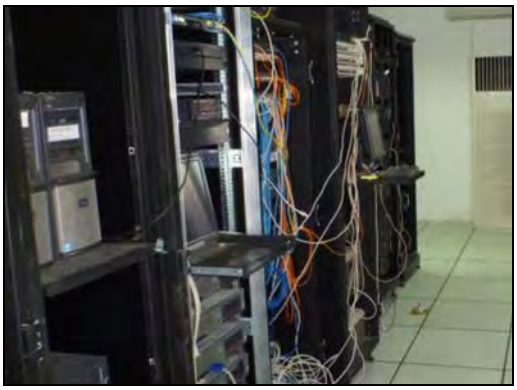
0. Summary

This project aimed at smooth application examination and easy acquisition of intellectual property information together with the enhancement of the management and protection of intellectual property through the development of an information system at the National Office of Intellectual Property of Vietnam (NOIP). The purpose of this project was consistent with policies and development needs at the times of both project planning and the ex-post evaluation and, therefore, its relevance is high. In developed information systems, while a part of the search system for examiners and electronic application systems has not been much used, intellectual property search systems for the public have been used in the case of application or corresponding to infringement by a wide variety of users, such as applicants, right holders, and agents. The administrative efficiency at NOIP was improved but the examination period tended to be prolonged, except for industrial design, mainly due to the increase in applications. For this reason, the effectiveness and impact of the project is fair. Both the project cost and the period of cooperation were within the plan and, therefore, the efficiency of the project is high. The planning capacity of NOIP staff for system development needs to be maintained while long- and medium-term plans become obsolete. They are issues in the technical capacities and, thus, the sustainability of this project is fair.

In light of the above, this project is evaluated to be satisfactory.

1. Project Description

Project Location



Equipment installed by the Project

1.1 Background

Vietnam has promoted economic liberalization since the middle 1980's, and a high rate of economic growth has been recorded as a result. Following economic development and globalization, the government of Vietnam has prepared relevant laws for protection of intellectual property, recognizing that protecting intellectual property is indispensable for technical innovation through research by companies and/or individuals in Vietnam and for the promotion of foreign investment. In November 2003, the "Agreement between Japan and the Socialist Republic of Viet Nam for the Liberalization, Promotion, and Protection of Investment" was concluded, and investment from Japan to Vietnam was revitalized. The protection of

intellectual property has become an important matter for Japanese firms.

In the first half of the 2000's, since reinforcement of the protection of intellectual property was a pressing need for Vietnam's participation in WTO, the relevant laws were being prepared. Also, there was the necessity not only for drafting the laws, but also for strengthening their implementation. To help meet these needs, aiming at efficient application processing, Japan International Cooperation Agency (JICA) assisted NOIP in building up an Industrial Property Administration System (hereinafter referred to as "IPAS") from 2001 to 2004 through the "Technical Cooperation Project for the Modernization of Industrial Property Administration". While attempts were made to improve the efficiency of application processing by the assistance, other matters that needed to be worked on for further efficiency became obvious, i.e. efficient searches for intellectual property information by NOIP staff, applicants, and agents, the speeding up of data input and lessening of input mistakes by accepting electronic applications.

Against this background, the Vietnamese government requested new technical cooperation, aiming at promoting the development of intellectual property information search systems and intellectual property information systems focusing on electronic application and also aiming at acquiring the capability necessary for the maintenance, management and update of information system development.

List of Acronyms

FGD	:	Focus Group Discussion
IPAS	:	Industrial Property Administration System
IPDL	:	Intellectual Property Digital Library
IP E-filing	:	Intellectual Property Electronic Filing System
IP Lib	:	Intellectual Property Library System
IP Sea	:	Intellectual Property Search System
JETRO	:	Japan External Trade Organization
JICA	:	Japan International Cooperation Agency
NOIP	:	National Office of Intellectual Property of Vietnam
TRIPS	:	Trade-Related Aspects of Intellectual Property
VIPRI	:	Vietnam Intellectual Property Right Institute
WIPO	:	World Intellectual Property Organization
WTO	:	World Trade Organization

1.2 Project Outline

Overall Goal		Intellectual Property (IP) rights is controlled and protected more appropriately in Vietnam.
Project Objective		Through the utilization of the IP Information System, efficient application processing, management, and information service of the IP is available in NOIP.
Output(s)	Output 1	Adequate equipment and facilities for IP information system are installed and used.
	Output 2	IP information search system is available for IP substantive examination[1].
	Output 3	IP information is provided for the public through the Internet.
	Output 4	E-filing is available
	Output 5	IP information system is operated and managed appropriately.
Inputs		Japanese Side: 1. Experts: 28 persons 6 persons for Long-Term, 22 persons for Short-Term 2. 16 Trainees received (Counterpart training in Japan) 3. Equipment 128.42 million yen 4. Local Cost approx. 84 million yen 5. Others (incl. dispatch of related missions) Vietnamese Side: 1. 29 Counterparts 2. Equipment and Facilities 3. Client PC 143 units 4. Server room and Connection Cables 5. Local Cost VND 4.76 billion (Utilities, Seminars, etc.)
Total cost		422.69 million yen
Period of Cooperation		January 2005 – March 2009
Implementing Agency		Ministry of Science and Technology/National Office of Intellectual Property of Vietnam
Cooperation Agency in Japan		Japan Patent Office
Related Projects		Japanese Technical Cooperation Project for Modernization of Industrial Property Administration (MOIPA)[2] (period of cooperation: April 2000 – June 2004)

1.3 Outline of the Terminal Evaluation

1.3.1 Achievement of Overall Goal

At the time of the terminal evaluation, it was pointed out that: (1) although the incidence of impacts depends on external assumptions, there is a high prospect of achieving the overall goal of the project assuming that the current efforts were continued, and (2) the Overall Goal will be achieved as long as continuous efforts on the development and maintenance of the intellectual property information system were carried out.

[1] Substantive examination is an examination to assess whether an application satisfies the conditions for intellectual property right.

[2] While MOIPA supported the development of IPAS, this project conducted database tuning of IPAS.

1.3.2 Achievement of Project Objective

At the time of the terminal evaluation, there was the prospect that most of the project outputs would be achieved within the project period. It was pointed out that it was desirable to achieve the outputs, which were not affected by external assumptions, within the project period in order to achieve the project objective and sustain its effectiveness.

1.3.3 Recommendations

At the time of the terminal evaluation, NOIP was recommended to continue maintenance and regular updates of the intellectual property information system based on an annual action plan. It was also recommended that NOIP should modify the medium-long term plan[3] prepared by this project every year, making practical use of the technical skills for planning and analysis which were transferred by Japanese experts.

2. Outline of the Evaluation Study

2.1 External Evaluator

Nobuyuki Kobayashi, OPMAC Corporation

2.2 Duration of Evaluation Study

Duration of the Study: September 2011 – October 2012
Duration of the Field Study: November 24 – December 21, 2011 and
April 2 – April 14, 2012

2.3 Constraints during the Evaluation Study

For many of the indicators to assess the incidence of project effects, data was not collected at the time of the terminal evaluation nor at the ex-post evaluation. In addition, there were several cases where indicators are not defined concretely. For this reason, judgment was made on alternative indicators when necessary, though it was difficult to set the level of achievement of the project. In addition, because the terminal evaluation report was not obtainable, information on the status at the time of the project completion came mainly from a project completion report and minutes of the discussions on the terminal evaluation with the counterpart agency.

3. Results of the Evaluation (Overall Rating: B[4])

3.1 Relevance (Rating: ③[5])

3.1.1 Relevance with the Development Plan of Vietnam

In 2004 when this project was planned, the reinforcement of activities relevant to accumulation of intellectual property rights and protection a part of Vietnamese national development plans, i.e. “The 10 year Socio-Economic Development Strategy 2001-2010” and “The 5 year Socio-Economic Development Plan 2001-2005 (SEDP2001-2005)”. Directly after the inauguration of WTO in 1995, Vietnam had aspirated to join the WTO and continued multi-lateral and bi-lateral consultations towards entry. As each WTO member country is required to fulfill an Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement), the building up of a legal system to reinforce the protection of intellectual

[3] In order to improve technical capacity of the counterparts, this project supported NOIP in the preparation of a medium-long term plan for the operation and development of the intellectual property information system.
[4] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory
[5] ③: High, ②: Fair, ①: Low

property became a policy issue in Vietnam.

In the Vietnamese national development plan, "The 5 year Socio-Economic Development Plan 2006-2010 (SEDP2006-2010)", the building up of a legal system for joining WTO it was planned. As part of the plan, the government worked on drafting the law relevant to the protection of intellectual property during project implementation. The Law on Intellectual Property was passed in November 2005 (enforced in July 2006, amended in June 2009, and the amended has enforced in January 2010) and Vietnam joined in WTO in January 2007. At project completion in 2009, the Vietnamese government as a WTO member country needed to have proper protection of intellectual property based on a Law on Intellectual Property.

As seen above, the policy for the reinforcement of the protection of intellectual property had been steadfastly maintained both at the time of project planning and termination and continuous efforts towards the building up of a legal system were made in order to guarantee observance of TRIPS Agreement. This project ultimately aims at the protection of intellectual property through information system development[6] in NOIP, and therefore, the project objective corresponded with the national development policy of Vietnam.

3.1.2 Relevance with the Development Needs of Vietnam

In a hearing at the time of the ex-ante evaluation, applicants, right holders, and agents, who are the ultimate beneficiaries, had required "prompt and appropriate application processing", "disclosure of intellectual property information, such as application, examination, and registration", and "simple electronic application." Examiners needed an electronic database which quickly responds to and adequately comprehends existing intellectual property information for prompt and appropriate application processing. At the time of project planning in 2004, it was possible the NOIP staff to use intellectual property information search system. However, as the system did not have a design specification, it was impossible to confirm the details of the system specification, which meant a risk that it would not be possible to maintain and operate it. Besides, the existing search system had a security problem in that the system directly accessed IPAS database, including undisclosed information. Secondly, although it is necessary to confirm if an application infringes on registered rights when applying for intellectual property rights, an intellectual property information search system (hereinafter referred to as IPDL) for the public had not been established and disclosed intellectual property information was limited to paper-based information. It therefore took a long time for applicants and agents to search for intellectual property information. In addition, paper-based applications tend to cause wrong conversion and input mistakes in OCR reading of application documents or transcriptions. Therefore, there was the expectation for an electronic application system to prevent such mistakes and to contribute to the smooth processing of application examination.

At the time of the project completion in 2009, the Law on Intellectual Property of Vietnam had stipulated a time limit for the application period[7] and NOIP had been required to complete an application examination within this period. On the other hand, the number of applications had rapidly increased in the year when the project was completed (2009) compared to the number in the year preceding the start of the project (2004) (see Table 1). As NOIP was required to complete the examinations of an increasing number of applications within the period, there was an urgent need to examine applications efficiently.

The intellectual property information search system for the public (hereinafter referred to as "IP Lib") developed in this project has provided users a means of collecting intellectual property information comprehensively and simply. If IP Lib had not been used at the time of

[6] The overview of the developed intellectual property information system is explained in Table 3 of "3.2.1.1 Project Output."

[7] The law on Intellectual Property amended in June 2009 stipulates that formality examination for all types of intellectual property rights has to be completed within a month from the date of applying. As regards substantive examinations, the time limit for examination periods differs according to the type of intellectual property rights: within 18 months from the date of application disclosure or of request for substantive examination for patents, 7 months from application disclosure for industrial design, and 9 months from application disclosure for trademarks.

project completion, it would have been difficult to obtain comprehensive intellectual property information from the Internet and fulfilling the need of applicants and agents to search for intellectual property information simply would have been extremely difficult.

Table 1: Applications for major types of intellectual property right

	2004	2005	2006	2007	2008	2009	2010
Patent	1,431	1,947	2,166	2,860	3,199	2,890	3,582
Vietnamese	103	180	196	219	204	258	306
Foreigners	1,328	1,767	1,970	2,641	2,995	2,632	3,276
Industrial Design	972	1,335	1,595	1,905	1,736	1,899	1,730
Vietnamese	686	889	1,105	1,338	1,088	1,430	1,207
Foreigners	286	446	490	567	648	469	523
Domestic Trademark	14,916	18,018	23,058	27,110	27,713	28,677	27,923
Vietnamese	10,641	12,884	16,071	19,653	20,831	22,378	21,204
Foreigners	4,275	5,134	6,987	7,457	6,882	6,299	6,719

Source: NOIP Annual Reports

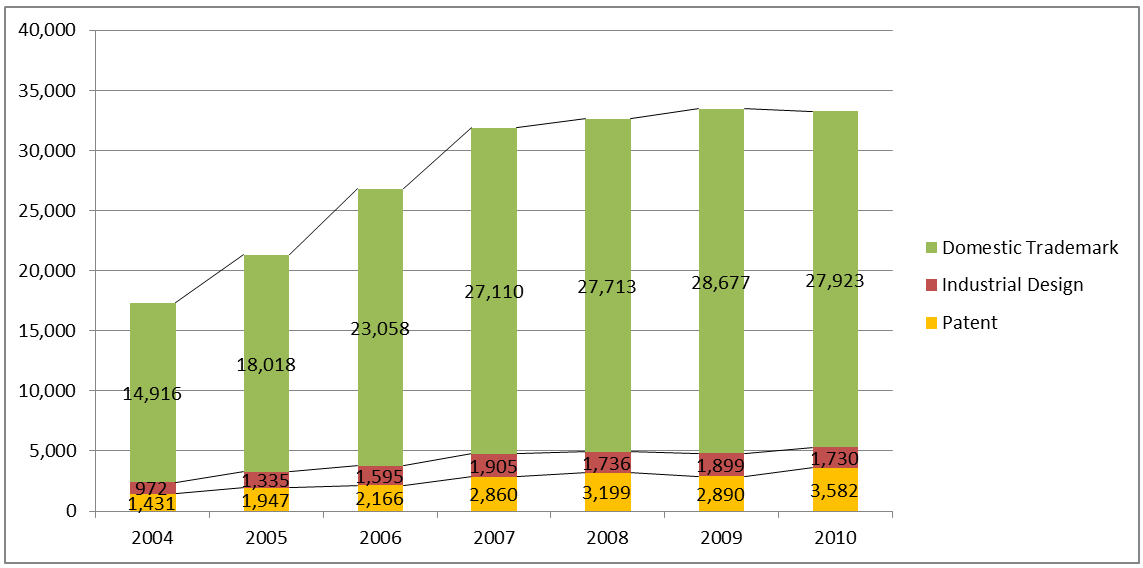


Figure 1: Changes in applications for major types of intellectual property right

During project implementation, the need for the protection of intellectual property increased following development of the Vietnamese economy and globalization. The search system for the public developed in this project deals with patents, industrial design and trademarks, and in these areas the number of applications for intellectual property right by Vietnamese and foreigners has steeply increased. In consideration of the above circumstance, this project attempted to contribute to the smooth application examination and easy acquisition of intellectual property information through the development of an intellectual property information system. It is judged, therefore, the project objective adequately corresponds with the development needs of Vietnam.

3.1.3 Relevance with Japan's ODA Policy

At the time of project planning in 2004, Japan's Official Development Assistance (ODA) Charter emphasized assistance to Asian countries and was also strongly conscious of the necessity for institution building and human resource development aiming at self-help by

developing countries based on good governance. In order to stimulate sustainable growth supported by trade and investment, institution building and human resource development in the field of the protection of intellectual property right were emphasized in the Charter. In concrete terms, Japan's ODA Charter, decided upon by the Cabinet in 2003, placed the Asian region as a priority area for assistance. It was recognized that relations with East Asian countries particularly need to be strengthened through ODA, considering the reinforcement of economic cooperation. Furthermore, in "Sustainable Growth", out of four priority issues of the Charter, assistance for institution building and human resource development were stressed and "appropriate protection of intellectual property right" was given importance.

Both the Country Assistance Program of the Ministry of Foreign Affairs and JICA's Country Assistance Strategy recognize capacity development of the Vietnamese government in the protection of intellectual property as an important field of cooperation aiming at the activation of foreign investment in Vietnam. The Country Assistance Program set out a plan in 2004 which regards three fields of cooperation as priority areas. The "Promotion of Growth" was placed as one of them. In addition, capacity development of the implementing agency for the protection of intellectual property was identified as a concrete task of cooperation in the field of "Promotion of Growth". In similar terms to the Country Assistance Program of the Ministry of Foreign Affairs, JICA's Country Assistance Strategy also came up with a policy to cope with capacity development of the implementing agency for the protection of intellectual property in the field of "Promotion of Growth; Development of the Investment Environment"

This project assisted in the development of the intellectual property information system and the capacity development necessary to support the system in the Asian region. Also, the project attempted the protection of intellectual property through the smooth acquisition of intellectual property information and the speeding up of the application process. As mentioned above, Japan's ODA policy attaches importance to institution building and human resource development for the protection of intellectual property. In light of the project objective and activities, it is judged that the project has a high consistency with Japan's ODA policy.

This project has been highly relevant to the country's development plan and development needs, as well as to Japan's ODA policy, therefore its relevance is high.

3.2 Effectiveness and Impact[8] (Rating: ②)

3.2.1 Effectiveness

Among the evaluation criteria, the incidence of project effects at the time of project completion, as "Effectiveness", is mentioned in "3.2.1 Effectiveness" while the incidence of project effects at the time of the ex-post evaluation, as "Impact", is shown in "3.2.2 Impact". The assessment of "Effectiveness" is to be conducted from both the viewpoints of: (1) project outputs at the time of project completion and achievement of the project objective, and (2) the degree to how far the project objective contributes to the project outputs.

The project has five Outputs, including three types of newly developed intellectual property information systems (IP Sea, IP Lib, and IP E-filing). Thus, the connections between the Outputs to the Project Objectives were complicated. For a better understanding, Figure 2 explains the outline of the intellectual property information system in NOIP while the outlines of activities, the contribution to the establishment of the intellectual property information system, prospective beneficiaries and relevance with the Project Objectives have been summarized according to each of the Outputs in Table 2. In addition, Table 3 shows an overview of the newly developed information system.

[8] "Effectiveness" is rated taking into account of "impact".

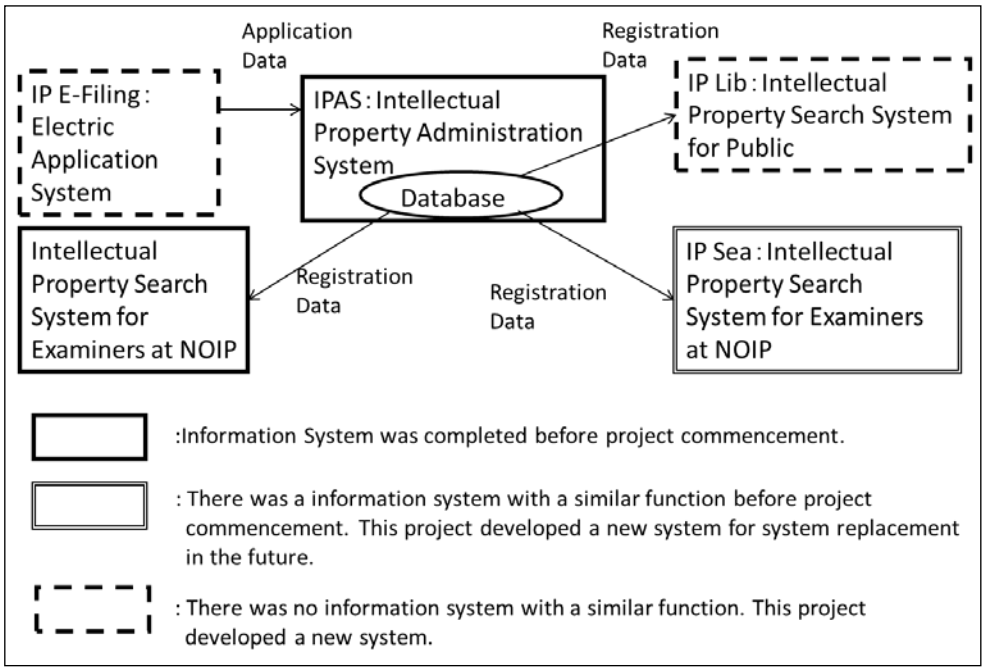


Figure 2: Overview of the intellectual property information system in NOIP

Table 2: Outlines of System Development

Output	Main activities	Relevant system	Prospective beneficiaries	Relevance to the Project Objectives*		
				Indicator 1	Indicator 2	Indicator 3
Output 1	Installation of equipment for intellectual property information system	intellectual property information system in general	NOIP staff	Relevant	Relevant	Relevant
Output 2	Development of intellectual property information search system for NOIP examiners	IP Sea	NOIP examiners	Highly relevant	Irrelevant	Irrelevant
Output 3	Development of intellectual property information search system for the public	IP Lib	Applicants, agents, right holders, enforcing agencies	Relevant	Highly relevant	Highly relevant
Output 4	Development of electronic application system	IP E-Filing	Applicant, agents	Highly relevant	Irrelevant	Irrelevant
Output 5	Preparation of operational and management basic rules, training	intellectual property information system in general	NOIP staff	Relevant	Relevant	Relevant

Source: JICA's internal documents and interview with the counterpart agencyNote: * The indicators for the Project Objectives are Indicator 1 "Efficiency of the application processing in NOIP", Indicator 2 "IPDL is used by the public" and Indicator 3 "Improvement the degree of satisfaction of the applicants and rights holders IP administration service NOIP"

Table 3: Overview of the newly developed information system

Information system	Function	Usage	Timing of Release
IP Sea	Search of intellectual property information for NOIP examiners	There are search systems for patents, industrial design, and trademarks. NOIP examiners confirm a proceeding right through substantive examination.	Trademark-Official release: September 2008, Patent and Industrial Design-Release to system environment*: March 2009
IP Lib	Search of intellectual property information for the public	Applicants and agents confirm a proceeding right before applications. Right holders confirm the contents of rights in infringement cases.	Official release of expanded version: November 2008
IP E-filing	Acceptance of electric application	Applicants and agents submit applications by electric data. This reduces data input in NOIP and contributes to the efficiency of application examination.	Acceptance of applications: June 2007

Source: Report of ex-ante evaluation team and interviews with NOIP staff and the expert dispatched
Note: * The systems were in a trial phase at project completion and were not officially released.

3.2.1.1 Project Output

In this project, five outputs were set out as the direct project effects. The situation regarding the achievement of the project outputs at the time of project completion is presented as follows:

1) Output 1 "Adequate equipment and facilities for IP information system are installed and used"

For Output 1, two indicators (1. Number of operating days of equipment and facilities for the intellectual property information system, 2. Periods when the equipment and facilities for the intellectual property information system could not be used) were set. The information system is under operation almost throughout the whole year. It is judged, therefore, that Output 1 was achieved. At the time of project completion in 2009, the intellectual property information system had been operated more than 350 days a year. The terminal evaluation did not collect data for periods when the equipment and facilities could not be used. The operation of the database on intellectual property information (hereinafter referred to as "IP Lib") that it is possible for the public to use, the operation of the server was changed to continuous operation from the limited operation during working time only before project implementation. Given this situation, the number of days per year minus operation days is considered to be the period when the facilities could not be used. This was less than 15 days in 2009.

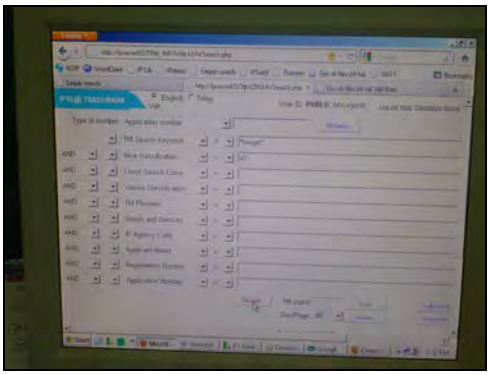


Photo 1: Screen shot of IP Sea

2) Output 2 "IP information search system is available for IP substantive examination"

For Output 2, one indicator (1. Number of days of utilization of the intellectual property information search system by the examiners) was established. As data on the above indicator was not collected in the terminal evaluation, an alternative indicator (availability of intellectual property information system) was used. This ex-post evaluation employs this indicator. Output 2 has been achieved, considering the intellectual property information search system for NOIP examiners (hereinafter referred to as "IP Sea") was furnished with the functions originally planned. Nevertheless, system development to add functions from the former search system was

continued by project completion as examiners were accustomed to using the former system. In this process, the development of the search system for trademarks, which has the largest number of applications, was ahead of others. In IP Sea, the search system for trademarks was officially released under the name of the Director General of NOIP at the time of project completion. On the other hand, the search system for patents and industrial design was in the trial stage at the time of project completion, and its development had not yet been completed. In patent and industrial design, examiners had used a search system which had been developed before the commencement of the project for substantive examination and, therefore, IP Sea did not produce the project effects (efficiency in application examination).

The following three factors have been given as the main causes of the delay in IP Sea development: (1) a lack of experience on the part of the vendor, (2) a wide range of ideas for the improvement of functions given by NOIP examiners, (3) difficulties in mutual understanding among the staff of NOIP, JICA experts, and vendors. It was difficult to achieve both quality of products and the deadlines for delivery in the system developed by vendors, and products with the planned quality were not made in accordance with the planned schedule. Besides, as examiners were versed in using the intellectual property information search system used before the project implementation, they wanted the functions of the former system to be installed in IP Sea. As the result, it took time to draw together their opinions in order to reflect them in the system functions. In a hearing with vendors, an opinion was given that communication and mutual understanding among the staff of the IT Division of NOIP, examiners, JICA experts, and local vendors was not easy and therefore it was hard to decide the details of the system functions.

In addition to the development of the IP information search system, the project achieved a reduction in the time for response through database tuning of the IPAS system (administrative work system) introduced in the “Japanese Technical Cooperation Project for Modernization of Industrial Property Administration”.

3) Output 3 “IP information is provided for the public through the Internet”

For Output 3, two indicators (1. The amount of intellectual property information provided for the public through the Internet, 2. The frequency of updating intellectual property information provided through the Internet) were set. IP Lib stored approximately 160,000 intellectual property rights at the time of project completion in 2009 and data updating has been held routinely. It is judged, therefore, Output 3 had been achieved.

Table 4: Number of registered intellectual property rights

Year	2007	2008	2009	2010	2011
Total registration	112,735	138,103	162,838	181,389	205,028
Patents	6,770	7,436	8,142	8,964	9,949
Utility Solutions	671	746	810	868	937
Industrial Design	11,398	12,735	13,971	15,123	16,268
Trademarks	93,896	117,186	139,915	156,434	177,874

Source: NOIP

IP Lib officially released its basic functions in 2007. In November 2008, patents, utility solutions, industrial design, and trademarks were registered in IP Lib with extended functions, and since project completion, the number of registrations of intellectual property rights has continuously increased (see Table 4). According to NOIP, IP Lib has been continuously updated every two weeks in principle after the release to the public.

Compared with other systems developed by this project, IP Lib had had a wider range of prospective beneficiaries including applicants, agents, rights holders and enforcing agencies. For this reason, IP Lib is a critical in ensuring the dissemination of project effects.

4) Output 4 “E-filing is available”

One indicator (1.Number of applications filed through the electronic filing system) was selected for Output 4 but a target for the indicator was not established. Given that electric application had been officially commenced by project completion, Output 4 could be seen as having been achieved to some extents. However, electric the application system was an off-line system unlike in the plan and there were no applications via the electric applications system (IP E-filing). For these reasons, the project effects were not fully produced.

NOIP started accepting applications through the off-line electronic filing system in June 2007. Although on-line application was planned at the stage of project planning, off-line applications using a combination of both paper and electronic data had been used by the completion of this project. After starting accepting electronic applications, NOIP opened seminars and explanatory meetings to promote the use of IP E-filing. However, no application by electronic data had been filed by the end of the project.

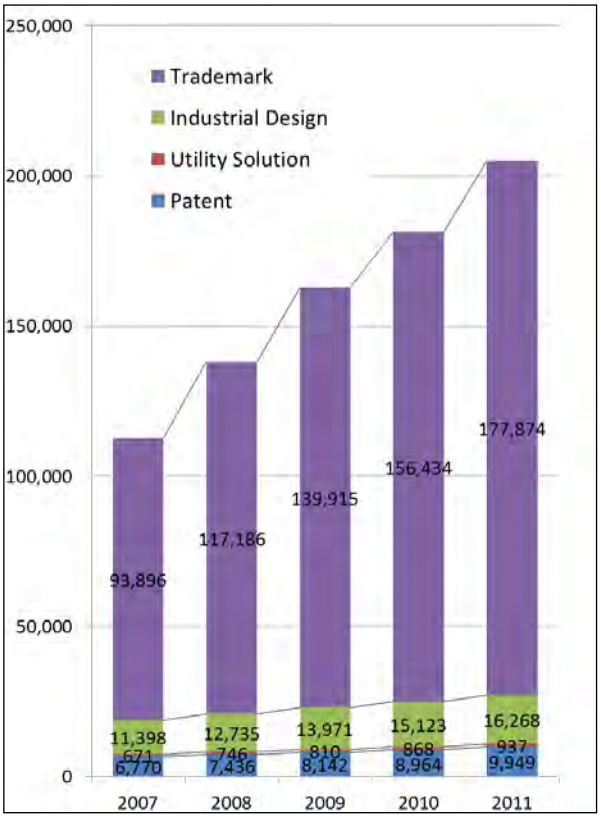


Figure 3: Changes in registered intellectual property rights

The reason for that is that no public certification agency had been established by the end of the project in spite of the fact that on-line applications require a certification by the agency. It was assumed, at the planning stage of the project, that the drawing up of laws on electronic certification and the establishment of a public certification agency would be achieved in the same period, but the latter took more time. In order to proceed with the development of the on-line system as soon as the agency was established, dispatched experts and counterparts routinely visited the relevant government offices and monitored the establishment of the public certification agency.

The probability that a public certification agency may not be established in addition to the drawing up of laws of electronic certification should have been examined at the planning stage of the project. A public certification agency is indispensable for on-line applications. Also, it is an external assumption, a difficult task to achieve its establishment within the project.

5) Output 5 “IP information system is operated and managed appropriately”

With respect to Output 5, two indicators (1. Operation and management framework of the intellectual property information system established, 2. Seven C/P personnel able to independently operate, maintain and manage the intellectual property information system) were established. Operational regulations and detailed rules were established and 10 counterparts acquired the appropriate level of technical capacity. For these reasons, it can be judged that Output 5 has been achieved.

Regarding Indicator 1, regulations for the operation and management of the information system were prepared, the text was drawn up by March 2008 and the detailed rules were decided by March 2009. Respecting Indicator 2, NOIP staff had acquired the skills necessary for the development and operation of the intellectual property information system during project implementation. In capacity assessment for ten personnel of the counterpart (assessment was

given in five grades for thirteen items in six fields) in October 2008, although two persons were given grade of 2 for “Design” in “System Development”, others attained grade of 3 or higher. Although there still remains room for improvement in the field of “System Development”, the staff has acquired sufficient skills in the operation, maintenance and management of the intellectual property information system.

3.2.1.2 Achievement of Project Objectives

In order to measure the degree of achievement for the Project Objectives (“Through the utilization of the Intellectual Property Information System, efficient application processing, management, and information services of the IP is available in NOIP”), three indicators were established. The project effects are the improvement of efficiency in application processing and management and the provision of information on intellectual property outside of NOIP (applicants, agents, rights holders, enforcing agencies) in this project. Both of these are equally important in the achievement of the Project Objectives. Achievement of the former effect is assessed by Indicator 1 and achievement of the latter by Indicators 2 and 3. The status of achievement of the indicator is as follows.

1) Indicator 1 “Efficiency of the application processing in NOIP”

The terminal evaluation employed qualitative information. The ex-post evaluation, however, used alternative indicators (Handling of applications for intellectual property right and Examination periods of application) in order to assess the achievement of Indicator 1 quantitatively. While the efficiency of administrative work in NOIP has been improved at project completion in 2009, a part of the intellectual property information system developed has not been used and there is an external factor (a substantial increase of applications). As a result, the examination period was beyond the legal limits. Thus, Indicator 1 was not achieved as planned.

Table 5: Handling of applications for intellectual property rights

	First year of Project (2005)	Last year of Project (2009)
Total Handling*	More than 18,000	55,241
Number of NOIP staff	185	285
Handling/staff	97.3	193.8

Source: NOIP

Note: * Total of registrations, refusals, amendments, assignments, etc.

Table 6: Examination periods of application for intellectual property rights *

Units: months

Type of IP	2004	2005	2006	2007	2008	2009	2010	2011	Legal Limits
Patents	50.7	50.7	51.1	52.4	54.6	59	60.9	60.8	19
Industrial Design	17.2	14.2	13.6	11.7	11.3	11.9	13	14.1	8
Trademarks	16.2	18.1	20.9	20.3	21.7	19.4	19.4	19.9	10

Source: NOIP

Note: * Months from filing date to registration date. The Law on Intellectual Property amended in 2009 stipulated a maximum examination period 19 months for patents (Formality examination-1 month, Substantive examination-18 months), 8 months for industrial design (Formality examination-1 month, Substantive examination-7 months) and 10 months for trademarks (Formality examination-1 month, Substantive examination-9 months).

The number of applications for intellectual property rights handled by NOIP sharply increased due to the increase in applications overall. The number of applications handled per employee also increased (See Table 5). It is conjectured that the investment in computerization

(introduction of servers, client PCs, and printers) through this project contributed to improvements in administrative efficiency. Also, in this project, a reduction in the time needed for responses was made by improvement of the IPAS system, which resulted in an improvement in administrative efficiency. As described in "3.2.1.1.Project Output", however, the search system developed before the project started was still used to search for patents and industrial designs by examiners and neither IP E-filing was used. Thus, these have not contributed to an improvement in administrative efficiency.

It was recognized, at the time of project planning, that the "efficient processing" of applications for intellectual property rights in the project objective included application processing within legal limits. Yet, periods for application examination have tended to be prolonged and application processing was not being completed within the legal limits at the time of project completion in 2009 (see Table 6). Actual application examination was 1.5 -3 times the legal limits, depending on the types of intellectual property rights. In addition to the non-use of IP E-filing, which is mentioned in Output 4 of "3.2.1.1 Project Outputs", external factors also contributed to the extension of the application examination period. According to NOIP, the following three factors were mentioned as causes of the extension of the examination period: (1) the number of applications sharply increased during project implementation (see Table 1), (2) while the number of examiners was increased in order to correspond to the increasing applications, it still took time for them to be versed in the work, (3) the number of patents not completed to be examined in foreign counties increased, so that cases where it is impossible to refer to the results of examinations in other countries also increased.

2) Indicator 2 "IPDL is used by the public"

The terminal evaluation employed qualitative information. The ex-post evaluation, however, used alternative indicators (number of access to IP Lib) in order to assess the achievement of Indicator 2 quantitatively. However, the amount of access to IP Lib before 2009 was not recorded. It is difficult, therefore, to judge achievement based on quantitative data.

Interviews with IP Lib users confirmed that patent law firms as agents of application for intellectual property rights and to tackle infringement had begun to use IP Lib. Under the project, seminars were held for expected users in order to promote the use of IP Lib.

3) Indicator 3 "Improvement of the degree of satisfaction of the applicants and rights holders to IP administration service by NOIP"

In the terminal evaluation, interviews with IP Lib users confirmed that the users were satisfied, though a survey was not conducted. This ex-post evaluation identified the benefits behind satisfaction through interviews with patent law firms. According to hearings with IP Lib users, it is obvious that the search system has contributed to improvements in administrative efficiency, and it is considered that Indicator 3 has largely been achieved.

Since most applications are filed through patent law firms, the firms are the main users of IP Lib. According to some patent law firms[9], it has been necessary for them to investigate, in filing, whether there is any registered right on which an application infringes. Before IP Lib was established, they had confirmed this using official gazettes kept in the firms and/or materials deposited in NOIP. After IP Lib was established, it became possible to proceed application administration by investigating through the system and by making use of other information sources having narrowed the investigation areas. According to patent law firms, as the information on intellectual property open to the public is scarce in Vietnam, narrowing the investigation area through IP Lib is important for efficient application administration.

While the target for Indicator 3 was achieved, inadequate data collection does not allow a fair assessment of Indicator 2. As for Indicator 1, a part of the intellectual property information system developed by this project was not utilized. Therefore, the project objectives were only

[9] Interviews were conducted with five patent law firms in Hanoi and Ho Chi Minh.

partially achieved. Both the non-use of a part of the developed information system and, as an external factor, an increase in applications prevented a shorter examination period. Among the project effects of this project (improvement of efficiency in application processing and the management and provision of information on intellectual property outside of NOIP), IP Sea is partially used for examination of trademarks, which has the highest number of applications, for the former project effect, while the provision of information via IP Lib was obvious in the latter project effect. Thus, the project effects are fair.

3.2.2 Impact

In this study, use of the intellectual property information system and the incidence of benefits at the time of the ex-post evaluation were reconfirmed, and since the development of the intellectual property information system was continuing at the end of the project, it is considered that the benefit had not appeared at the time of project completion.

3.2.2.1 Achievement of the Overall Goal

In order to measure the extent to which the Overall Goal ("Intellectual Property (IP) rights is controlled and protected more appropriately in Vietnam") had been achieved, four indicators were established. Indicators 1 to 3 were used to confirm the effectiveness of the project while keeping a consistency with the overall goal. Indicator 4 dealt with the incidence of project effects in Vietnam as a whole. How far each indicator is being achieved is presented as follows.

1) Indicator 1 "IP application handling is appropriately done in NOIP"

In order to assess the achievement of Indicator 1 quantitatively, this ex-post evaluation used the application examination period as an alternative indicator and the legal limits[10] stipulated by the Law on Intellectual Property as a target. From project completion to the time of the ex-post evaluation, examination periods had become prolonged and it remained that the period exceeded the legal limits (see Table 6). Therefore, Indicator 1 was not achieved as planned.

As mentioned in Indicator 1 of "3.2.1.2 Achievement of Project Objectives", both internal (non-use of a part of the system) and external factors (large volume of applications, examiners' experience with their tasks, difficulty of using examination results in other countries) have also resulted in extensions of the examination period. According to patent law firms, there were many cases where examinations were not completed within the period.

After the project terminated, the operation of the intellectual property information system has tended to be improved (see Table 7). Since at one point the server did not work due an increase in temperature in the server room, a new air conditioner was installed at the end of 2010. Although a back-up power source is prepared for working hours, if the power supply is cut off at night or at the weekend, access to IP Lib is difficult.

Table 7: Operation days of the intellectual property information system

2009	2010	2011*
More than 350 days	More than 355 days	More than 330 days

Source: NOIP
Note: * As of November 2011

At the time of the ex-post evaluation, only the search system for trademarks in IP Sea had been used. Searches for industrial design and patents used the system developed before the

[10] The time limit of the examination period is explained in footnote 7. As mentioned in Indicator 1 of "3.2.1.2. Achievement of Project Objectives", it was recognized that "appropriate processing of intellectual property" included application processing within the legal period at the time of project planning. This definition was emphasized also for the judgment for evaluation.

project started. The search system for trademarks was ahead of the other search systems and its usage commenced officially during the project period. For industrial design and patents, the development of IP Sea had not been completed by project completion. As examiners were versed with the use of the existing search system and had not frequently used the new system, the use of the new system was not commenced officially. On both types of intellectual property rights, data conversion to the IP Sea database has been suspended.

There were no applications through IP E-filing at the time of the ex-post evaluation. It was not possible to file applications by electronic media only. Furthermore, there was no incentive in terms of application costs for users to apply using both paper and electronic media. According to JICA experts, the following two factors were mentioned as causes why IP E-filing had not been much used, i.e. (1) applications by electronic media only were not accepted and it was necessary to file using both paper and electronic media, and so the administrative burden for applicants was not lightened, (2) as there was little difference in application cost between applications using paper and electronic media in combination and paper-based only applications, the incentive for data input was weak. In hearings with examiners and the staff of IT Divisions, there was the opinion that, because it is difficult to discern forged documents, applications using electronic data only are hardly acceptable without certification from a public certification agency.

2) Indicator 2 “IP Digital Library (IPDL) is used by the public”

In order to assess the achievement of Indicator 2 quantitatively, the amount of access to IP Lib is employed as an alternative indicator. After the project terminated, the amount of access to IP Lib tended to increase (see Table 8) reaching approximately 400 per day in 2011. As mentioned in Indicator 3 of “3.2.1.2. Achievement of the Project Objectives”, IP Lib has been frequently used for application administration by patent law firms. As public users have utilized IP Lib after project completion, it can be considered that Indicator 2 was achieved.

In hearings with patent law firms and right holders[11], although IP Lib continued to be a precious information source at the time of the ex-post evaluation, the following two points were indicated: (1) updates in information are sometimes late, (2) there are some items which is not inputted. At the time of the ex-post evaluation, patent law firms were the main users of IP Lib since this requires a basic knowledge of intellectual property right. There was a case, however, that an entrepreneur had participated in an intellectual property right seminar was using IP Lib and was planning a business after investigating study trends in this interesting filed.

Table 8: Access to IP Lib

	2010	2011
Access from Vietnam	64,444	154,910
Access from outside Vietnam	3,710	10,435

Source: NOIP

3) Indicator 3 “IP enforcement activities are strengthened by using IP information”

It was difficult to obtain quantitative information on Indicator 3. By interviewing patent law firms and a relevant government agency, this ex-post evaluation assessed whether IP Lib was utilized for infringement cases of intellectual property rights. This project has contributed to an appropriate crackdown on counterfeit products through the provision of intellectual property information to patent law farms and the Vietnam Intellectual Property Research Institute (hereinafter referred to as “VIPRI”). Thus, it can be considered that Indicator 3 was achieved.

With respect to correspondence with counterfeit products, in many cases, a right holder makes a request for administrative action to a regulatory agency or mediates with a violator

[11] Hearings were conducted with five IP Law firms in Hanoi and Ho Chi Minh and with a rights holder.

through a patent law firm. In particular, local subsidiaries of Japanese companies seldom have a division that deals with intellectual property in Vietnam. It has been pointed out, therefore, that patent law firms have a major role in correspondence with infringement[12]. For requests for administrative action to a regulatory agency, judgment of the infringement by VIPRI is recommended[13]. Through the hearings of this evaluation study, it was ascertained that patent law firms and/or VIPRI used IP Lib when dealing with cases of infringement. Patent law firm investigate whether a client is a legitimate rights holder by using IP Lib. Also, VIPRI has used IP Lib for the cross checking of application contents.

4) Indicator 4 "The evaluation on IP protection by the international organizations (WIPO, WTO, etc.) improved.

According to NOIP, comprehensive evaluation of the protection of intellectual property in Vietnam by international organizations was not conducted after the project terminated, so it is not possible to confirm the conditions of achievement.

Although the overall goal was somewhat achieved for target Indicator 2 and target Indicator 3, the period for application examination has been longer than before due to factors such as increases in applications and underutilization of IP E-filing in Indicator 1. Therefore, the overall goal was only partially achieved

3.2.2.2 Other Impacts

As the result of a questionnaire with NOIP and hearings with people concerned, no negative impact on the natural and social environment has been confirmed. In order to grasp the project effects from many different angles, Focus Group Discussions (hereinafter referred to as "FGD") with NOIP examiners and staff of the divisions relevant to the intellectual property information system[14] were implemented. In order to grasp participants' opinions quantitatively, a vote was conducted after eliciting opinions about the discussion theme. Also, based on opinions from the participants, issues concerning the intellectual property information system contributing to the protection of intellectual property were taken as opinions for voting. The following is the outline of a FGD.

- Venue : NOIP Headquarter (Hanoi City)
- Date : 12th December 2011
- Participants : Examiners (6 persons: 3 males and 3 females), staff of divisions relevant to the IP information system (6 persons: 4 males and 2 females)
- Theme : "How the intellectual property information system contributes to the protection of intellectual property?"
- Voting Method : After narrowing down the opinions to about five, each person voted using three votes (In the case where he/she strongly agreed, multiple votes for the same opinion were accepted).

[12] Based on interviews at JETRO

[13] Okada, Takako (2010), "Counter measures to counterfeit products in Vietnam and the Law on Intellectual Property (Effective from January 2010)", *Patents Vol.63 No.12*

[14] The staff of an Intellectual Property Registration Division and an IT Divisionwere targeted.

Table 9: Results of the FGD

Examiners			Staff relevant to the intellectual property information system		
Project effects					
Rank	Opinion	Votes	Rank	Opinion	Votes
1	IPAS helps in managing documents and data in a well-organized manner.	7	1	Supporting individuals, agencies during the filing process	6
2	Intellectual property information system helps in searching for intellectual property rights much more quickly than before.	3	2	Helping users/applicants monitor their application status more easily	1
2	It helps in issuing intellectual property certificates in a more accurate manner.	2	2	Reducing operational and management costs	1
4	It helps in providing intellectual property information (regarding State Management: Law, Decrees, Circulars) to public users.	1	2	Helping in faster and more accurate assessment (of violation cases)	1
			2	Providing research trends for inventors	1
Issues					
1	Information and data on intellectual property is not regularly updated.	3	1	Slow response of the intellectual property information system	3
2	The responsive of the system is long (slow).	2	1	More attention needs to be paid by management to the intellectual property information system as well as to information technology in general.	3
			3	Shortage in information technology staff.	2
	Total	18		Total	18

In the results of the FGD (see Table 9), In addition to the project effects identified by interviews with NOIP staff and IP Lib users (such as the improvement of efficiency in the application process of applicants and agents), participants recognized easy checking of the status of applications and the reduction of operating costs in NOIP. Besides this, since examiners process applications for intellectual property rights using the IPAS system, they consider that they have contributed to the protection of intellectual property by implementing smooth examination with the proper management of application documents. This project conducted database tuning of IPAS. While examiners consider that the late update of intellectual property information is an issue necessary to be improved, the staff relevant to the intellectual property information system recognize that insufficient resource allocation to the system is an issue.

This project has produced its effects to some extent and, therefore, its effectiveness and impact is fair. As for the Project Objective, Indicator 1 was only partially achieved because a part of the developed system was not utilized and this indicator was affected by external factors while Indicator 3 (satisfaction with the provision of intellectual property information) was achieved. The Overall Goal was partially achieved. The use of IP Lib has become more prevalent but the period for application examination is prolonged.

3.3 Efficiency (Rating: ③)

3.3.1 Inputs

Inputs	Plan	Actual Performance
(1) Experts	4 persons for Long-Term TBD after the commencement of project for Short-Term	6 persons for Long-Term 22 persons for Short-Term
(2) Trainees received	Field(s) of training: TBD after commencement of the project	Field(s) of training: Intellectual Property Information Policy, Leadership Development for Information System Promotion, Management of Intellectual Property Information Systems, etc.
(3) Third-Country Training Programs	Field(s) of training: No Third-Country Training Programs were planned.	Field(s) of training: None
(4) Equipment	Network equipment, Severs, and Office equipment	Network equipment, Severs, Office equipment, Generators, etc.
Total Project Cost	530 million yen	422.69 million yen
Total Local Cost	N/A	33.01 million yen[15]
Period of Cooperation	Jan. 2005– Mar. 2009 (51 months)	Jan. 2005– Mar. 2009 (51 months)

3.3.1.1 Elements of Inputs

With regard to inputs of the Japanese side, the dispatch of long-term experts was changed when the project was implemented, from 4 fields (chief advisor, intellectual property information, computer system, project coordinator) to 3 fields (chief advisor, intellectual property information, project coordinator). For the field of computer systems, multiple short-term experts were dispatched instead of a long-term expert. The reason why the number of long-term experts increased was that there was a change in experts during project implementation. Short-term experts were dispatched to 15 fields during project implementation[16]. According to answers from a questionnaire with NOIP, experts were selected based on the proper standards and the timing of dispatch was more or less appropriate. Assistance by experts was important especially for the process of the management of system development projects by an vendor such as NOIP when there was little experience on the part of the management. Also, NOIP commented that the installed facilities (network equipment, servers, PCs) properly corresponded to the needs.

As regards the inputs of the Vietnamese side, though it is difficult to make a precise comparison as the quantity of inputs was not clearly decided at the planning stage, it is judged that they are nearly as planned at the time of the terminal evaluation. Responding to increases in staff, 143 client PCs were installed in total for both replacement and new installation.

3.3.1.2 Project Cost

The project cost was lower than planned (80% of the original plan). Although a strict comparison between plan and actual is difficult since there are input items for which the quantity at the planning stage was unclear, it is considered that the total period of dispatch was shortened as the result of changes from a long-term expert to multiple short-term experts dispatched in the field of computer systems, which was one of the factors in reducing the total cost of assistance.

[15] Based on the Minutes of Meeting at the time of the terminal evaluation. Converted using the exchange rate on a monthly mean (144.19 VND/JPY) during the project period.

[16] The positions of short-term experts were 1.Intellectual property information system/software and database, 2.Intellectual property information system/software and hardware, 3.Trademark search, 4.Industrial Design Search, 5.IPDL, 6.Intellectual property information systems, 7.Intellectual property information system /computer systems, 8.E-filing, 9.Patent search, 10.E-filing on-line, 11.Network management, 12.System planning, 13.Effective utilization of intellectual property information systems for substantive examination, 14.Mid/Long-term plans for intellectual property information systems, 15.Utilization of intellectual property information systems.

3.3.1.3 Period of Cooperation

The period of cooperation was as planned (100% of the original plan). Within the planned period, the development of the intellectual property information system was completed with the originally planned functions, except for IP E-filing in which the external assumption prevented the development of an on-line system. As mentioned in Output 2 in "3.2.1.1. Project Outputs", the development of a search system for patents and industrial design in IP Sea had not reached official release. As the counterparts of this project obtained an adequate capacity for the development and management of the intellectual property information system (see the Output 5 in "3.2.1.1 Project Outputs"), NOIP and the dispatched experts concluded that NOIP could continue system development until the official release and, therefore, the period of cooperation was not extended.

The inputs were appropriate for producing the outputs and for achieving the project objective. Both project cost and the period of cooperation were within the plan. Therefore, the efficiency of the project is high.

3.4 Sustainability (Rating: ②)

3.4.1 Related Policy towards the Project

The policy of the government of Vietnam aims at the installment of IT into government institutions and an on-line service for the public, which supports the maintenance, management and updates of the intellectual property information system introduced by the project. Therefore, the sustainability of this project in terms of policy and systems is high.

At the time of the ex-post evaluation, the Vietnamese government had continuously worked on the protection of intellectual property in its position as a WTO member country. As mentioned in "3.1.1. Relevance to the Development Plan of Vietnam", Vietnam joined WTO in January 2007 and the protection of intellectual property was therefore required along with the TRIPS Agreement at the time of the ex-post evaluation. The Law on Intellectual Property has been continuously amended and its detailed regulations have been drawn up. In the amendment of 2009, the examination period and the procedures for the recognition of infringements were changed.

PM Decision No 1605/2010 aims at improvement of the operation of government agencies, the implementation of policies, the provision of public service and set the target for the program of IT introduction in government institutions. This aimed to promote the use of IT for internal administration in the public sector for efficiency improvement and cost reduction by 2015, together with the provision of online public services by 2020. The government of Vietnam has adopted a positive policy of promoting IT introduction in government institutions and online services.

3.4.2 Institutional and Operational Aspects of the Implementing Agency

There was no change hindering sustainability in the institutional and operational aspects from project commencement to the ex-post evaluation. Considering the need for further development of the intellectual property information system, it is desirable that the IT Division is strengthened on a long-term basis.

At the times of both project planning and of the terminal evaluation, NOIP had jurisdiction over several types of intellectual property rights such as patents, utility solutions, industrial design and trademarks. Although NOIP had assessed infringement of intellectual property rights at the time of project planning, it was no longer obligated to assess infringements at the time of the ex-post evaluation and general rights holders have asked VIPRI[17] for assessment of infringements. Although there was a change in the role of infringement assessments, NOIP

[17] Based on JETRO (2008) *Introductory manual on counterfeit products overseas (revised version)* and JETRO (2012) *Manual on counterfeit products-Vietnam.*

remains responsible for examination, the basis for the protection of intellectual property and the provision of intellectual property information. Responding to the increase in the number of applications, NOIP expanded its divisions for examination, and the number of the staff members is increasing even after the project has terminated (see table 10).

Table 10: Number of NOIP staff

Year	2008	2009	2010	2011
Number of employees	268	285	285	302

Source: NOIP

At the time of the ex-post evaluation, the IT Division of NOIP was in charge of the operation and maintenance of the intellectual property information system. The number of staff members in the IT Division shifted from 12 persons in March 2009 to 13 persons in 2010, and to 12 persons in 2011. Among these, 7 staff members of the IT Division were involved in the implementation of this project, and 3 persons worked for the "Japanese Technical Cooperation Project for the Modernization of Industrial Property Administration." There was no change in the functions of the IT Division and personnel changes and the retirement of staff assigned to the IT Division was limited after project completion. For these reasons, there are no serious problems in the intuitional setting for system maintenance in the short-run. It is judged, therefore, that no change harming sustainability has occurred. However, in light of the trend of increases in both the number of employees and the needs for the intellectual property information system, an expansion of the system scope is appropriate together with a reinforcement of the system, such as an increase in the personnel of the IT Division and an improvement of skills through training programs, based on a long-term and mid-term vision. In interviews with IT Division staff and vendors, it was pointed out that an increase in the personnel in the IT sector is appropriate in the case of a redevelopment of the intellectual property information system. Also, there was an opinion in the FGD that staff of the IT sector are in short supply. As mentioned in "3.4.3 Technical Aspects of the Implementing Agency", it is advisable that the medium and long term plans are updated at the earliest opportunity. In the case of new system development, NOIP would face tasks with little experience (such as the process management of vendors) and the need to enhance human resources in terms of both quality and quantity.

3.4.3 Technical Aspects of the Implementing Agency

As a result of technical transfer, it is judged that NOIP staff have acquired the relevant skills to conduct daily maintenance work of the intellectual property information systems. However, in spite of the recommendation in the terminal evaluation, an update of the medium-long term plan of the intellectual property information system has not been made and, thus, maintaining planning capacity and the obsoleteness of the current medium-long term plan are considered critical issues from the technical aspects.

As mentioned in Output 5 of "3.2.1.1. Project Outputs", capacity improvement of NOIP staff for the development and operation of information systems has been implemented. Also, NOIP has made a medium-long term plan for the operation and development of the intellectual property information system and has gained practical knowledge with the assistance of JICA experts. The terminal evaluation suggested that the medium-long term plan be revised every year by utilizing the improved capacity. Nevertheless, the necessity of revising the plan was not widely recognized in NOIP and the plan had not been updated at the time of the ex-post evaluation. Periodic updates of the medium and long-term plan help the counterparts maintain their planning capacity. In addition, there have been various changes in the working environment in the three years after project completion and the medium-long term plan needs to reflect these changes. Specifically, these changes are (1) the number of applications staying at a

high level, (2) obsoleteness of equipment and database software installed by the "Japanese Technical Cooperation Project for the Modernization of Industrial Property Administration", (3) the establishment of a public certification agency which is a precondition for online IP E-filing, (4) security issues rising from the fact that examiners still use old search systems for patents and industrial design and (5) correspondence with new fields of intellectual property rights (such as geographical indication[18]). The fact that the plan has not been updated is recognized as a technical issue of concern.

The staff of the IT Division have participated in training programs for the effective use of information systems, held by WIPO or the Japan Patent Office once a year or so. The IT Division has considered the replacement of database software, and demands for training on databases have increased. Also, training programs for newly employed staff to be examiners on search systems and document preparation using information system have been implemented once or twice a year. User manuals for the intellectual property information system as a whole and a manual for data conversion have been prepared and were used at the time of the ex-post evaluation.

According to the staff of the IT Division, the maintenance and inspection of the relevant equipment has been outsourced since 2011 and inspection based on a checklist has been conducted once every three months. Monitoring (temperature, humidity, noise) of a server room has been conducted by the staff of the IT Division as a routine operation. Also, the IT Division has made a data backup of IPAS once a day and of IP Lib and IP Sea once a month at least. Furthermore, they have recorded data into magnetic tapes once a year and these are kept in a safe. As mentioned in Indicator 1 of "3.2.2.1 Achievement of the Overall Goal", the search systems for patents and industrial design in IP Sea had not been used at the time of the ex-post evaluation, and operational work such as data conversion had not been conducted.

3.4.4 Financial Aspects of the Implementing Agency

NOIP has continuously invested in information systems since the project has terminated. It is considered, therefore, that the project's sustainability in the financial aspects is high.

Budgets relevant to information systems at NOIP have increased since 2010, and the performance of IP systems has been maintained through the updating and expansion of the equipment (see Table 11), which is noteworthy, particularly in the purchasing of equipment such as servers and in the expansion of databases.

Table 11：Budget for information systems at NOIP

Year	2008	2009	2010
Budget for information systems (JPY equivalent*)	VND 6,190 million (approx. JPY 33 million)	VND 5,816 million (approx. JPY28 million)	VND 9,137 million (approx. JPY 39 million)

Source: NOIP
Note: * 1 JPY=VND 186.46 at 2008, 1JPY= VND 206.00 at 2009, 1 JPY= VND233.95 at 2010

Although financial data related to the general budget could not be obtained, the number of staff increased as shown in "3.4.2. Institutional and Operational Aspects of the Implementing Agency". It is conjectured that the allocation of the general budget has tended to increase similarly. Since it is possible for NOIP to allocate a part of application fees paid by applicants to the budget, the increase in the number of applications in recent years has provided a positive effect on financial sustainability.

Some problems have been observed in the structural and technical aspects of the executing agency, therefore, the sustainability of the project effects is fair.

[18] Where the quality or evaluation of a product is attributed mainly to its geographical origin, the indication of the origin or name of the origin are to be subjects of protection.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project aimed at smooth application examination and easy acquisition of intellectual property information together with the enhancement of the management and protection of intellectual property through the development of an information system at NOIP. The purpose of this project was consistent with policies and development needs at the times of both project planning and the ex-post evaluation and, therefore, its relevance is high. In developed information systems, while a part of the search system for examiners and electronic application systems has not been much used, intellectual property search systems for the public have been used in the case of application or corresponding to infringement by a wide variety of users, such as applicants, right holders, and agents. The administrative efficiency at NOIP was improved but the examination period tended to be prolonged, except for industrial design, mainly due to the increase in applications. For this reason, the effectiveness and impact of the project is fair. Both the project cost and the period of cooperation were within the plan and, therefore, the efficiency of the project is high. The planning capacity of NOIP staff for system development needs to be maintained while long- and medium-term plans become obsolete. They are issues in the technical capacities and, thus, the sustainability of this project is fair.

In light of the above, this project is evaluated to be satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

Although sufficient maintenance skills for equipment have been maintained through the continuous work of maintenance, definite efforts for planning of maintenance, updates, and the expansion of information systems based on the long-term view have not been observed. As the strengthening of capacity development of planning is an issue, it is desirable that NOIP regularly updates its medium-long term plan for maintenance and also its action plans.

4.2.2 Recommendations to JICA

The recommendations of the terminal evaluation included routine updates of a medium-long term plan on operation and development and action plans. At the time of the ex-post evaluation, however, NOIP was not reviewing the medium-long term plan on operation and development and action plans routinely. In order to improve the sustainability of this project, it is important for NOIP to make efforts to achieve the above recommendations. It is desirable for JICA to monitor NOIP’s efforts and, if necessary, to encourage NOIP to take appropriate actions.

4.3 Lessons Learned

(1) Monitoring Based On the Right Indicators

At the time of the ex-ante evaluation, unclear indicators had been set for some of the Outputs and the Project Objectives, so these were modified to more concrete indicators as the result of the project consultation mission. Also, the relevant data had not been collected for many indicators for the confirmation of the incidence of project effects both during project implementation and at the time of the ex-post evaluation. Given that an increase in applications and an extension in the examination period started during project implementation, correspondence within the project should have been considered based on the indicators. It is recommended to confirm the indicators regarding the collection of data for routine operation by the relevant organizations at the time of project planning, and to select indicators possible for continuous data collection, as well as to set up a monitoring system.

(2) Examination for Contingency Plan

Due to the lack of experience of local vendors involved in system development, products which could satisfy experts were not produced as planned. In addition, it was difficult to achieve mutual understanding on the technical specifications of the system among NOIP's counterparts, JICA experts, and local vendors. As a result, user interface of the system did not reach the level to satisfy examiners, and this resulted in a limitation on the use of the system after project completion. In the case where technical gaps among the counterparts, JICA experts, and vendors and/or limitations in mutual understanding are anticipated in a project for system development, it is advisable that countermeasures are assessed to solve problems at the planning stage and the project managed accordingly.

(3) Confirmation by Government Institutions Necessary for the Operation of the Legal System

At the time of the ex-ante evaluation, while the preparation of laws relevant to electronic application was recognized as an important external assumption while the situation was understood, the establishment of a public certification agency necessary for electronic application was not recognized as an external assumption. Although law relevant to electronic application had been prepared during project implementation, online application was put off due to the delay in the establishment of a public certification agency. In the case where law preparation is regarded as an external assumption, it is advisable that it is not only recognized as an external factor but also that the existence of the government institution needed for the operation of the legal system or prospect of its establishment is confirmed. It is also recommended that the risk factors in the incidence of project effects are understood, such as the negative effects on a project caused by the absence of a government institution and the possibility of countermeasures within the project.