

## Simplified Ex-Post Evaluation for Grant Aid Project

Evaluator, Affiliation	Miho Kawahatsu Waseda Research Institute Corporation (WRI)	Duration of Evaluation Study
Project Name	The Project for Construction of Primary Schools in Lao People's Democratic Republic	January 2010 – December 2010

### I Project Outline

Country Name	The Lao People's Democratic Republic																									
Project Period	(I/II) August 2003-February 2005 (II/II) June 2004-November 2005																									
Executing agency	Provincial Education Service of Vientiane Municipality and Vientiane Province																									
Project Cost	Grant Limit: 758 million yen	Actual Grant Amount: 747 million yen																								
Main Contractors	Sampo International																									
Main Consultants	System Science Consultants Inc,																									
Basic Design	February 2003																									
Related Projects (if any)	N.A																									
Project Background	<p>The Educational Strategic Planning of Laos has addressed the issue of school construction as a means of increasing the net enrollment ratio in primary education, which could positively link to the adult literacy rate. Further, the Five-year Development Plan for Education (2001-2005) focuses and gives priority to "equal access to education." This policy implies overwhelming needs and demands for construction of new school buildings in Laos. At the same time, primary schools in the Vientiane area, with relatively high enrollment ratios, could not be properly maintained, and face structural safety issues. Therefore, with such urgent needs, the government of Laos requested Japan to help construct and rehabilitate primary school facilities in the Vientiane area.</p>																									
Project Objective	To construct facilities and procure classroom furniture for targeted primary schools in order to improve the general learning environment at school and to assure better access to education.																									
Output[s] (Japanese Side)	<p>1. Reconstruction and/or expansion of school facilities at primary schools located in the Vientiane area:            I/II 31 Schools (143 Classrooms, 23 Teachers' rooms, 8 Toilet buildings)            II/II 35 Schools (191 Classrooms, 23 Teachers' rooms, 23 Toilet Buildings)            (Total of project terms (I. II) 66 Schools (334 Classrooms, 46 Teachers' rooms, 31 Toilet buildings)</p> <p>2. Provision of school furniture and equipment</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding-left: 20px;">Per classroom</td> <td style="padding-left: 20px;">(10 set desks &amp; chairs for pupils</td> <td style="padding-left: 20px;">334 Classrooms x 10 sets)</td> </tr> <tr> <td></td> <td style="padding-left: 20px;">(Teachers' desk &amp; chair</td> <td style="padding-left: 20px;">334 Classrooms x 1 set )</td> </tr> <tr> <td></td> <td style="padding-left: 20px;">(Shelves</td> <td style="padding-left: 20px;">334x 1)</td> </tr> <tr> <td></td> <td style="padding-left: 20px;">(Blackboards</td> <td style="padding-left: 20px;">334x 1)</td> </tr> <tr> <td style="padding-left: 20px;">Per Teachers' room</td> <td style="padding-left: 20px;">(3 set desks &amp; chairs for teachers</td> <td style="padding-left: 20px;">46x 3 sets)</td> </tr> <tr> <td></td> <td style="padding-left: 20px;">(1 table and 6 chairs for a meeting room,</td> <td style="padding-left: 20px;">46x 1 and 46 x6)</td> </tr> <tr> <td></td> <td style="padding-left: 20px;">(5 Shelves</td> <td style="padding-left: 20px;">46 x 5)</td> </tr> <tr> <td></td> <td style="padding-left: 20px;">(Blackboards</td> <td style="padding-left: 20px;">46x 1)</td> </tr> </table>		Per classroom	(10 set desks & chairs for pupils	334 Classrooms x 10 sets)		(Teachers' desk & chair	334 Classrooms x 1 set )		(Shelves	334x 1)		(Blackboards	334x 1)	Per Teachers' room	(3 set desks & chairs for teachers	46x 3 sets)		(1 table and 6 chairs for a meeting room,	46x 1 and 46 x6)		(5 Shelves	46 x 5)		(Blackboards	46x 1)
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### II Result of the Evaluation

Summary of the evaluation
<p>Regarding the efficacy of this project, while it is difficult because of data constraints to show in quantitative terms the effects, the new 66 schools with the total of 334 classrooms may have improved the general learning environment of the maximum of 12,024 pupils in total, in accordance with the specification that each one classroom has a capacity of 36 pupils. Also as indirect effects note is to be taken of spillover effects such as the implementation of adult literacy education – assigned high importance in Laos – and greater social activity through participation in community activities. From the viewpoint of sustainability, however, while it cannot be said of all of the 66 schools, there are some where in the absence of adequate contributions from the local community problems of operation and management have arisen.</p> <p>In light of the above, this project is evaluated to be highly satisfactory.</p> <p>&lt;Recommendations&gt;</p> <p>As recommendations to the executing agency, mention must be made of issues related to sustainability of operations and maintenance (O&amp;M) at some of the schools in this project. Because contributions from the community and donation of labor by villagers are indispensable for O&amp;M of school facilities, it is desirable that prior to project implementation that community residents be made fully aware of the necessity for appropriate sharing of responsibilities by beneficiaries and for the collection of contributions to facilitate the supply of services by the facilities in question</p> <p>Further, it is desirable that, from the viewpoint of sustainability of community activities, and with the intention of increasing activities in the villages on behalf of community contributions, to support the formulation of an activity action program intended to</p>

promote the participation of a large number of villagers as needed for success in effective adult literacy education efforts. In this country in particular, in order to improve the literacy rate of village schoolchildren – an objective of this project – it is thought to be extremely effective to establish “model schools” with which large numbers of community residents have a relationship.

<Constraints of this evaluation study>

Because this project encompasses the large number of 66 schools, there is an absence of tabulated data on the situation regarding the number of children attending school which is one measure of project effectiveness, and regarding sustainability it is thought there to be wide variation of the conditions of O&M of facilities by the communities where the schools are located, it is difficult to obtain quantitative data and a detailed understanding of actual conditions

Therefore it is necessary to evaluate this project solely on the basis of whether there has been an increase in school enrollment, whether adult literacy education has been carried out, and whether contributions have been made to the communities in question. Regarding judgment of sustainability, in accordance with the situation as described by the executing agency, the judgment is not applicable to all of the schools.

1 Relevance

(1) Relevance with the Development Plan of Laos

Announcement of this project is included in the Laotian government’s Social and Economic Development Strategy for 2020 and 2010, where it is included as a development topic related to the expansion of primary, vocational, secondary, and informal education as strategy for the education sector.

Special importance has been assigned in the Five-year Development Plan for Education (2001-2005) to raising the primary school enrollment rate to 86 in 2005, and expansion of equal access to education, improvement of the quality and the content of education, and strengthening of capacity for education administration as three means of raising the adult literacy rate to 78%. Further, as medium- to long-term objectives, the Educational Strategic Planning (2001-2020, 2001-2010) calls for raising the primary school enrollment rate to 90% in 2010 and then to 98% in 2020, and for raising the adult literacy rate to 83% in 2010 and then to 90% in 2020. In this program increased investment in school construction is identified as an important policy and its relevance to this project is high.

(2) Relevance with the Development Needs of Laos

While gradual progress was being made towards improvement of access to primary education at the time this project was planned, it was calculated that the number of new schools required to realize the enrollment rate targets for the nation was about 6,000. Thus, there was a severe shortage of primary school facilities. At the time of the ex-post evaluation, moreover, many schools in the nation had buildings that were structurally unsafe, and there were many classrooms that were temporary structures lacking the ability to withstand strong forces of nature; thus, the problem of insufficiently safe and hygienic school facilities was a continuing problem, and a high level of need was evident for the improvement of the environment for learning.

(3) Relevance with Japan’s ODA Policy

When the project was planned, through policy discussions with Laotian officials and in keeping with the concepts and guidelines for Japanese ODA, four areas were identified as suitable for emphasis in assistance from Japan, namely development of human resources, basic human needs (BHN), agriculture & forestry, and infrastructure improvement. As assistance related to BHN, appropriate areas for assistance were identified as primary education (school construction and repair, supply of equipment, etc.), health and medical care (improvement of facilities particularly at major hospitals, supply of equipment, child health), and protection of the environment (afforestation, etc.).

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

2 Efficiency

(1) Project Outputs

The output on the Japanese side was revised as follows. The major reason for the revision was elimination from initial plans of 11 schools in the northern part of Vientiane province as this was judged to be a dangerous area. Further, appreciation of the yen resulted in a smaller sum becoming available in Laotian currency and this required that new classroom construction had to be reduced.

Phase I	<ul style="list-style-type: none"> <li>• Change of the location of #31 school (with no change in classroom components’ scale or nature, or of monetary amounts)</li> <li>• Change of the dimensions of supplementary framing for the front exterior of buildings at all #31 sites (use of reinforced concrete blocks)</li> </ul>
Phase II	<ul style="list-style-type: none"> <li>• As Vientiane province was judged to be a dangerous area, at the time of the basic study 11 schools (sites 75-80, 95 and 97-100) were eliminated from the plan (A reduction in Phase II from 46 to 35 schools)</li> <li>• Change in the location of new school construction at sites 70 and 93 (relocated in connection with the location of power lines)</li> <li>• Change in the number of new-construction classrooms (revision of project budget in keeping with impact of change in forex rates; at sit 69 the number of classrooms was reduced from 17 to 13.</li> </ul>

(2) Project Period (Project Inputs)

The project period was planned in two phases, from August 2003 (signing of E/N) to February 2006 (30 months) but in actuality became from August 2003 (E/N signing) to November 2005 (27 months). The project ended three month earlier than had been

planned.

(3) Project Cost (Project Inputs)

Actual project cost was 747 million yen and the E/N was 758 million yen, so costs were 11 million yen less than had been planned.

Both project period and project cost were largely within the plan, therefore efficiency of the project is high.

3 Effectiveness / Impact

(1) Quantitative Effects

Regarding the effectiveness of this project, note first of all as stated in (1) Output above the number of schools was reduced from 77 by 11. The numbers shown in the table below therefore must be adjusted accordingly. However, because the basis for improvement of the enrollment rate in primary education to be accomplished by the construction work of the project was the total number of pupils enrolled, it is thought that by enrollment at schools newly constructed by this project the level will at least exceed the 2002 benchmark. Concerning the education sector in 2008, according to the "Evaluation of Japan's Assistance to the Education Sector in Laos (Third Party Evaluation: Joint Evaluation with NGOs), Ministry of Foreign Affairs of Japan, March 2009," enrollment in primary education in the entire nation rose from 828,000 in 2000 to 892,000 in 2005 and 900,000 in 2007, and, moreover, as of 2007 data for provinces indicates that in Vientiane Municipality and Vientiane Province all together, the enrollment was above 95%.

Without actual values from the executing agency, it is not quite possible to quantitatively evaluate the effect of the project. However, the new 66 schools with the total of 334 classrooms may have at least improved the general learning environment of the maximum of 12,024 pupils in total, in accordance with the specification that each one classroom has a capacity of 36 pupils.

【Table 1】 Potential Number of Pupils for Enrollment Under this Project

Indicator (unit)	Benchmark (2002)	Target (2006)	Realized (2006)
No. of pupils with access to permanent classrooms (no. enrolled)	4,600	19,059	n.a.
No. of pupils with access to usable toilets	10,079	19,059	n.a.

Source: Basic Design Study Report on the Project for Construction of Primary Schools in Lao People's Democratic Republic

(2) Impacts (Impacts on the Natural Environment, Land Acquisition and Resettlement, Unintended Positive/Negative Impact)

Implementation of informal education for adults, and community activities, both using project facilities, were considered to be indirect effects of the project. The Provincial Education Service of Vientiane Municipality and Vientiane Province implements adult literacy classes for groups of 20 or more once a year and regarding community activities the response was received that there had been participation by 50-100 persons at every school. Further, responses to our questionnaire to the executing agency indicate that there have been indirect effects in the form of increases in contributions from the communities to their schools, and through higher levels of understanding regarding responsibility and obligations of community members to undertake the operation and maintenance at their schools.

There were no reports concerning issues related to the environment, relocation of residents or acquisition of land. Also, there were no reports of serious adverse impacts.

This project has largely achieved its objectives and therefore its effectiveness is high.

4 Sustainability

(1) Structural Aspects of Operation Maintenance

According to the response to our questionnaire, there is an ongoing trend for activities by community members to increase their proactive behavior and ownerships related to the schools. O&M including repair work and the like of primary school facilities in the nation is basically performed with the cooperation of village heads, educators and parents' associations, and no special arrangements or change were made for O&M of the project schools.

(2) Technical Aspects of Operation Maintenance

The same as is the case for existing primary school facilities, in the case of this project the requirements for maintaining functionality of toilets and maintaining hygienic conditions the O&M involved consists of cleaning and routine care, repair of furniture, and painting of the interior and exterior, tasks that do not require a high level of technical ability on the part of villagers. However, according to the response from the executing agency, problems of facilities O&M that could not be resolved by the villagers occurred at some schools. It is thought that the reason O&M of facilities could not be done in these cases is the absence of a suitable technician.

(3) Financial Aspects of Operation Maintenance

The system in Laos is such that each primary school, in principle, is the property of its village, and, fundamentally, the use of the buildings and facilities as well as their O&M are the responsibility of the villagers and school-related persons. O&M expenses necessary for buildings covered by this project would be for cleaning the water tank once in two years, constructing a new infiltration tanks every four years, painting, repairs of desks and chairs, cleaning implements, water supply for toilets during the dry season. Expenses for these are properly borne by the villagers. Some labor is required for these tasks but if it can be obtained the financial burden of the villagers would be low. However, according to the executing agency, it is difficult to undertake O&M because of shortfalls in the collection of money from community residents to pay for repairs, and it is thought that in some villages it has not been possible to collect sufficient funds from residents to ensure adequate O&M.

(4) Current Status of Operation Maintenance

The equipment and facilities acquired under this project are being fully utilized but according to the executing agency at some schools it has not been possible to obtain sufficient funds and voluntary labor from the community residents, making O&M difficult to

accomplish. It is thought that because of this at some facilities there is now need for repairs.

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

## Simplified Ex-Post Evaluation for Grant Aid Project

Evaluator, Affiliation	Miho Kawahatsu Waseda Research Institute Corporation (WRI)	Duration of Evaluation Study
Project Name	The Project for Strengthening Regional Education and Training Institutions for Nurses and Primary Health Care Workers in the Lao People's Democratic Republic	January 2010 – December 2010

### I Project Outline

Country Name	The Lao People's Democratic Republic	
Project Period	June 2004-November 2005	
Executing agency	The Ministry of Health	
Project Cost	Grant Limit: 546 million yen	Actual Grant Amount: 545 million yen
Main Contractors	Mitsui Sumitomo Construction Co., Ltd.	
Main Consultants	Pacific Consultants International	
Basic Design	March 2004	
Related Projects (if any)	JICA, "Project for Human Resource Development of Nursing/Midwifery" (2005-2010) (Technical Cooperation Project)	
Project Background	<p>"Health Development Plan Toward Year 2020 and 2010" and the "Health Development Plan 2001-2005" of Laos state that that human resource development is one of the most important contributing factors to attain its sectoral goal. Strengthened primary health care service through improvement of the service quality provided by nurses and health workers in rural areas has an impact on the overall health status in the country. Especially, five Public Health Schools and the College of Health Technology (currently, Department of Nursing, University of Health Sciences) should primarily provide such education. Yet, the physical condition of the facilities and equipment in those institutions are not adequate to appropriately meet the demand for education and in-service training for nursing and healthcare work. Therefore, the government of Laos requested Japan to help improve the health educational environment, by rehabilitation of these institutions, which was considered urgent and given high priority.</p>	
Project Objective	To newly construct and renovate facilities of five public health schools as well as to provide equipment to the five schools and College of Health Technology, in order to improve the quality of primary health care services in rural area in Laos.	
Output[s] (Japanese Side)	<ol style="list-style-type: none"> <li>1. Construction and renovation school facilities               <ul style="list-style-type: none"> <li>Oudomxay Public Health School; new construction of 3 classrooms, 1 demonstration room, 1 library, 1 restroom</li> <li>Luangprabang Public Health School; new construction of 1 demonstration room, 1 restroom, and renovation of 4 classrooms, 2 English room</li> <li>Khammuane Public Health School; new construction of 2 classrooms, 1 demonstration room, 1 library, 1 restroom, and renovation of 2 classrooms</li> <li>Savannakhet Public Health School; new construction of 3 classrooms, 1 demonstration room, 1 restroom, and renovation of 1 large classroom and 1 small classroom</li> <li>Cahmpasak Public Health School; renovation of 6 large classrooms, 1 small classroom, 1 demonstration room, 5 dormitory rooms, 1 storage, 2 restrooms</li> </ul> </li> <li>2. Provision of equipment for Oudomxay Public Health School; Luangprabang Public Health School; Khammuane Public Health School; Savannakhet Public Health School; Cahmpasak Public Health School; Collage of Health Technology (Dept. of Nursing, University of Health Sciences)               <ul style="list-style-type: none"> <li>2-1. Equipment to learn basics of nursing through in-school practice                   <ul style="list-style-type: none"> <li>Anatomical Human body, Human Skelton, Pregnant Uterus Model, Phantom for Delivery, Injection Simulator, Resuscitation Simulator, Binocular Microscope</li> </ul> </li> <li>2-2. Equipment used in the classroom lecture                   <ul style="list-style-type: none"> <li>Overhead Projector, Overhead Projector (reflection), Tape Recorder, LCD Projector System, LCD Projector system (3D)</li> </ul> </li> <li>2-3. Equipment to produce teaching materials                   <ul style="list-style-type: none"> <li>Copying Machine, Small Printing Machine, Computer with Printer, Image Acquisition equipment</li> </ul> </li> </ul> </li> </ol>	

## II Result of the Evaluation

### Summary of the evaluation

The relevance of this project is extremely high and regarding its effectiveness various activities have been carried out consistent with the initial plan. To the extent that can be judged from actual data serving as indicators at the time of the ex-post evaluation, regarding the effectiveness of the project, while we can see the importance of and potential for preparing educators for the College of Health Technology (the present Department of Nursing, University of Health Sciences) and the Public Health Schools, on a national basis the number of nurses and healthcare workers even when tabulated simply by adding the number of graduates of each school is still short of what is needed. Thus, from the viewpoint of improving the quality of regional health care, achievements have been limited. Further, while we note that there is a high degree of usage of equipment provided as part of the project, there is some concern regarding the operation and maintenance of said equipment. As has been indicated by the Ministry of Health, given the background of the increasing demand for healthcare workers in Laos, because student enrollment at targeted schools exceeds proper levels, the project itself is highly evaluated.

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

#### <Recommendations>

As recommendations to JICA, because it is believed that the development needs of this country will remain high in the future, it would be beneficial not only to ensure sustainability of the project but also for regional Public Health Schools outside the scope of the project to clearly convey to the Laotian nation the effects related to the preparation of educators that result from the connections made by this project between the Department of Nursing, University of Health Sciences) and the Public Health Schools.

As recommendations to the executing agency, mention is made of some concerns regarding operation and maintenance of the equipment procured for the project. Accordingly, in view of the increasingly important preparation of healthcare workers in the future, in order that arrangements can be established for a comprehensive, diversified system of promoting implementation that includes management, financial control and technical matters related to the Public Health Schools, it is desirable that a detailed understanding be obtained of issues related to management of the schools, and that the issues be organized into groups for study and suitable action. Also, concerning the effectiveness, not only will there be physical constraints to the capacity in terms of number of students at the schools, need exists to optimize the number of students accepted from the viewpoints of the suitable number for each course given the number of educators available, and of the quality of the education. In addition, to ensure a proper supply of funds to pay for personnel expenses required to hire and keep high-quality educators at the schools in keeping with the tie-up between the schools and the Department of Nursing, it is desirable that courses be designed that merit high evaluations from graduates who are on the job and meet for high-priority needs, as well as producing high-quality personnel so as to alleviate the shortage of skilled healthcare workers over time.

#### <Constraints of this evaluation study>

Detailed information for each of the target schools such as would be desired for evaluation purposes was not made available, for which reason it was not possible to go as far as to evaluate the results and issues at each individual school. Therefore for ex-post evaluation, the basic common points for all schools, and overall trend, are used.

### 1 Relevance

#### (1) Relevance with the Development Plan of Laos

The Health Development Plan Toward Year 2020 and 2010 and the Health Development Plan 2001-2005 of Laos states as a goal "fair and swift access to the high-quality health care services that match the needs of all of the people, by 2020," and the highest priority is assigned to basic policy for developing the human resources needed to accomplish that, and this project is consistent with the priority programs having the target year 2005.

#### (2) Relevance with the Development Needs of Laos

Within the scope of this country's improvement of the status of health care is the area of basic health care, particularly preventive and therapeutic treatment and primary health care (PHC) in regional parts of the country. To attain this, the training and qualitative improvement of nurses and PHC workers is essential. Training of nurses and PHC workers, and their re-training or refresher education are work done by the schools that this project targets, so there is consistency with Laotian development needs.

#### (3) Relevance with Japan's ODA Policy

Japan undertook a study for a health and medical service improvement plan, from March 2001 to October 2002, formulated a master plan for this sector with the horizon of 2020, and identified as a basic strategic objective the development of health care personnel and particularly the education and training of nurses.

Further, on the basis of the concept and principles of the ODA Charter through discussions with Laotian counterparts human resources development (HRD) and support for basic human needs was made an area of special importance and this project, in that context, is consistent with ODA policy in that the project is concerned with "development of practitioners and technicians" and "support for higher education," as work on behalf of BHN.

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

## 2 Efficiency

### (1) Project Outputs

The following gives changes and additions to output from the Japan side. The executing agency reports that there have been issues related to procurement of equipment, the performance of construction and installation contractors, and the effects on the total project budget of change in the yen exchange rate, which have been causes of delays in implementation and have required revision of plans.

It is thought that consideration must be given to the need and scope of the similar project in the future as to how to employ a multiple number of contractors as well as to the variety and quantity of procurement. Nevertheless, for this case, it is reported that these matters including change items were handled properly among relevant parties during the performance of work.

Changes as indicated in JICA's internal documents are as follows.

Common at all construction sites	Change in plans of the foundation, columns, beams and roofing materials
Luangprabang Public Health School	Change of roof shape for the new-construction demonstration room; addition of wooden furniture for the renovated classrooms; change of the shape of the water tank; additional work on the foundation of renovated classrooms; additional work for strengthening of pillars; change to the use of existing building materials for the trusses of the renovated classrooms; change in exterior finishing materials; additional concrete work for the under-layer of floors and tile floors
Cahmpasak Public Health School	Addition of rain gutters for dormitory roof; elimination of infiltration tank for toilets; truss removal work at dormitories and partial change and addition of materials; removal of existing earth floors, re-pouring of concrete, and addition of measures to prevent entry of ants
Khammuane Public Health School	Renovated classrooms: ; truss removal work at dormitories and partial change and addition of building materials, and addition of measures to prevent entry of ants
Savannakhet Public Health School	Renovated classrooms: ; truss removal work at dormitories and partial change and addition of building materials, re-pouring of concrete, and addition of measures to prevent entry of ants

### (2) Project Period (Project Inputs)

Combined planning and implementation: 18 months from June 2004 (E/N) to December 2005. Project was completed as planned (100% of plan achieved).

### (3) Project Cost (Project Inputs)

Total project cost, 545 million yen, or one million yen less than the 546 million yen in the E/N. Essentially on budget (98% of budget).

Both project period and project cost was mostly as planned, therefore efficiency of the project is high.

## 3 Effectiveness / Impact

### (1) Quantitative Effects

Three indicators were adopted for this project, namely (1) increase in classroom area per student at the five schools where construction work was planned (Figure 1), (2) increase in actual practice time per nursing course student at the six schools (including the College of Health Technology [now the university]) which were planned to receive equipment (Figure 2), and (3) effects attained by re-education of health school educators at the college. For (1) and (2) benchmark data for 2004 were obtained for comparison with target values.

Regarding (1), classroom area, as shown in Figure 1, the degree of achievement of target varies from school to school but at the tie of the ex-post evaluation there had been general improvement. Considering in addition the formidable increase in the number of students – this against the background of increasing demand in the health care services, these results are considered to be realistic. In particular at Luangprabang Public Health School the rate of increase of the number of students was the highest of all schools and this worked to depress the area per student.

Regarding (2), practice time per student, as shown by Figure 2 there was a moderate increase from the benchmark values at all schools but results fell far short of the target of 300 hours.

Regarding (3) it is reported that whereas there were only three persons with the bachelor degree of nursing science working as educators in 2004, the number has increased to 21, far above the target of 13, suggesting that re-education and refresher study at the university's nursing department is improving in quality.

【Figure 1】 Classroom area per student at target schools (sq m per person)

	Benchmark (2004)		Target (2006)		Actual (2010)	
	Class-Room	Demo room	Class-room	Demo room	Class-room	Demo room
Oudomxay Public Health School	0	0.57	1.40	1.87	1.2	2.0
Luangprabang Public Health School	1.01	1.01	1.58	1.87	0.94	1.33
Khammuane Public Health School	0.93	0.62	1.40	1.87	1.2	2.0
Savannakhet Public Health School	1.05	0.91	1.40	1.87	1.4	1.2
Cahmpasak Public Health School	1.44	0.96	1.44	1.92	2.0	1.3

Source: Ministry of Health data

**【Figure 2】 Actual practice time per student in nursing courses (in hours)**

	Benchmark (2004)*	Target (2006)	Actual (2010)
Oudomxay Public Health School	128	300	132
Luangprabang Public Health School			130
Khammuane Public Health School			128
Savannakhet Public Health School			132
Cahmpasak Public Health School			135
**Collage of Health Technology			135

\* The average number of 5 schools at the basic design study

\*\*Present Nursing Department, University of Health Sciences

Source: Ministry of Health

**(2) Impact (Impacts on the natural environment, Land Acquisition and Resettlement, Unintended Positive/Negative Impact)**

The libraries created at Khammuane and Oudomxay public health schools are being used by health care workers in the schools' communities, as well as by the students, and this is taken as representing a degree of spillover effects to the communities through the access now possible to health and medical information. Concerning the indirect effect, "increasing the number of nurses and primary health care workers in the nation's regions, improvement of their abilities and as a result the improvement and augmentation of health and medical practice in the regions," the lack of quantitative information for the regions prevents detailed analysis from being done.

Nevertheless, whereas there were, according to the basic design study, 11,195 health care workers in the nation as of 2002, data from the Ministry of Health that gives the figure for 2010 as 12,422 means there has been only a slight increase. Further, at the time of project planning the number of nurses in 2002 was 5,175 (at which time the number required was estimated at 8,391). If the number of graduates since then year is added to this the total obtained is 6,516 (a shortfall of 1,875). The Ministry of Health reports that in 2010 there were 5,570 nurses (a shortfall of 2,821), from which we can observe that the shortage is a chronic condition.

Further, including the effect on cultural legacies of construction at the Luangprabang Public Health School, there have been no reports of problems related to the environment, relocation of residents or acquisition of land.

This project has somewhat achieved its objectives, therefore its effectiveness is fair.

**4 Sustainability**

**(1) Structural Aspects of Operation Maintenance**

Subsequent to implementation of this project, the required policy support to ensure its sustainability has been provided by the central and local governments, and there are ongoing increases in education and practical training of midwives and primary health care workers as undertakings initiated by the health schools on behalf of their communities. Moreover, according to the Ministry of Health the construction done and equipment supplied under this project have led to improvement of the income earned by the health schools. Although the cause is not known, overall, even though the number of students has increased, there have been decreases in the number of educators and administrative staff since the basic design study.

**(2) Technical Aspects of Operation Maintenance**

At the time of project planning, it was not expected that there would be need for large-scale introduction of new technology as it was thought that the project would make maximum use of existing facilities and equipment, and up to this time there have been no complicated issues regarding techniques arisen. Moreover, it is reported that training in the O & M of medical equipment is being provided in the curriculum at the five health schools. However, it is reported that it is hard to retain suitable technicians for repair and O & M of the equipment.

**(3) Financial Aspects of Operation Maintenance**

At present, the cost of O & M of equipment at the five health schools is covered by funds from the central government budget and from tuition or other fees paid by students. According to reports from the five schools, the 2010 budget is ranged from 1.5 to 6.5 times greater than at the time of project planning. Also, as the plan did not anticipate a great increase in utilities cost or O & M cost of the new facilities and equipment, it was not expected that the new facilities and equipment would create a significant financial burden, while on the other hand a shortage of Ministry of Health budget funds and insufficient income are reported to have led to difficulty in managing and repairing the equipment, and in cases when a school's income has imposed restraints it has not been possible to allocate adequate funds for such activities, causing concern that the equipment may become unusable.

**(4) Current Status of Operation Maintenance**

According to the Ministry of Health, the equipment and facilities provided by this project are being fully utilized but because of the increase in the number of students and increased use of the facilities and equipment, management and repair has become difficult.

Some problems have been observed in terms of financial aspects as well as in the current status of O & M, therefore sustainability of the project effects is fair.



## Simplified Ex-Post Evaluation for Grant Aid Project

Evaluator, Affiliation	Masaaki Shiraishi Waseda Research Institute Corporation (WRI)	Duration of Evaluation Study
Project Name	The Project for Establishment of Disastrous Weather Monitoring System in Vientiane in Lao People's Democratic Republic	January 2010 – December 2010

### I Project Outline

Country Name	Lao People's Democratic Republic																																	
Project Period	August 2004-December 2005																																	
Executing agency	Department of Meteorological and Hydrology (DMH), Ministry of Agriculture and Forestry Department of Civil Aviation, Air Navigation Division (DCA), Ministry of Communication, Transport, Post and Construction																																	
Project Cost	Grant Limit: 736.0 million yen	Actual Grant Amount: 735.6 million yen																																
Main Contractors	Marubeni Corporation																																	
Main Consultants	Japan Weather Association																																	
Basic Design	June 2004																																	
Related Projects (if any)	JICA, "the Project for Meteorological and Hydrological Services Improvement" (2006-2011) (Technical Cooperation Project) JICA, "the Project for Air Traffic Safety Improvement Project" (2006-2009) (Technical Cooperation Project)																																	
Project Background	Lao People's Democratic Republic can be often threatened by severe rain and strong wind in the country. The mountainous areas in the northern and central part of the country receive more than 3,000 mm of annual rainfall. As well, highly humid wind blows from the Indian Ocean into the country and a tropical depression or typhoon approaching from the South China Sea strengthens the influx of the wet air. People in Laos suffered from heavy floods along the Mekong River and its branch rivers, lightning accidents, strong wind disaster, and even aircraft accidents. DMH, responsible for monitoring and forecasting weather conditions, disaster management are insufficient, needed to upgrade related systems and equipment.. Therefore, the government of Laos requested Japan to provide and rehabilitate various facilities for facilitating disaster control.																																	
Project Objective	To improve weather monitoring and forecasting system, making it possible to provide more timely information, among the improvements, by use of technologically advanced facilities and equipment, in order to better cope with and mitigate meteorological disaster.																																	
Output[s] (Japanese Side)	<table border="0"> <tr> <td>Major Equipment List</td> <td>Major Construction (Building and Installation)</td> <td></td> </tr> <tr> <td>- Meteorological Radar System</td> <td>- Radome Room</td> <td>30.17 m<sup>2</sup></td> </tr> <tr> <td>- Meteorological Radar Data Display System</td> <td>- Radar Equipment Room</td> <td>32.04 m<sup>2</sup></td> </tr> <tr> <td>- Meteorological Data Communication System</td> <td>- Weather Observation &amp; Forecasting Room</td> <td>75.27 m<sup>2</sup></td> </tr> <tr> <td>- Meteorological Satellite Data Receiving System</td> <td>- Maintenance Room</td> <td>24.70m<sup>2</sup></td> </tr> <tr> <td>- Meteorological Satellite Data Receiving System (for Vientiane International Airport)</td> <td>- Data Room</td> <td>10.09 m<sup>2</sup></td> </tr> <tr> <td></td> <td>- Toilets</td> <td>12.61 m<sup>2</sup></td> </tr> <tr> <td></td> <td>- Engine Generator Room</td> <td>19.61 m<sup>2</sup></td> </tr> <tr> <td></td> <td>- Electricity Room (incl. 2 EPSs)</td> <td>9.25 m<sup>2</sup></td> </tr> <tr> <td></td> <td>- Radar Power Backup Room</td> <td>8.16 m<sup>2</sup></td> </tr> <tr> <td></td> <td>- Storage</td> <td>2.40 m<sup>2</sup></td> </tr> </table>	Major Equipment List	Major Construction (Building and Installation)		- Meteorological Radar System	- Radome Room	30.17 m <sup>2</sup>	- Meteorological Radar Data Display System	- Radar Equipment Room	32.04 m <sup>2</sup>	- Meteorological Data Communication System	- Weather Observation & Forecasting Room	75.27 m <sup>2</sup>	- Meteorological Satellite Data Receiving System	- Maintenance Room	24.70m <sup>2</sup>	- Meteorological Satellite Data Receiving System (for Vientiane International Airport)	- Data Room	10.09 m <sup>2</sup>		- Toilets	12.61 m <sup>2</sup>		- Engine Generator Room	19.61 m <sup>2</sup>		- Electricity Room (incl. 2 EPSs)	9.25 m <sup>2</sup>		- Radar Power Backup Room	8.16 m <sup>2</sup>		- Storage	2.40 m <sup>2</sup>
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### II Result of the Evaluation

Summary of the evaluation
<p>This project is basically in line with the essential policies and development needs of Laos, and Japan's ODA policy as well, therefore, validity of the project is high enough. And the project has been implemented almost as planned, thus efficiency is also high. Effectiveness in terms of the outcome of the project has developed as expected, particularly the information service for "Agricultural Disasters Information" and "Crop Harvest Forecast" which have been highly appreciated. While in terms of sustainability, DMH staff members feel worried about lack of basic knowledge of science, difficulties in operation, maintenance and application of the advanced equipment are expected. Although it may not seriously affect daily operation and maintenance work at present, improvement in regard to capacity is required, The project are highly appreciated by DMH particularly for the contribution in agro-meteorological areas, but no outcome development in aviation area can be confirmed at this time because of not receiving any information from DCA.</p> <p>In light of the above, this project is evaluated to be satisfactory.</p> <p>&lt;Constraints of this evaluation study&gt; Although a Questionnaire Sheet has been sent to DMH and DCA, a reply has been given only by DMH, therefore, this evaluation have been made based on the information given from DMH.</p>
1 Relevance

(1) Relevance with the Development Plan of the Lao PDR

At the time of planning the project, the subject of the development of collection and dissemination of meteorological and hydrological observation data had been mentioned in the Fifth Five-year Development Strategy Plan (2001~2005), and in the development plan of Ministry of Agriculture and Forestry, "DMH Development Plan 2001~2010." At the time of the ex-post evaluation, though no directly related policy is seen in the Sixth Five-year Development Strategy Plan (2006~2010), under the policy of continuous investment for social and economic infrastructures, improvement in the navigational field is emphasized as an important area. Following the DMH Development Plan as above, the "DMH Strengthening Plan 2005~2008" has been formulated with assistance by WMO (World Meteorological Organization). Further, in July 2007, DMH was transferred from being an agency of the Ministry of Agriculture and Forestry to being an organ under the Prime Minister's Office with new name of WREA (Water Resources and Environment Administration). The WREA has become the principal organ to implement the National Integrated Water Resources Management Programme network, and is increasingly important in that role. As stated above, water resources management and development and disaster prevention are essential policy themes in the country, and therefore, this project is very much relevant to the state's policy.

(2) Relevance with the Development Needs of the Lao PDR

Prevention and mitigation of the meteorological disasters in the central and southern part of the country had been long term development needs for Laos. In recent years, due to an increase of aircraft accidents in keeping with an increase in air traffic, timely information service on meteorological disturbances have become a new need for traffic security. Further, irrigation and water resource management are essential services that may directly affect agricultural production activities in the prime industry of the country. Therefore, accurate provision of meteorological and hydrological forecast and alarm by the project meets the development needs of the country.

(3) Relevance with Japan's ODA Policy

In Japan's ODA White Paper 2004, assistance for the prevention and mitigation of damage by natural disasters such as flood, drought, typhoon, etc. is emphasized as a part of social and economic infrastructure development programs. In particular, Mekong Basin is one of the important strategic areas. Further, this project meets two basic infrastructure needs, agriculture and forestry (water resources management) and infrastructure development (flood control), out of the four strategic priority ODA areas emphasized in the Country-wise Data Book of Japan (2005).

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

2 Efficiency

(1) Project Outputs

Consistency of items and quantities of equipment and services between plans (the Major Equipment List in the Basic Design) and actually purchased equipment items are difficult to verify, because different classification methods and serial numbers have been used. However, no deficiencies in actually delivered equipment and installation performance have been reported, and all equipment and services have been received, as per the reply by DMH, and therefore, it is judged that all supplies and services for the project have been properly provided. One projector supplied under the project was stolen just after the completion of the project, but it has been by repurchase by the executing agency's own funds.

(2) Project Period (Project Inputs)

The project implementation period of 18.2 months has been shorter than planned 19 months. (95.8%)

(3) Project Cost (Project Inputs)

The actual project cost of 735.6 million Japanese yen was lower than the planned budget of 736 million Japanese yen. (99.95%)

Both project period and project cost were mostly within the plan, therefore the efficiency of the project is high.

3 Effectiveness / Impact

(1) Quantitative Effects

As per attached Table-1 received from DMH, except slight under-achievement in observation distance of atmospheric disturbance of 240km against 250km as planned, other quantitative targets have been attained. Therefore, the facilities supplied under the project are justified as being managed as technically instructed by Japanese experts in the time of project implementation.

(2) Impacts (Impacts on the Natural Environment, Land Acquisition and Resettlement, Unintended Positive/Negative Impact)

Outcomes including compilation of a database of meteorological observation data by DMH counterparts, utilization of analyzed data for planning of prevention of disasters, information exchange with the MRC (Mekong River Commission) and strengthening of collaboration with regional organizations, enhancement of rainfall monitoring capacity in Mekong River Basin have been effectively developed. Among others, very highly-regarded outcomes of the project are agricultural disaster information and crop harvest prediction. Further, reportedly, increased expenditure for electric power consumption incurred by continuous operation of the facilities is a negative impact on the management of implementation agency. As above, it is justified that the required function and role of the meteorological and weather station have been fulfilled satisfactorily. In regards to the burden of power charge, it is firstly necessary to evaluate incremental costs versus benefits due to this project, before an energy saving study. Moreover, because of lack of a reply from DCA, outcome and impact by the project concerning aviation weather observation have not been evaluated.

This project has somewhat achieved its objectives, therefore its effectiveness is fair.

#### 4 Sustainability

##### (1) Structural Aspects of Operation and Maintenance

At the time of project planning, DMH was an organization of the Ministry of Agriculture and Forestry, but in July 2007 it was transferred to the Prime Minister's Office with the new name of Water Resources and Environment Administration (WREA). This organizational change has been made according to a new policy to unify controls of water resources and environment. Under this reform, the Agricultural Weather Section has been transferred from the Meteorological Network Division to the Climatological Division, and this have caused partly modification in the working shift system which has been recommended in the Basic Design at the time of project planning, i.e., abolishment of second shift engineers, attendance of a forecast manager on the first shift of Saturday and Sunday, abolishment of staff assignments in the data communication section, weather monitoring section and aviation weather section in the second shift on Saturday and Sunday, but no report has been provided about consequences in terms of affecting meteorological observation activities by such changes in the operation shift.

##### (2) Technical Aspects of Operation and Maintenance

After the completion of the project, technical training and practice on operation and maintenance of the facilities have been conducted with assistance of JICA experts in 2008 and 2009. Further, successive training by JICA senior volunteer experts are planned in 2010 and 2011. Major subjects of training are; basic knowledge on electronics and function of radar; daily, monthly and semi-annual maintenance and operation technologies; testing tools and measurements of signals and performance; trouble shooting method. Trainees who completed such a training course are as per attached Table-2. A comment from DMH on the training has been provided that states that due to lack of basic knowledge of mathematics, physics, English, electronics, ICT, etc., it is difficult to understand the teaching by Japanese experts, therefore, further continuous assistance of technology transfer is required. In this regards, however, meteorological observation activities and its products (weather information, forecast, etc.) have been performed as instructed by manuals, and on several instances programs of science and mathematics education have been conducted. Nevertheless, it might be still necessary to enhance the quality of counterpart staff in the stage when DMH activities would progress to advanced stage to utilize data and information for new applications such as prevention and forecast of flood disasters.

##### (3) Financial Aspects of Operation and Maintenance

Responding to the question to DMH concerning financial status, they replied that all of required expenditures will be disbursed by the government. Since it is inferable that required expenses are fully budgeted, no constraints in financial sustainability are identified.

##### (4) Current Status of Operation and Maintenance

This project is thought to have been performed smoothly except some technical challenge.

Some problems have been observed in terms of technical aspects, therefore sustainability of the project effects is fair.

【Table-1】 State of Target Attainment

Index Item			Baseline	Target		Actual Performance			Attainment
			2004	Target Year	Target Level	2006	2007	2008	
1	Precipitation Monitoring Capability	Spacial Resolution	115km	2006	2.5km	2-3 km	2-3 km	2-3 km	Attained
		Time Resolution	3 hours	2006	10 min.	10 min.	10 min.	10 min.	Attained
2	Weather Monitoring Frequency		3 hours	2006	1 hour	1 hour	upto 15 min	upto 15 min	Attained
3	Atmospheric Disturbance Observation (air control)		20km (Visual)	2007	250km (Lader)	240 km (Lader)	240 km (Lader)	240 km (Lader)	96%
4	Frequency of Alarm Information Service		1-2 times /day	2008	Increase of service time				Not Replied
					On time and rapid service			On time and rapid service	Attained
5	Issuance of Air Turbulence Warning		Unadministered	2008	Real time warning			Real time warning	Attained
6	Lead Time for Water Level Forecast		To next day	2008	To 3 days after	To next day	2 days	3 days	Attained

【Table-2】 Training by JICA after 2008

Training Subject	Unit	2008	2009	2010	2011
		JICA Expert		Senior Volunteer	
Operation and Maintenance	Person	6	6	Scheduled	
Data Application (Forecaster)	Person	8	8	Scheduled	
Maintenance of IC Equipment and Rader	Person	-	-		Scheduled



## Simplified Ex-Post Evaluation for Technical Cooperation Project

Evaluator, Affiliation	Akihiro Nakagome, Akemi Shimura Ernst & Young Advisory Co., Ltd.	Duration of Evaluation Study
Project Name	Palau International Coral Reef Center Strengthening Project	February 2010 – December 2010

### I Project Outline

Country Name	Republic of Palau		
Project Period	October 2002-September 2006		
Executing Agency	Palau International Coral Reef Center (PICRC)		
Cooperation Agency in Japan	Ministry of the Environment, Japan Wildlife Research Center, Establishment of Tropical Marine Ecological Research, Marine Science Museum Fukushima Prefecture, Yokohama Hakkeijima Sea Paradise		
Total Cost	326 million yen		
Related Projects (if any)	The Project for Establishment of Palau International Coral Reef Center (2000-2001), The Capacity Enhancement Project for Coral Reef Monitoring (2009-2012), Japan Overseas Cooperation Volunteers (JOCV) for Environmental Education		
Overall Goal	Conservation and sustainable use of coral reef ecosystem and related biota in Palau are improved.		
Project Objective	To attain self-sustainability of PICRC, the center's administrative, research, exhibition, and education capacity are strengthened.		
Output[s]	<ol style="list-style-type: none"> <li>1. PICRC is administrated in organized and planned manner.</li> <li>2. Aquarium is self-sustained in exhibition, operation, and maintenance.</li> <li>3. Coral reef research and monitoring function is firmly established.</li> <li>4. Education division is capable of conducting environmental education on coastal resources for students and communities.</li> </ol>		
	Inputs (Japanese Side)	Inputs (Palawan Side)	
Experts	5 for Long term, 15 for Short term	Staff allocated	16
Equipments	351,000 US dollar	Equipments	Existing equipment
Local Cost	515,672 US dollar	Local Cost	-
Trainees Received	11	Land etc provided	Land and facilities of PICRC
Others	2 of JOCV	Others	450,000 US dollar of annual budget from the Government

### II Result of the Evaluation

Summary of the evaluation
<ul style="list-style-type: none"> <li>• PICRC, an institution for research on and the protection of coral reefs, has an important role to play in industry promotion and environmental protection in Palau. Therefore, the relevance of this project is high.</li> <li>• This project helped PICRC enhance its operation and management abilities and research skills, and since the implementation of the project, PICRC has indeed gained recognition among tourists to Palau and research institutions and environmental protection organizations, both at home and abroad. As a result, now that PICRC plays this role in the protection of coral reefs, especially in Micronesia, the effectiveness of this project is high.</li> <li>• In this project, appropriate inputs were provided for the outputs and objectives to be reached, except in the area of education and public relations. In terms of education and public relations, a judgment cannot be made as to whether sufficient inputs were provided for the objectives to be achieved, including whether experts had to be sent to Palau. The effectiveness of the project, therefore, is judged to be fair.</li> <li>• PICRC has most of its operating expenses financed through subsidies from the government. With the probability of a reduction in these subsidies, the sustainability of the effects of this project is judged to be fair.</li> </ul> <p>In light of the above, this project is evaluated to be satisfactory.</p> <p>&lt;Recommendation to PICRC&gt;</p> <ul style="list-style-type: none"> <li>• It is desirable that efforts be continued to increase income from sources other than government subsidies.</li> </ul> <p>&lt;Recommendations to JICA&gt;</p> <ul style="list-style-type: none"> <li>• As most of the project design matrix (PDM) indicators lacked a quantitative definition for them, with some represented by abstract terms, such as "stable" or "without major disruption," there were some cases where a single criterion to be used in judging how well an output had been achieved was applied twice to two different indicators. For this PDM, several indicators were set for a single output, so there was no problem in terms of the evaluation. However, in order to adjust the composition of the PDM and clarify the outputs to be reached, it seems to have been necessary to revise the PDM during the implementation of the project or at the time of the mid-term evaluation.</li> <li>• As pointed out in the terminal evaluation, the project had such a wide range of coverage that it failed to achieve some of the outputs in the field of education and public relations, for which no expert was sent to the country. In order to secure the accomplishment of the project outputs, it seems that a selection should have been made at the planning stage in terms of the range of cooperation to</li> </ul>

be offered. During the project, some of the Japan Overseas Cooperation Volunteers (JOCVs) sent to PICRC carried out after-school programs at schools in the local communities. This fact suggests that even when there was no likelihood of experts for education and public relations being sent to the country, the aid framework, including the JOCVs' activities, could have been reviewed so that they worked in the field of education and public relations to achieve the outputs of the project.

## 1 Relevance

### (1) Relevance with the Development Plan of Palau

The Palau 2020 National Master Development Plan, formulated in 1996, mentions the systems to be maintained to preserve the natural marine environment for tourism and culture as one of the development strategies for the continuous improvement of the people's quality of life in Palau.

### (2) Relevance with the Development Needs of Palau

For Palau, coral reefs are important natural resources as fishery sources, seawalls, and tourism assets. PICRC is expected to play an important role in research on and the protection of coral reefs. However, at the time of planning of this project, shortly after its inauguration in January 2001, PICRC had not yet acquired sufficient capacity to develop as an independent organization.

### (3) Relevance with Japan's ODA Policy

Japan and Palau have maintained a close relationship in the fishery industry. This started when the former governed the latter as a part of the South Sea Islands, and was strengthened with the Non-governmental Fisheries Agreement that they concluded. The Miyazaki Initiative, announced in April 2000 at the Second Japan-South Pacific Forum Summit Meeting, referred to the preservation of coral reefs as one of the common challenges, declaring that Japan would provide aid to make PICRC a center of cooperation for coral reef protection.

In the light of the above, 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.

## 2 Effectiveness / Impact

### (1) Achievement of Project Outputs and Project Objective(s)

This project transferred to PICRC the techniques for operation and management of PICRC, the displays, operation and management of its aquarium, the research on and monitoring of coral reefs, and education and public relations about the environment for local communities, and with these techniques it is now able to study coral reefs, provide technical support for domestic environmental protection organizations, and produce scientific literature and international reports. Its staff, having obtained advanced skills, can work by themselves at the affiliated aquarium for its displays, operation and maintenance. With a larger number of staff assigned to it, and training and job experience accumulated among its workers, who in the process have acquired more and better skills than before the project, PICRC is being operated and managed more smoothly. Although PICRC still relies on subsidies from the government as a source of income, having failed to secure financial independence, it earns more by itself than before the project. In terms of education and public relations for local communities, however, the project failed to achieve some of its outputs. It can be said, therefore, that the project succeeded in achieving most of its outputs, with some failures.

In this project, PICRC has achieved considerable advancement in its capabilities regarding aquarium operation and research, and also improved its organization to become better qualified for education and public relations. The judgment is that, therefore, most of the project objectives have been achieved.

### (2) Achievement of Overall Goal, Intended and Unintended Impacts

With the studies it has conducted jointly with other institutions, and its theses published in scientific journals, PICRC has gained recognition around the world among the parties concerned. Data it collects using the techniques that were transferred to it, such as GIS-related technologies, which it needs to monitor coral reefs, are also effectively used for other purposes, for instance, by the central government for a wind power generation project or ordinary weather forecasting.

In the light of the above, this project has largely achieved its objectives, therefore its effectiveness is high.

## 3 Efficiency

### (1) Outputs

As stated above under (1) of "Effectiveness / Impact", this project has produced most of the outputs originally planned.

### (2) Elements of Inputs

Inputs into this project were provided as stated in the "Project Outline." In terms of the experts to be sent, some alterations were made (coral and fish rearing) and some divergence from PICRC's needs was identified (GIS database management), but the outputs have also been achieved in the fields for which the experts were responsible. In the field of education and public relations, it is unknown whether the inputs needed to achieve the expected outputs were actually provided, as seen in the fact that no expert in this field was sent to Palau. As the analysis conducted for the terminal evaluation concluded that, the "inputs were all provided efficiently in terms of quality, quantity and timing," it can be said that, after all, the outputs were achieved with no substantial effects from the lack of contribution from such inputs, other than education and public relation for local communities, as discussed above.

### (3) Project Cost, Period of Cooperation

The project period, designed to end in 48 months in the plan, actually ended in 48 months, just as planned (100% of the plan). The project cost, ¥329 million in the plan, actually totaled to ¥325 million, lower than planned (98.8% of the plan).

In light of the above, as some of the inputs that were provided to this project seem inappropriate for the achievement of outputs and project objectives, its efficiency is fair.

## 4 Sustainability

(1) Related Policy towards the Project

As seen in the fact that no revision has been made so far to the Palau International Coral Reef Center Enabling Act, Environmental Quality Protection Act, Marine Protection Act, or any other act concerned, the system of policies necessary to maintain the effects of the cooperation have already been established.

(2) Institutional and Operational Aspects of the Executive Agency

No change has been made in PICRC's position in the organization or in any part of its structure. Most of the counterparts who underwent training in this project have already resigned, but a sufficient number of replacements have been employed, so that the systems and people required to continue the effects of the project and operate and maintain its facilities and equipment can be secured.

(3) Technical Aspects of the Executive Agency

PICRC's employees and researchers work among and with the staff of the state government to share and maintain their skills. They also conduct joint studies with research institutions overseas to enhance their expertise. This demonstrates that there is nothing to be concerned about in terms of the technical aspects of PICRC.

(4) Financial Aspects of the Executive Agency

This project enabled PICRC to earn more from its own sources of income, but since the completion of the project, PICRC's revenues have failed to grow. PICRC still depends largely on government subsidies for its operating expenses. In addition, government subsidies for fiscal 2009 (the year beginning from October 2009) were cut by 5.6% compared to the preceding year. There is some concern about whether PICRC will be able to secure sources of income that it will need to preserve the effects of the project and operate and maintain its facilities and equipment.

(5) Continuity of Effectiveness and Impact

PICRC is playing a central role in the protection of coral reefs in Micronesia. Its research has yielded outputs that are being effectively used for environmental protection efforts within and outside Palau. A technical cooperation project is now being carried out to support the monitoring of coral reefs. Once its staff are trained through the human resources development programs offered in this project and obtain the scientific techniques for monitoring, PICRC will be regarded as a hub institution for research on and the protection of coral reefs in the entire region of Micronesia. The necessary maintenance is carried out for the equipment it was granted in the project, so the effects that were observed at the time of the terminal evaluation are judged to have remained as they were at ex-post evaluation.

In the light of the above, some problems have been observed in the financial aspects of the executing agency, therefore, sustainability of the project effects is fair.





## Simplified Ex-Post Evaluation for Grant Aid Project

Evaluator, Affiliation	Akihiro Nakagome, Keisuke Nishikawa Ernst & Young Advisory Co., Ltd.	Duration of Evaluation Study
Project Name	The Project for Upgrading of Electric Power Supply in Tarawa Atoll (Phase II)	February 2010 – December 2010

### I Project Outline

Country Name	Republic of Kiribati	
Project Period	July 2004-December 2005	
Executing Agency	Public Utilities Board (PUB)	
Project Cost	Grant Limit: 796 million yen	Actual Grant Amount: 795 million yen
Main Contractors	(Procurement) Mitsubishi Corporation	
Main Consultants	Yachiyo Engineering Co., Ltd.	
Basic Design	May 2004	
Related Projects (if any)	<p>&lt; TECHNICAL COOPERATION &gt;</p> <ul style="list-style-type: none"> <li>• Acceptance of energy-sector researchers</li> </ul> <p>&lt; GRANT AID &gt;</p> <ul style="list-style-type: none"> <li>• The Project for Upgrading of Electric Power Supply in Tarawa Atoll (Phase-I)</li> <li>&lt; Other international cooperation and aid agencies, etc.&gt;</li> </ul> <p>(1) Australian Agency for International Development (AusAID)</p> <ul style="list-style-type: none"> <li>• 1994/95 Construction of Bikenibeu Power Station No. 1 and 2</li> <li>• 1997-July 2000: Tarawa Distribution Network Rehabilitation Plan (Phase I: Technical guidance on operation and maintenance)</li> </ul> <p>(2) Asian Development Bank (ADB)</p> <ul style="list-style-type: none"> <li>• 1988 Procurement of the Besio Power Station No. 8 (Wartila: 1,080 kW; one unit)</li> <li>• 1990 Extension work of a 11 kV distribution line (from South Tarawa to Nabeina District, North Tarawa)</li> </ul>	
Project Background	<p>In its National Development Strategies (2004-2007), the Republic of Kiribati recognized the need to renew its power generation and distribution facilities to improve power supply conditions in the country. However, for Kiribati, which is in financial distress, it was difficult to raise funds by itself and construct such facilities. In fact it barely managed to maintain the power supply to the capital by extending the life of the existing facilities and obtaining spare parts. At its power stations, with decrepit power generation facilities as old as 27 years or more since their construction, failures and accidents often took place. In 2002, a fire broke out, forcing some power stations to halt operation. Under such conditions, Kiribati suffered a substantial decline in its power generation capacity.</p>	
Project Objective	<p>To construct power generation facilities and develop a distribution network for securing a highly reliable and stable power supply and to promote electrification in unelectrified areas with a view to realizing a better quality of life for the people, a stable operation of social and public facilities and the revitalization of industries in South Tarawa, which is the economic and social center of Kiribati.</p>	
Output[s] (Japanese Side)	<p>(1) Power station expansion (diesel engines, generators, electrical equipment, mechanical equipment, spares for the power generation facilities, maintenance tools for the power generation facilities, and repair tools included)</p> <p>(2) Distribution network development (distribution substations, circuit breaker panels, high-voltage cables, spares, maintenance tools, and trucks equipped with cranes for maintenance work)</p>	

### II Result of the Evaluation

Summary of the evaluation
<p>This project was carried out to solve the power supply problems of Kiribati, which was facing the need to expand its power generation and distribution facilities. The project was therefore relevant with Kiribati's development policies and needs, and with Japan's ODA policy at that time. The project was completed as planned in terms of the outputs, project period, and project cost, demonstrating its high efficiency in implementation. It can also be rated high in its effectiveness and impacts as it yielded a certain degree of effects, such as great improvements in securing a balance between power supply and demand and reducing voltage drops, and it also helped to substantially improve the operation of public facilities and the life of the people. In terms of the environment impact, there seem to be no problems caused by the project. As for the sustainability of the project, the problem of a shortage of qualified people must be resolved. However, the power supply facilities constructed under this project are generally maintained well in terms of the technical and financial conditions, and no major problem was found in their operation or in the maintenance work.</p> <p>In light of the above, this project is evaluated highly satisfactory.</p> <p>&lt;Recommendations&gt;</p> <p>To solve the problem of the shortage of engineers, it is desirable that closer cooperation be established with the Kiribati Technical College for the purpose of developing human resources from the long-term perspective.</p>

## 1 Relevance

### (1) Relevance with the Development Policy of the Republic of Kiribati

The National Development Strategies (2004-2007), a plan Kiribati had in place when this project was designed, recognized that tight power supply conditions in its capital could not be improved without renewing its power generation and distribution facilities. The Kiribati Development Plan (2008-2011), the current program, also mentions the need to develop the infrastructure for economic development among its strategies. The development of the power supply infrastructure has always been rated as an important issue among its development policies.

### (2) Relevance with the Development Needs of the Republic of Kiribati

In South Tarawa, which is the capital as well as the economic, industrial and administrative center of Tarawa, a stable power supply was critical to its economic and social development. However, the construction and upgrading of electricity facilities to raise the quality of people's lives has lagged behind. At the time of the ex-post evaluation, the stable power supply has also had a considerable impact on the economy and society by providing an important foundation. This project, therefore, is quite relevant with the development needs of Kiribati.

### (3) Relevance with Japan's ODA Policy

When the project plan was formulated, Japan had declared that for island countries in the entire Pacific Area, not only for the Federated States of Micronesia, "(Japan should work to) develop the economic and social infrastructure that should serve as a foundation for their economic and social activities and help them overcome the dispersion and geographical remoteness that they experience," and provided Kiribati with assistance for infrastructure development as a priority area. The implementation of this project is relevant with this policy.

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

## 2 Efficiency

### (1) Project Outputs

The outputs from the Japanese side were generally delivered as planned.

### (2) Project Period

The project was designed to be completed in 20 months in the basic design study and it was actually completed in 17 months, which was shorter than the planned period (85% of the plan).

### (3) Project Cost

The project was designed to cost 796 million yen in the original plan, but actually cost 795 million yen, which was lower than the planned amount (99.9% of the plan).

Both project period and project cost were mostly as planned, therefore efficiency of the project is high.

## 3 Effectiveness / Impact

### (1) Quantitative Effects

With the implementation of this project, the generation capacity increased by 1,400 kW and this added capacity has been in use ever since. Since the completion of the project, the total capacity of the power supply, combined with the capacities of other power generation facilities, has always been above the demand level. The frequency of voltage drops has fallen to below the target of 5%, with a delay of two years. The number of waiting consumers did not meet the target of zero in 2006, with 90 households still waiting, which nonetheless represented a significant decline of 78% from the level before the project. The utilization rate of the power supply facilities constructed in this project is gradually rising, with a rate of 50% in 2009, demonstrating a certain level of effects.

### (2) Impacts (Impacts on the natural environment, Land Acquisition and Resettlement, Unintended Positive/Negative Impact)

According to the responses from the executing agency, the stable power supply delivered through the implementation of this project has achieved a substantial decline in power cut/outage at public facilities, which can now be operated in a more reliable manner than before the project. In people's lives, significant effects from the power supply can be seen, for instance, in the fact that 24-hour stores and gas stations have appeared. In terms of the environment, an environmental impact assessment was carried out before the project to examine the level of noise, the systems to collect leaked fuel, and the quality of exhaust gases. No incident that could have imposed a burden on the environment has ever taken place. With the current regulations banning the ownership of independent generators, it can be said that in general power generation has little impact on the environment.

This project has largely achieved its objectives; therefore its effectiveness is high.

## 4 Sustainability

#### (1) Structural Aspects of Operation Maintenance

Since the implementation of this project, the power supply facilities have been operated and maintained by the power generation and distribution divisions of the Power Engineering Department, the Public Utilities Board (PUB). At the time of the ex-post evaluation, the power generation and distribution divisions had 36 and 11 operation and maintenance staff, respectively. The number of staff is much smaller than the number when this project was planned, which was 47 and 25 at the power generation and distribution divisions, respectively. This is due to personnel reductions in the public sector. According to the executing agency, it has started to hire graduates from Kiribati Technical College to increase its staff, but it is still short of staff for the distribution division.

#### (2) Technical Aspects of Operation Maintenance

Ninety-six percent of the operation and maintenance staff have work experience of five years or more and have no problems in conducting daily checkups and regular inspections of the facilities that have been in operation for less than 6,000 hours. With on-the-job training (OJT) provided and manuals produced during the project period, the engineers have acquired a sufficient level of operation and maintenance abilities, according to comments made by the executing agency and consultants. The executing agency has stated that after operation for 6,000 hours or more, the facilities are to be overhauled by an agency of the Japanese manufacturer of power generation facilities.

#### (3) Financial Aspects of Operation Maintenance

It was difficult to obtain financial information focusing on the operation and maintenance activities of the executing agency. Data concerning its general financial conditions show that the executing agency as a whole has been in deficit for years as its fuel expenses have risen sharply due to a steep rise in the oil prices, although its revenues, such as electricity charges, have also generally been on the rise in recent years. However, as the repair expenses are falling rapidly, and its personnel expenses are restrained due to the public-sector reforms, the scale of the deficit of the executing agency as a whole is shrinking. Expenses at the power generation facilities constructed in this project are leveling off, not increasing, which demonstrates a certain degree of contribution they are making to improve the financial condition of the executing agency.

Mainly for the purpose of mitigating impacts on the national economy that may take place as a result of fuel shortages caused by a sharp rise in the price of oil, Japan provided Non-Project Grant Aid in fiscal 2007. (Non-Project Grant Aid for supporting the procurement of general goods and materials has been offered ever since the fiscal year of 2005.)

#### (4) Current Status of Operation Maintenance

According to the responses from the executing agency, the power supply facilities constructed under this project sometimes halt their operation due to fuel shortages or breakdowns, but appropriate repairs are carried out. There seems to be no major problems in their operating conditions. The executing agency says it maintains a sufficient stock of parts and other supplies. It also stated that it retains the inspection records of the power stations, but does not produce inspection records for the distribution network due to a lack of staff to carry it out.

Some problems have been observed in terms of financial and structural aspects; therefore sustainability of the project effects is fair.

