

Summary of evaluation results

1. Outline of the Project		
Country:	Timor-Leste	Project title: The Project for Capacity Development of Teaching Staff of the Faculty of Engineering, National University of Timor-Leste (UNTL)
Issue/ Sector:	Higher education	Cooperation Scheme: Technical cooperation project
Division in charge:	Technical and Higher Education Division, Human Development Department	Total cost: 290 million yen
		Partner Country's Implementation Organization: Faculty of Engineering, National University of Timor-Leste (UNTL), and Ministry of Education
Period of Cooperation (*one year extended by civil conflict)	(R/D)	March 16, 2005 August 23, 2007 (*) (*: R/D related to extension of cooperation period)
		April 2006 to March 2010 (4 years) (*Initially planned for 3 years until March 2009)
		Supporting Organization in Japan: Nagaoka University of Technology, Saitama University, and Gifu University
		Related cooperation: Institute of Technology Sepuluh Nopember, Indonesia
<p>1-1 Background of the Project</p> <p>In Timor-Leste, the turmoil erupting after the direct popular vote on independence held in August 1999 caused serious devastation and forced many inhabitants to take refuge. More than 70% of the country's physical infrastructure including educational facilities were destroyed and rendered unusable. In November 2000, the United Nations Transitional Administration in East Timor (UNTAET) opened the National University of Timor-Leste (UNTL), and established the Faculty of Engineering (hereinafter referred to as "the Faculty"), which includes the Department of Mechanical Engineering (ME), Department of Civil Engineering (CE), and Department of Electrical and Electronic Engineering (EEE) from the viewpoint of nurturing highly skilled engineers who can help rebuild the nation. However, given its lack of experience and knowledge on the development and management of technical and higher education, Timor-Leste requested technical and physical assistance from Japan. In response to Timor-Leste's request, Japan has been supporting the preparation of curricula at each department of the Faculty since 2001 by providing technical assistance, restoring facilities, and providing equipment granted as Emergency Grant Aid in October 2003, then dispatching long-term and short-term experts, as well as receiving long-term trainees.</p> <p>Following these cooperation outputs, the "Project for Capacity Development of Teaching Staff in the Faculty of Engineering, National University of Timor-Leste (CADETES project)" was launched in April 2006 to improve the teaching capabilities of teaching staff who are essential for development of the Faculty of Engineering of UNTL, with a three-year period of cooperation as originally planned. Immediately after the onset</p>		

of assistance in May 2006, social unrest hindered the implementation of project activities; the project was restarted in August 2007 with the dispatch of JICA's consultation mission, upon the restoration of public order following the parliamentary elections held in June 2007. In view of the interruption lasting about a year, both sides agreed to extend the period of cooperation for another year until March 2010.

This project is intended to ensure the basic teaching capabilities of teaching staff of the Faculty of Engineering, National University of Timor-Leste, through practical activities. Therefore, the project provides cooperation to achieve the following outputs: (1) Teaching staff are able to prepare curriculum and syllabus in the field of engineering which are appropriate for Timor-Leste.; (2) Teaching staff acquire sufficient knowledge on basic mathematics and physics, fundamental engineering subjects, and necessary skills for conducting experiments through practical and appropriate research activities; (3) Teaching quality, methods and materials including equipment for lectures and experiments are improved under well-organized faculty management. In order to implement this project, Nagaoka University of Technology, Saitama University, and Gifu University have provided cooperation in the fields of mechanical engineering, civil engineering, and electrical and electronic engineering, respectively.

1-2 Cooperation details

(1) Overall goal

The quality of education in the Faculty of Engineering, UNTL is improved..

(2) Project purpose

Basic teaching capacity of teaching staff in the Faculty of Engineering, UNTL is improved through practical activities.

(3) Outputs

Output 1: Teaching staff are able to prepare curriculum and syllabus in the field of engineering which are appropriate for Timor-Leste

Output 2: Teaching staff acquire sufficient knowledge on basic mathematics and physics, fundamental engineering subjects, and necessary skills for conducting experiments through practical and appropriate research activities.

Output 3: Teaching quality, methods and materials including equipment for lectures and experiments are improved under well-organized faculty management.

(4) Inputs (at the time of the evaluation investigation)

Japanese side:

Dispatch of experts	15.20 MM (Chief advisors) 31.87 MM (Coordinator) 16.37 MM (Basic engineering) 17.48 MM (3 specialized	Equipment	Approx. 76 million yen
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	departments)		
Local Cost	Approx. 17.51 million yen (based on exchange rate of 100 yen to the US dollar)	Trainees received	7 long-term trainees (*) 9 short-term trainees

(*Long-term trainees include those trained under another cooperation scheme, in collaboration with this project.)

Timor-Leste's side:

Counterparts	60 teaching staff in the Faculty of Engineering, UNTL
Land and Facilities	Provision of project offices, utility charges, water service charges, etc.
Others (assistance by the Timor-Leste government)	Provision of equipment to the FE, workshops at the Department of Electrical and Electronic Engineering, and expenses for repairing the student dormitory

2. Evaluation Team

Member of Evaluation Team	Mission leader	Takao Yamashita	JICA guest senior advisor (Professor at Hiroshima University)
	Higher education (faculty management)	Manabu Tsunoda	JICA senior advisor
	Engineering education (mechanical engineering)	Ikuo Tanabe	Professor, Mechanical Engineering, Nagaoka University of Technology
	Engineering education (electrical and electronic engineering)	Hiroki Yoshida	Associate Professor, Electrical and Electric Engineering, Gifu University
	Evaluation planning	Machiko Nunotani	Member of the Technical and Higher Education Division, Human Development Department, JICA
	Evaluation analysis	Chie Tsubone	Consultant at Global Link Management Inc.
Period of Evaluation	October 19, 2009, to October 31, 2009 (13 days)		Evaluation type:: Terminal evaluation

3. Result of Evaluation

3-1 Confirmation of actual results

(1) Achievement of outputs

Output 1: Teaching staff are able to prepare curriculum and syllabus in the field of engineering which are appropriate for Timor-Leste.

The indicators of Output 1 have been achieved to some extent.

Teaching staff in the Faculty have made slight but not drastic revisions to the existing curricula. Because the national curriculum recommended by the Ministry of Education was formulated in 2007 in accordance with an international standard, some of the subjects were

difficult to implement, due to the current capabilities of the teaching staff and existing facilities of the Faculty. Under such conditions, the Japanese advisors instruct the teaching staff to set educational goals for the D3 and S1 programs, respectively, so that they can formulate their own curriculum, while considering how to match it with the national curriculum. According to the self-evaluation conducted by teaching staff, more teaching staff are preparing a syllabus every term, which suggests that the habit of preparing a syllabus is gradually being established. Furthermore, the short-term experts are expected to feed back their findings on the quality of such syllabi to teaching staff in the Faculty by the end of the project.

Output 2: Teaching staff acquire sufficient knowledge on basic mathematics and physics, fundamental engineering subjects, and necessary skills for conducting experiments through practical and appropriate research activities.

The indicators of Output 2 have largely been achieved, but further effort and improvement are necessary.

The project conducted tests three times regarding mathematics, physics, basic engineering, and English. As a result of the tests, “more than 70% of teaching staff achieved the senior high school level” of understanding English and mathematics, and “more than 50% of teaching staff achieved the S1 level” of understanding mathematics and physics. Concerning the self-evaluation conducted by teaching staff for the purpose of ensuring consistency in test results and compensating for constraints in the samples, “more than 70% of teaching staff have achieved the high school level” of understanding all four subjects, and “more than 50% of teaching staff have achieved the S1 level” of English comprehension. Both the Dean of the Faculty and the short-term experts have reported a considerable rise in English proficiency among the teaching staff, and a greater comprehension and wider applicability of classes headed by younger teaching staff. In view of these findings, the teaching staff certainly gained more knowledge on the basic subjects through the project.

The short-term experts also found that understanding of the basic engineering subjects (i.e., basic special subjects on the curriculum) and the experiment methods used in special fields have improved to some extent. This is because the senior teaching staff show relatively low attendance and comprehension of lectures, while the younger teaching staff show considerable improvement. Moreover, the need to improve experiment skills in certain special fields has been observed for some teaching staff.

In conclusion, even though some improvements are seen in each subject, it is difficult to clarify the degree of achievement with concrete percentages as shown in the indicators, and further efforts must be made to reach more advanced levels for enhancing teaching

capabilities. In particular, it is necessary to step up the knowledge on “basic engineering,” where low scores were recorded in both items of the reference data.

Output 3: Teaching quality, methods and materials including equipment for lectures and experiments are improved under well-organized faculty management.

The indicators of Output 3 have been achieved to some extent, but further improvement is necessary.

The results of class evaluation by students showed a degree of satisfaction ranging from average to above average, but many students requested easier-to-understand lectures. This terminal evaluation mission also found that teaching staff give classes with little interaction with their students. These findings lead us to conclude that, although the teaching methods used by teaching staff have improved to a certain level, there is still room for improvement.

The self-evaluation conducted by teaching staff indicates a higher percentage of teaching staff prepared their own lecture notes and job sheets. Conversely, the quality of prepared lecture notes and job sheets is not being uniformly reviewed. Such a review is expected to be made by the end of the project, with the results being fed back to the teaching staff.

Equipment maintenance records were developed within the project. The staff of each department kept records on units of equipment costing more than one million yen apiece, thereby discovering any damage and other conditions as appropriate.

Although a list of reference books for each subject has yet to be developed, the self-evaluation conducted by teaching staff reveals that more than 68% of teaching staff have introduced three or more references for each subject.

Even though not incorporated in the indicators, the key for this output is that these indicators are achieved “under well-organized faculty management.” For the development of “well-organized faculty management,” an organization chart for each department showing teaching staff assignments and their subjects has been prepared. Moreover, a regular faculty department meeting has been held twice a month, as planned.

(2) Prospects of achieving the project purpose

Project purpose: Basic teaching capacity of teaching staff in the Faculty of Engineering, UNTL is improved through practical activities.

Regarding the indicators of the project purpose, the basic knowledge and skills of teaching staff are expected to improve by the end of the project, but their teaching capabilities should be further improved.

As discussed above, some improvement is generally seen among teaching staff in

terms of knowledge of the basic subjects and the skills for conducting experiments. Interviews with the teaching staff also reveal that they feel that their capabilities have improved through the project. They recognized a particular improvement in how to use the equipment, how to conduct practical classes with the equipment, and how to prepare a syllabus. The self-evaluation showed that nearly 70% of teaching staff expressed positive comments regarding a considerable improvement of their own teaching methods, while further improvement is expected in their efforts, such as giving easier-to-understand lectures and engaging in more interactive communications with their students.

(3) Prospects for achieving the overall goal

Overall goal: The quality of education in the Faculty of Engineering, UNTL is improved.

At present, sufficient improvement in the quality of education toward achieving the overall goal has yet to be seen.

It is understood that the national curriculum generally reflects the needs of Timor-Leste. However, the current lack of competent teaching staff and the shortage of equipment make it difficult to strictly follow the national curriculum.

The status of the facilities and equipment is being improved, with workshops and the dormitory being repaired under Timor-Leste's budget, and the Timor-Leste side also providing several items of equipment. If such improvements continue steadily into the future, the overall goal could possibly be achieved.

3-2 Evaluation results of the five evaluation items

(1) Relevance: High

1) Consistency with Timor-Leste's needs

The government of Timor-Leste established UNTL and the Faculty of Engineering in November 2000. However, the Faculty lacked experience and knowledge regarding how to develop and manage the technical and higher education system, and found it difficult to give classes according to a teaching plan in a situation where about one-third of the teaching staff had not even acquired a postsecondary level of proficiency in mathematics, physics, and English. Therefore, the design of the project, which is intended to improve the capabilities of teaching staff in the Faculty, matched the needs of Timor-Leste.

As JICA also reviewed the project design matrix (PDM) with emphasis on practical activities after the social unrest calmed down in August 2007, the project appropriately reflects the needs of Timor-Leste.

2) Consistency in terms of policy between Timor-Leste and Japan

According to the "Sector Investment Plan (SIP)" in effect when the project was

launched, education was one of the most important sectors, with technical/vocational training and higher education being positioned as long-term strategies. And since the current government assumed power in August 2007, the “national priorities” (developed each year) have served as the interim planning method. Among the seven national priorities for 2009 is the development of human resources, which matches the goal of the project. Moreover, the “rationalization and implementation of technical and higher/university education” is stipulated as one of the policy objectives of the National Education Policy of 2007-2012. Thus, higher/university education and the areas of science and technology are prioritized in the policy.

The project is also highly consistent with Japanese policy. The Japanese policy on providing assistance to Timor-Leste stresses the development of Timor-Leste’s infrastructure, which matches the intent of the project, to nurture highly skilled human resources who can help develop and maintain the country’s infrastructure.

(2) Effectiveness: Slightly high

The project purpose has been achieved to some extent, but further development of teaching staff capabilities is expected. The activities recognized by the teaching staff as being highly effective for improving their teaching capabilities are the provision of new equipment and instruction on how to use it, collaboration with the Institute of Technology Sepuluh Nopember (ITS), and the introduction of practical research activities. Since more than a few teaching staff members have difficulty in understanding theory in English, the intensive lectures of ITS provided in the Indonesian language effectively improved their understanding.

Regarding the degree of contribution to achieving the project purpose of the outputs, Output 2 contributes significantly to achieving the project purpose, compared with Outputs 1 and 3. This is because Outputs 1 and 3 are not directly related to improving the capabilities of teaching staff. And since both outputs are important in sustaining the project’s effects and achieving the overall goal, further enhancement of the outputs is expected during the remaining period of the project.

(3) Efficiency: Slightly low

Inviting professors from ITS was an effective and efficient strategy, because they can teach in the Indonesian language, and inviting one professor from Indonesia costs less than inviting one from Japan or a third-country expert.

The collaboration with other projects involving JICA also encouraged fieldwork at the actual sites and the trial production of rice seed sowing machinery.

The infrastructure equipment provided on campus, however, adversely affects the

project outputs in terms of an unstable power supply, poor communication line connections, and other unreliable resources.

Regarding the equipment provided, such problems as delays in the provision of certain equipment, a low frequency of use, the difficulty in operation and instruction encountered by the teaching staff, and missing or lost parts of equipment were identified. These factors reduced the project's efficiency. At present, improvements have been made to address these problems, such as replacing missing and lost items of equipment, and having the teaching staff acquire the skills needed to use the equipment.

There were also some cases of teaching staff being unable to attend the training and intensive lectures given by the short-term experts, thereby failing to fully learn how to use the equipment, due to such reasons as studying abroad to acquire higher-level degrees, learning Portuguese under the Timor-Leste government's policy making Portuguese the official language, and attending to their side businesses.

Regarding the short-term training of nine teaching staff of the Faculty, only those who participated in the training at Japanese universities improved their knowledge and skills, but did not effectively share that knowledge and skills with other teaching staff, even though they held a session for dissemination. Thus, disseminating their achievements to the other teaching staff could have been managed more efficiently in such a way as to give intensive lectures or some other forms of dissemination.

(4) Impact: Medium

Though outstanding signs of achieving the overall goal have yet to be seen, a positive impact is observed. The project activities have intensified the collaboration between the Faculty and industry, so that some corporations are now receiving intern students. The Faculty and these corporations have also begun exchanging views about the skills and levels required of the graduates, along with other issues, and such collaboration is considered to positively impact the feedback on curriculum development, as well as increase employment opportunities. And on the university's foundation day, an open forum was held to invite members of the general public. Such activities are expected to enhance public awareness about the importance of engineering education.

(5) Sustainability: Medium

1) Political and financial aspect

The national educational policy for 2007-2012 will continue political support for technical and higher education. The Timor-Leste government's budget for UNTL has been available since 2008. In the year 2010, UNTL was recognized as being autonomous and is expected to receive a budget increase of 125%. Therefore, financial sustainability

is also expected to be enhanced.

2) Organization and technical aspect

It is possible for UNTL to develop the capabilities of its teaching staff by continuing its collaboration with ITS. Other challenges are to keep equipment maintenance records, prepare syllabi and lecture notes, conduct class evaluations at the end of each term, and establish a system for making faculty improvements during the rest of the project, so that the Faculty can independently operate and manage these system. And yet another important task is to develop the administration system of the university.

Regarding the capabilities of the teaching staff, each teaching staff member must independently review the teaching materials provided in this project, so as to maintain the level of knowledge and skills acquired.

Some teaching staff that attend the intensive lectures have been observed as being highly motivated, while others have even proposed research activities and voluntarily conducted research, along with advice offered from the Japanese experts.

3) Personnel aspect

The shortage of competent personnel should be improved in 2010 and later years when the teaching staff currently studying abroad to obtain higher degrees return to the Faculty. The Faculty must consider how to motivate such teaching staff to continue working at the Faculty after returning from their studies abroad.

4) Equipment management aspect

The Faculty is observed to still rely to some extent on JICA's experts regarding any equipment maintenance trouble. It is therefore important to ensure that teaching staff of the Faculty are able to maintain the equipment by themselves by the end of the project.

3-3 Factors that promoted realization of effects

(1) Factors concerning planning

- To introduce a variety of knowledge and capability development training (for teaching staff) such as theory, practice, and fieldwork.
- To collaborate with ITS, so that it encourage the understanding of teaching staff who are not proficient in English.
- The provision of equipment by the Timor-Leste government

(2) Factors concerning the implementation process

- Smooth communications encouraged by new heads of departments and the Faculty (who studied in and are familiar with Japan)
- Regular meetings held in the Faculty regarding project activities

3-4 Factors impeding the realization of effects

(1) Factors concerning planning

- Absence of some teaching staff due to a side business or studying abroad
- Mismatch between academic language (English) and teaching language (Indonesian)

(2) Factors concerning the implementation process

- Damage to facilities and equipment, and the refuge of teaching staff and students due to the social unrest in Timor-Leste
- Bad situation regarding infrastructure and the means of transportation

3-5 Conclusion

The evaluation results show steady achievements and outputs, though certain issues have yet to be improved.

Regarding the five evaluation criteria, relevance is rated high and the effectiveness of the project's approach has also been appreciated to some extent. Toward the end of the project period, the project should pay more attention to enhancing efficiency, impact and sustainability, so as to utilize equipment more effectively, build a foundation for achieving the overall goal, and establish a system in the Faculty for sustaining and developing the project's effects. In particular, for achieving the project purpose, further efforts shall be made to strengthen the organization and its management system, as well as to sustain the teaching capabilities of teaching staff as addressed by the project.

3-6 Recommendations (challenges to be addressed by the end of the project)

Based on the evaluation results above, we proposed to the Faculty the following:

- (1) Develop an equipment maintenance plan: Assign responsible staff for the management of equipment, training for equipment maintenance, development and revision of operation manuals, drafting a budget plan for maintenance, etc.
- (2) Receive advice on revision of the curriculum: With continuous support from the Japanese experts, the Faculty should receive advice on how to match the curriculum with the national curriculum, and how to prepare a syllabus, and other teaching materials.
- (3) Receive feedback on class evaluations, syllabi, lecture notes, and job sheets: Teaching staff should receive feedback on the results of previous class evaluations, and continuously review their teaching method, so that teaching quality will be regularly improved.
- (4) Hold seminars: To review the project outputs by the end of the project, and widely share the project outputs and other findings among stakeholders by holding seminars.

- (5) Document the teaching materials: Summarize and document the provided teaching materials used in intensive training and other activities conducted under the project, so as to continue teaching staff learning of the knowledge and skills regarding the subjects.

3-7 Lessons learned

(1) Collaboration with ITS

Collaboration with ITS will encourage a greater understanding of research activities by the teaching staff in the Faculty, given that institute's familiarity with the local language (Indonesian), culture, and environment.

Similarly, establishing collaborative relationships with regional universities where JICA supported other projects is expected to sustain and expand the project's effects that cannot be completely covered by the project alone.

(2) Encouragement of participation of the project C/P

Though surely a factor that impeded implementation of the project, the situation where teaching staff must leave classes to study abroad or attend to a side business should be considered. Therefore, the Faculty should consider measures to document the teaching materials used in intensive training provided by the project, so that each teaching staff member can follow up independently (even if absent from the Faculty during a certain period), and UNTL should consider how to dispatch teaching staff systematically for their studies abroad, as the government of Timor-Leste is expected to improve the working conditions (such as the payment of salary and other treatment) of teaching staff.

(3) Review of the period of cooperation

As mentioned above, teaching staff must inevitably study abroad to develop their capabilities. Even though the counterparts who are able to join the project activities were limited, they are surely expected to lead the Faculty after they return. And during the mission, the salary levels of university teaching staff gradually improved, and infrastructure is steadily being rehabilitated. In this way, the environment surrounding the project is expected to improve in subsequent years. Therefore, even if it is apparently difficult for the project to show drastic achievements within the scheduled period of cooperation, the period should be properly reviewed in accordance with the progress of the country's policies and institutions during the implementation period of the project.