Democratic Republic of Timor-Leste

FY2023 Ex-Post Evaluation Report of

Japanese Grant Aid Project

"Project for the Construction of New Buildings for the Faculty of Engineering, Science and Technology of the National University of Timor-Leste"

External Evaluator: Junko Noguchi

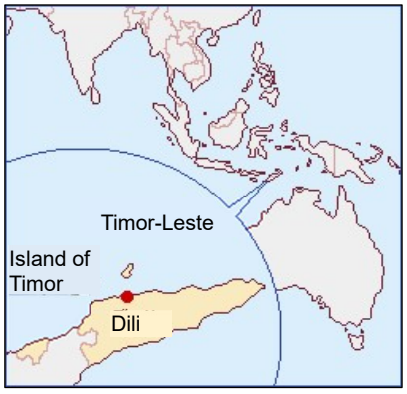
Foundation for Advanced Studies on International Development

0. Summary

This project was implemented to improve the quality and condition of the education and training delivered at the Faculty of Engineering, Science and Technology (FEST) of the National University of Timor-Leste (UNTL), by constructing new buildings and procuring research and educational equipment, thereby contributing to the development of human resources for economic development. The project was relevant with the development policies of Timor-Leste, which have considered infrastructure development as an important issue for national development and with the development needs for improving the educational environment of FEST, which is responsible for human resource development for this purpose. Japan's assistance policy toward Timor-Leste also emphasized the importance of infrastructure development and industrial human resource development, and there was coordination and collaboration with other JICA projects during the project period; therefore, the project relevance and coherence are high. Although the project cost was within the plan, the project period significantly exceeded the plan due to the extended detailed design survey and construction period and unsuccessful bidding. Thus, efficiency of the project was moderately low. The number of registered students increased significantly as classrooms, laboratories, and other facilities were developed. Facilities and procured equipment have been utilized to provide practical education. Therefore, effectiveness and impact are high. Some minor issues have been observed in the institutional/organizational and financial aspects regarding the operation and maintenance of the facilities developed by the project, and they are not expected to be resolved. Thus, sustainability of the project effects is moderately low.

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

1. Project Description



Project Location (Prepared with the map from the Website of the Ministry of Foreign Affairs of Japan)

New Building of FEST (Common & Office Building) (Photograph Taken by the External Evaluator)[1]

1.1 Background

After the restoration of independence in 2002, Timor-Leste was experiencing strong economic growth with the stabilization of security. The Government of Timor-Leste had set a goal of becoming an upper-middle-income country by 2030, and its priority objectives were to break away from excessive dependence on oil revenues, establish key industries, and diversify industries. To meet these objectives, it aimed to develop industrial human resources with high technologies. FEST-UNTL, as the engineering school of the only national university, was expected to become a core institution in the country's industrial human resource development, but the lack of classrooms and educational equipment relative to the number of students and the poor learning environment were problems.

1.2 Project Outline

The objective of this project is to improve quality and condition of the education and training delivered at FEST-UNTL, by constructing new buildings and procuring research and educational equipment, thereby contributing to the development of human resources for economic development in the country.

Grant Limit / Actual Grant Amount	2,231 million yen / 2,183 million yen
Exchange of Notes Date / Grant Agreement Date	March 2016 / March 2016
Executing Agency	Ministry of Higher Education
Project Completion	October 2019
Target Area	Herra, Dili

[1] Other photographs inserted in this report were also taken by the external evaluator during the field survey.

Main Contractors	(Construction) Rinkai Nissan Construction Co., Ltd. (Equipment) Ogawa Seiki Co., Ltd.
Main Consultants	Yamashita Sekkei, Inc., Intem Consulting, Inc.
Preparatory Survey	February 2015 to December 2015
Related Projects	"Project for the Capacity Development of Teaching Staff in the Faculty of Engineering, The National University of Timor-Leste" (CADETES) (2006-2010), "Project for Capacity Development of the Faculty of Engineering Science Technology, the National University Timor Lorosa'e" (CADEFEST) (2011-2016), "Project for Capacity Development of the Faculty of Engineering Science Technology, the National University Timor Lorosa'e Phase 2" (CADEFEST 2) (2016-2023), Training "Capacity Development for Establishing the Engineering Graduate School at UNTL" (2023-2025), Individual Expert "Advisor for Supporting the Establishment of the Engineering Graduate School at UNTL" (2023-2025)

2. Outline of the Evaluation Study

2.1 External Evaluator

Junko Noguchi, Foundation for Advanced Studies on International Development

2.2 Duration of Evaluation Study

This ex-post evaluation study was conducted with the following schedule.

Duration of the Study: August 2023 to January 2025

Duration of the Field Study: December 10 to 22, 2023, March 10 to 14, 2024

3. Results of the Evaluation (Overall Rating: B[2])

3.1 Relevance/Coherence (Rating: ③[3])

3.1.1. Relevance (Rating: ③)

3.1.1.1 Consistency with the Development Plan of Timor-Leste

The national development plan, *Timor-Leste Strategic Development Plan* (SDP) (2011-2030), states the country's goal of becoming an upper-middle-income country by 2030. The petroleum industry is positioned as a priority sector for national development, and the plan states that infrastructure development, human resource development, and related industries are important for this purpose. In the plan, UNTL is recognized as a core institution essential for human resource development and contribution to national development, and the med-term goals for 2020 include the expansion of UNTL, construction of a modern complex facility of

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

[3] ④: Very High, ③: High, ②: Moderately Low, ①: Low

FEST, and provision of a bachelor's degree program in geology and petroleum.

Thus, the project was consistent with Timor-Leste's national development policy at the time of both ex-ante and ex-post evaluation,

3.1.1.2 Consistency with the Development Needs of Timor-Leste

After the restoration of independence in 2002, the Government of Timor-Leste was working to expand higher education as part of its efforts in order to develop human resources toward establishing a foundation for economic growth, and SDP states that the strengthening of higher education institutions necessary to develop future leaders will begin at UNTL. In response, the *Strategic Plan of UNTL* was developed, with plans to increase the number of FEST students from approximately 1,200 in 2014 to 1,600 by 2025 and to create a new department in the long term. However, much of the infrastructure, including educational institutions, had been destroyed and rendered unusable by the turmoil at the time of independence, and FEST of UNTL had insufficient classrooms for the number of students, resulting in a poor learning environment, with 35 students taking classes in a 25-person classroom [4] and using the laboratory building for temporary classrooms. In addition, educational equipment was inadequate in terms of quantity and quality. At the time of ex-post evaluation, the Ministry of Higher Education and the rector of UNTL mentioned that engineering is one of the most important fields for national development, along with agriculture, health, and education, and that it is necessary to further train specialists in this field.

Thus, the project is relevant with the development needs of Timor-Leste at the time of both ex-ante and ex-post evaluation.

3.1.1.3 Appropriateness of the Project Plan and Approach

One of the features of this project is the barrier-free design of the facility. Multipurpose restrooms and ramps connecting the upper and lower floors of the Classroom Building were installed primarily for academic staff and students with physical disabilities (Photo 1). The Common & Office Building does not have a ramp or elevator, but the building is adjacent to the Classroom Building and is accessible via crosswalks, allowing for shared use of the ramp. From the time of planning to the time of ex-post evaluation, no faculty staff or students have used wheelchairs in FEST, but from the perspective of universal design, these facilities are natural and appropriate. In addition, there have been no universally designed public facilities in Timor-

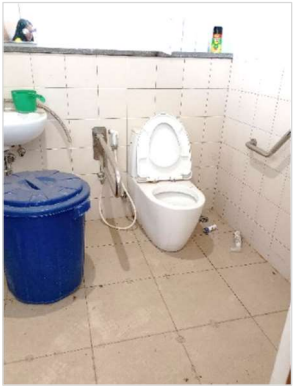


Photo 1 Multipurpose Restroom.

[4] Ex-ante Evaluation Paper.

Leste like FEST, so the project plan was appropriate from the perspective of presenting an advanced example.

3.1.2 Coherence (Rating: ③)

3.1.2.1 Consistency with Japan's ODA Policy

In the *Country Assistance Policy for the Democratic Republic of Timor-Leste* (2012), the basic policy of assistance was to support the creation of a foundation from reconstruction to economic growth, and one of the priority areas was the creation of a foundation for the revitalization of economic activities. Concerning this, it was stated that "in order to revitalize economic activities, which is the biggest challenge for the stable development of Timor-Leste in the future, assistance related to infrastructure development, including capacity building, and industrial human resource development, will be provided with emphasis." Thus, the project was consistent with Japan's development assistance policy at the time of ex-ante evaluation.

3.1.2.2 Internal Coherence

Any collaboration or coordination between the project and other JICA interventions was not clearly planned at the time of ex-ante evaluation. However, collaboration and coordination were made during the project period, and the positive effects were confirmed at the time of ex-post evaluation. First, by asking experts of the technical cooperation project for advice during the preparatory survey, the project could select appropriate equipment suited to the educational content. Second, the technical cooperation project conducted capacity development of the faculty members and curriculum development, and the lecturers demonstrated the knowledge and teaching methods obtained through the technical cooperation project using the facilities and equipment of the new building.[5]

3.1.2.3 External Coherence

Any cooperation/coordination with other Japanese agencies, other donors, or private companies was not clearly planned and not implemented.

In light of the above, the project is relevant with the development policies and needs of Timor-Leste, and the project plan and approach were appropriate. Additionally, it was consistent with Japan's ODA policy, and implemented in collaboration and coordination with other JICA projects. Therefore, its relevance and coherence are high.

[5] Interview with FEST vice deans and department directors.

3.2 Efficiency (Rating: ②)

3.2.1 Project Outputs

3.2.1.1 Outputs of the Japanese Side

(1) Facility Construction and Equipment Procurement

Under the project, construction of a new building for FEST-UNTL (Common & Office Building, Classroom Building, etc.) and procurement of equipment associated with the Classroom Building and educational equipment were implemented.

Table 1 Outputs of the Japanese Side (Construction of the Common & Office Building and Classroom Building): Plan and Actual

		Rooms	Plan	Actual
Common & Office Building	Library	Library, librarian room.	1,935 m^2	1,935 m^2
	Administration	Administrative office, chief administrator office, dean room, printing room, reception office, secretary room, 4 vice dean rooms, 2 meeting rooms, auditorium.		
	Common	Restroom (3 for males, 3 for females, 3 multipurpose restrooms)		
Classroom Building	Common classroom, general room	15 classrooms, 5 large classrooms, 2 general labs, drafting room, 2 PC rooms, distance learning room, research project lab, preparatory room for the research project lab.	6,078 m^2	6,078 m^2
	Geology and Petroleum	Geology and petroleum workshop, preparatory room for geology and petroleum, sample room.		
	Informatics	2 PC labs.		
	Administration	5 director rooms, 5 Vice director rooms, 5 secretary rooms, 13 lecturer rooms, 3 guest lecturer rooms, 3 meeting rooms, server room.		
	Common	Restroom, corridor, storage, machine room, etc.		

Source: Preparatory Survey Report, Project Monitoring Report (Final Version), interview with the project main consultant.

The Common & Office Building and the Classroom Building were constructed mostly as planned (Table 1). There were bidding failures, as discussed later, and the specifications had to be changed after the second detailed design survey. First, part of the exterior louver was canceled. This change was made after confirming that the same sun-shading function could be ensured with curtains and blinds.[6] Second, the exterior pavement was excluded for a locally procured pavement. Regarding these changes, no issue was identified during the ex-post

[6] Interview with the project main consultant.

evaluation field survey. In addition, the installation of a generator was deleted. This was because there was an existing generator, and it was confirmed that it could be locally procured after the project completion. However, at the time of ex-post evaluation, the existing generator was not in operation. When there are electricity blackouts, the classes would be temporarily affected, but the blackouts are often short lived and not a major problem for the classes.[7]

As mentioned earlier, because the generator was not to be installed, the construction of the machine room building to store it was excluded (Table 2).

Table 2 Outputs of the Japanese Side (Construction of Other buildings): Plan and Actual

	Facility	Plan	Actual
Substation	Facility for electricity inlet	60 m^2	60 m^2
Machine room building	Facility for storing the generator	25 m^2	0 m^2
	Total	85 m^2	60 m^2

Source: Preparatory Survey Report, Project Monitoring Report (Final Version), interview with the project main consultant.

Procurement of equipment was carried out as planned, as shown in the table below.

Table 3 Outputs of the Japanese Side (Procurement of Equipment): Plan and Actual

	Plan	Actual
Classroom	Projector, screen.	Procured as planned.
Large classroom	Projector, screen.	Procured as planned.
Distance learning room	Projector, screen, set of e-learning system.	Procured as planned.
PC room	Desktop PCs, printers, network equipment, projectors, screens.	Procured as planned.
Meeting room	Projector, screen, whiteboard.	Procured as planned.
Auditorium	Projector, screen, set of audio-visual equipment.	Procured as planned.
Printing room	Photocopier, digital printer.	Procured as planned.
Library	Desktop PCs, printer, photocopier.	Procured as planned.
Drafting room	Sets of drawing equipment, projector, screen.	Procured as planned.
General lab.	Projector, screen, basic practical equipment for physics.	Procured as planned.
Research project lab.	Draft chamber, electric oven, ph meter, set of practical equipment for chemistry.	Procured as planned.
PC lab (Informatics)	Desktop PCs (40 for each), network equipment.	Procured as planned.
Geology and petroleum lab.	Minerals or crystals replica, jaw crusher, binocular microscope with camera, field measuring equipment, etc.	Procured as planned.
Existing mechanical engineering workshop	Minimum replacement and additional equipment necessary for the fields for material testing, mechanical processing, energy conversion and automobile.	Procured as planned.

[7] Interview with FEST vice dean.

Existing civil engineering workshop	Minimum replacement and additional equipment necessary for the fields for concrete, asphalt, field measurement and structure.	Procured as planned.
Existing electrical and electronic engineering workshop	Minimum replacement and additional equipment necessary for the fields for analogue/digital circuits, electrical facilities, control, power electronics and communications.	Procured as planned.

Source: Preparatory Survey Report, Project Monitoring Report (Final Version), interview with the consultant.

As discussed later, procurement of equipment for the new buildings was later than planned due to the extended construction period and delay in the completion of the new building construction. Despite this delay, overall procurement of equipment was completed as planned by procuring equipment for the existing workshop buildings first.

(2) Consulting Services

Consulting services such as detailed design, bidding and construction contract assistance, and construction supervision were conducted as planned.

In light of the above, the outputs of the Japanese side were produced mostly as planned.

3.2.1.2 Outputs of the Timor-Leste Side

Responsibilities of the Timor-Leste side were implemented as planned, except for the fact that planting and landscaping, procurement of furniture and equipment, and infrastructure connection work were carried out after the project completion due to the time required for the internal procedures[8] (Table 4).

Table 4 Responsibilities of the Timor-Leste Side: Plan and Actual

	Plan	Actual
Work	Site leveling, tree felling and stumping.	Implemented as planned.
	Procurement of soil for embankment.	Implemented as planned.
	Tree planting and landscape gardening.	Implemented after the project completion.
Maintenance	Procurement of general furniture which was not included in the project.	Implemented after the project completion.
	Wiring work and leading telephone line.	Implemented after the project completion.
Administrative procedure	Obtaining construction permissions and environmental licenses.	Implemented as planned.
	Bank commissions.	Implemented as planned.
	Tax.	Implemented as planned.
	Customs duties and internal taxes of	Implemented as planned.

[8] Interview with FEST vice dean.

	Japanese nationals.	
	Arrangement for Japanese nationals to enter and stay in Timor-Leste.	Implemented as planned.

Source: Preparatory Survey Report, Project Monitoring Report (Final Version), JICA internal documents, interview with the consultant, questionnaire answer from UNTL.

3.2.2 Project Inputs

3.2.2.1 Project Cost

The planned total project cost was 2,255 million yen (Japanese side: 2,231 million yen, Timor-Leste side: 24 million yen). The actual cost was 2,206 million yen (Japanese side: 2,183 million yen, Timor-Leste side 23 million yen), which was within the plan. Expenditures on the Timor-Leste side included site leveling, tree felling and stumping, bank commissions, import duty, and sales tax applied to imported equipment and materials, and so on.

3.2.2.2 Project Period

The planned project period from the signing of the grant agreement to the start of facility operation was 29 months (March 2016 to July 2018). The actual period was 44 months (March 2016 to October 2019), which significantly exceeded the plan (ratio against the plan: 151%). There were three main reasons for this. First, the detailed design required more time for the cost estimate review at JICA headquarters (plan: 5 months; actual: 9 months). Second, there were few experienced companies in Timor-Leste, which had just regained independence, and the first bidding was unsuccessful. Third, the construction period was longer than planned period (plan: 18 months; actual: 22 months). Because the constructor could not allocate enough experienced workers from within the country, many workers were deployed from Indonesia. Each year, 150-180 workers entered and left the country, and each entry required a work visa, which was a time-consuming process. Also, the time and effort required to extend visas were significant.[9]

In light of the above, the project outputs were produced mostly as planned. Regarding the input, although the project cost was within the plan, the project period significantly exceeded the plan. Therefore, efficiency of the project is moderately low.

[9] Interview with the project main consultant.

3.3 Effectiveness and Impacts[10] (Rating: ③)

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects (Operation and Effect Indicators)

The following table shows the number of registered students and pieces of graduation research at FEST-UNTL and the floor area per student after the project completion in October 2019.

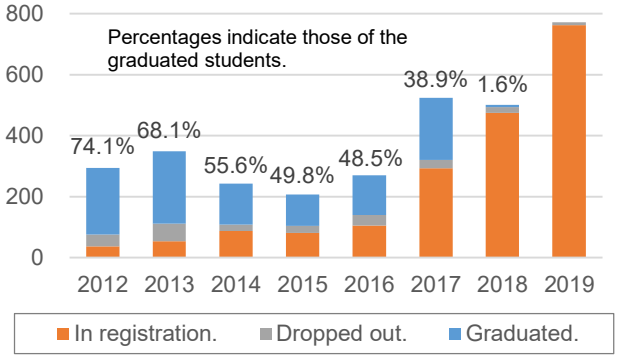
Table 5 Registered Students, Graduation Research at FEST, and the Floor Area per Student

	Baseline	Target	Actual Value			
	2015	2021	2020	2021	2022	2023
		2 years after completion	1 year after completion	2 years after completion	3 years after completion	4 years after completion
Number of Registered Students at FEST (persons)	1,201	1,400	1,669	1,885	2,230	2,342
Graduation Research at FEST (piece)	NA	300	53	129	113	217
Floor Area per Student (m^2/student)	5.6	10.2	8.6	7.6	6.4	6.1

Source: Preparatory Survey Report, Project Monitoring Report (Final Version), JICA internal documents, interview with the consultant, data provided by FEST-UNTL.

Note: The target value of floor area per student was calculated by dividing the sum of the floor area of 8,200 m^2 of classrooms and laboratory buildings (excluding restrooms and corridors) in UNTL's mid-term plan for the FEST expansion and the planned area of 6,078 m^2 for this project (=14,278 m^2) by the target number of registered students (1,400). Preparatory Survey Report.

The number of registered students already exceeded the target in 2020 and has continued to increase since then. One of the factors for this is that many students do not graduate in 4 years. Among the 294 students who entered in 2012, 218 (74.1%) had graduated in 2023, whereas 37 (12.6%) were still enrolled (Figure 1). Among the 524 students who entered in 2017, 204 (38.9%) had graduated, and 293 (55.9%) were still enrolled in 2023. According to FEST, the reason for this is the lack of employment opportunities immediately after graduation. In addition, the relatively low tuition fee is another reason for not rushing to graduate.[11]



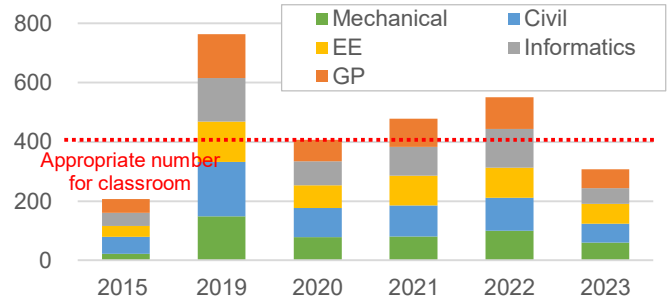
Source: Created with data provided by FEST.

Figure 1 Students' Current Status by Enrolment Year

[10] When providing the sub-rating, Effectiveness and Impacts are to be considered together.
[11] Interview with CADEFEST 2 expert.

Although there is a rule that the enrolment period is 6 years, it seems that it has not been strictly enforced. However, it was officially announced in the media at the end of 2023 that students who are enrolled for more than six years will be expelled from UNTL, and it is presumed that the graduation rate will improve in the future.[12]

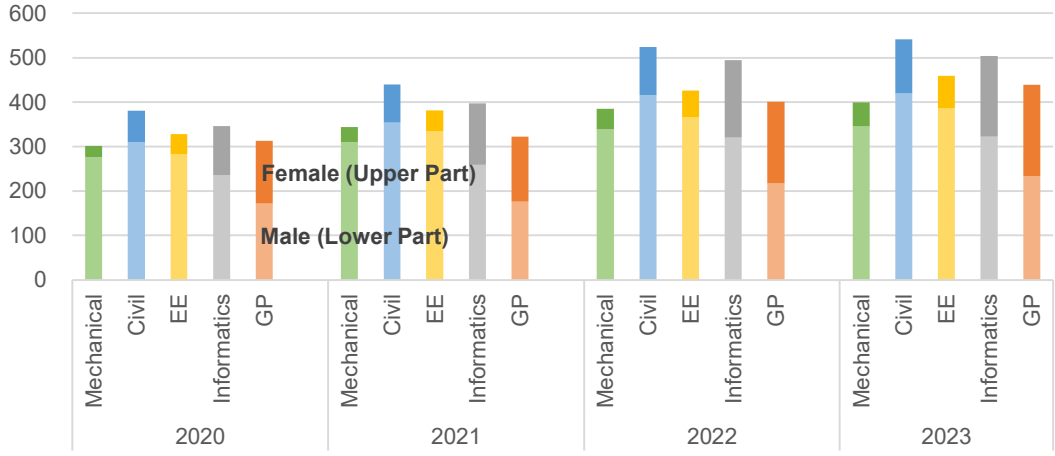
Another major factor is that the number of admitted students exceeds its capacity (Figure 2). Admitted students for UNTL are selected by the Ministry of Higher Education, and which faculty should be admitted is determined also considering students' preferences, and so on. With a regular classroom capacity of 40, each department accepts 80 students, by which the annual capacity is calculated to be 400 for the entire faculty. However, the number of students admitted in 2019 (763) was far more than this. Although the number of admitted students decreased since then, it was still 407, 478, and 551 in 2020, 2021, and 2022, respectively.[13] Since there is a limit to the number of students for whom lecturers can provide graduate guidance, the number of registered students should be kept within that range.



Source: Created with data provided by FEST.
Note: EE: Electrical and Electronic, GP: Geology and Petroleum.

Figure 2 Number of Admitted Students by Department

Figure 3 shows the number of registered students by department and by gender. Since 2020, the number of registered students has increased in all five departments. By gender, the



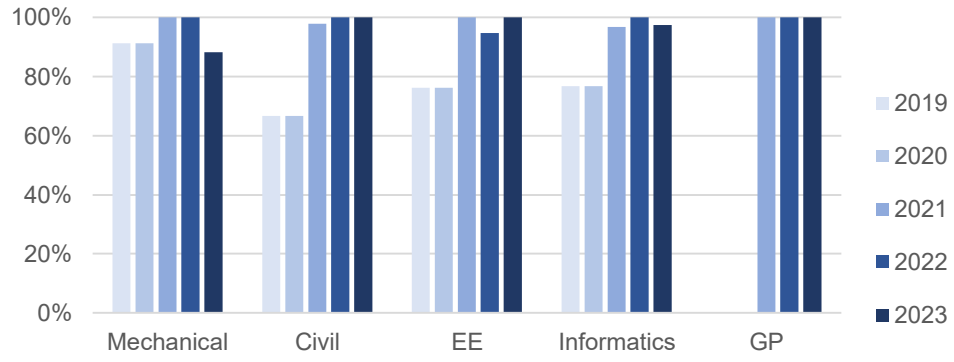
Source: Created with data provided by FEST.
Note: EE: Electrical and Electronic, GP: Geology and Petroleum.

Figure 3 Number of Admitted Students by Department

[12] Interview with FEST vice dean.
[13] Data Provided by FEST.

number of male students in 2023 was 1,707 (72.9%) and female students, 635 (27.1%). The percentage of female students increased from 23.5% in 2020. The percentage of male students is larger in the Departments of Mechanical Engineering, Civil Engineering, and Electrical and Electronic Engineering. The percentage of female students is larger in the Departments of Informatics and Geology and Petroleum, increasing over the years to 41.5% and 55.6%, respectively, in 2023. Compared to 28% of female engineering graduates in the member countries of the Organization for Economic Co-operation and Development[14], the access of female students to engineering education in Timor-Leste is relatively good.

The number of graduate research pieces has not been managed by FEST. Instead, the number of graduates was used in the ex-post evaluation, because graduation research is required for graduation. The target for three years after the project completion was 300 pieces per year, but the number was 113 (in 2022), which was not even half of the target. The reason for this, as already mentioned, is that few students graduate in four years, and it is assumed that the outbreak of COVID-19 infection after 2020 also had an impact. On the other hand, although the number of graduation research was below the target, the content of these pieces was adequate: since 2021, almost 90% of graduation theses in all five departments have received 8 or more points out of 10 (Figure 4).



Source: Created with data provided by FEST.
Note: GP (Department of Geology & Petroleum) has graduates from 2021.

Figure 4 Ratio of Graduation Thesis that got 8+

The floor area per student was 6.4 m^2 (in 2022), far below the target (10.2 m^2). As previously mentioned, this figure is calculated by dividing the total floor area by the number of registered students, and the reason is that the number of registered students significantly exceeded the target. However, the number of students registered for classes has not greatly exceeded the capacity of each classroom, and classes have not been conducted under overcrowded conditions. For example, when there are more than 40 students registered for a

[14] Organization for Economic Co-operation and Development (2024) *Education at a Grance 2023*. For reference, the percentage of female students in engineering schools in Japan in 2023 was 12.7%. Ministry of Education, Culture, Sports, Science and Technology of Japan (2023) *School Basic Survey of Reiwa 5*.

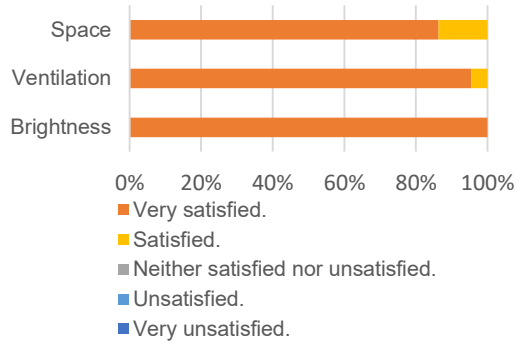
class, if there is an excess of about five students, chairs are brought in from other classrooms to accommodate them, or if there is an excess of more than five students, the class is divided into two classrooms.[15]

3.3.1.2 Qualitative Effects (Other Effects)

(1) Improvement of the Class Preparation and Implementation

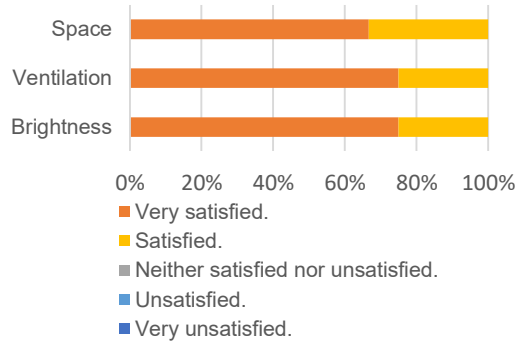
The facilities developed by the project are highly appreciated by lecturers and students. When interviewed in the ex-post evaluation survey, all of the responding lecturers and students answered that they were "very satisfied" or "satisfied" with the brightness, ventilation, and space (Figures 5 and 6, Photo 2). Lecturers commented that "windows are large and provide good lighting and ventilation," "classrooms without air conditioners have ceiling fans for good ventilation," "the brightness can be adjusted with curtains, making it easy to use the projector," and "classrooms are wider and easier to move for supervision," indicating that classes are being conducted comfortably. Considering that the classrooms and laboratory rooms were in the same building and there was some noise before the project, it can be said that the environment has become quiet and suitable for classes.

Photo 2 Lighting by Atrium.



Source: Interview results of 22 FEST lecturers.

Figure 5 Evaluation of Classrooms by Lecturers



Source: Interview results of 12 FEST students.

Figure 6 Evaluation of Classrooms by Students

According to the lecturers, in addition to the more comfortable educational environment, their class preparation and implementation have improved. Projectors and screens are now installed in each classroom, eliminating the need to wait for a small number of projectors and to transport and set them up in each classroom, as was previously the case. In addition, lecture content can be prepared in advance and projected on the day of the lecture, saving time for writing on the board, and classes have become more efficient and effective by visualizing the

[15] Interview with FEST vice dean.

content of explanations. Some students interviewed also commented that having diagrams and photographs projected on the screen made the content easier to understand than explanations based on printed materials. Another factor that facilitated class preparation was the well-equipped lecturer's room. The desks are larger, which means that it is now possible to prepare classes with multiple PCs and materials.

(2) Conduct of Practical Education

It can be said that the facilities and equipment developed by the project have made the classes more practical. FEST has signed an agreement with a private company that produces road construction materials, and in exchange for providing the use of the laboratory and equipment, the students of the Department of Civil Engineering have the opportunity to conduct joint research.[16] In addition, national and international seminars have been conducted in the field of engineering at the auditorium to disseminate information and to collect the latest information from abroad. The following comments were from lectures.

- The number of practical exercises conducted in class has increased due to the improved laboratory and more equipment for practical exercises (Department of Geology and Petroleum).
- Because PCs are used in class, having one PC per student maximizes the use of time for practical exercises (Department of Informatics) (Photo 3).

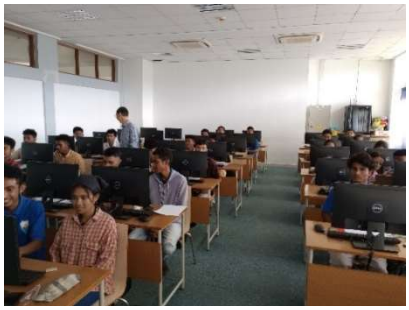


Photo 3 Class in PC Laboratory

- The projector and screen make it possible to illustrate examples of electrical device connections, etc., and explain them more clearly than when whiteboards were used. The classroom has become larger, allowing for group discussions (Department of Electrical and Electronic Engineering).
- The equipment for practical exercises in machining has been updated, and the exercises have been enhanced. Students' research topics have been diversified, and they can now perform machining more relevant to social issues, such as scooters for persons with disabilities (Photo 4) (Department of Mechanical Engineering).
- A new laboratory was built to provide practical exercises using procured equipment. The use of materials for simulation and software for structural design has made classes easier to understand, whereas they were previously in textbooks (Department of Geology and Petroleum).

Photo 4 Scooter for a Person with Disability

[16] Interview with the Representative of Timorock Technology System.

Similar comments were received from students and graduates. For example, a student from the Department of Geology and Petroleum indicated that the equipment was useful for their fieldwork, as it was necessary for her research (slope stability). She noted that the equipment for practical exercises functions so well that students from other universities ask permission to visit the laboratory. A graduate of the Department of Civil Engineering indicated that what he learned in class about surveying and measuring the density of materials was useful for his internship at a road construction company. Another graduate was unable to intern at a company due to the outbreak of COVID-19 expansion but was able to perform equivalent practical exercises in the laboratory at FEST using surveying and water-level measurement equipment. After graduation, he became employed by a road construction company and found the classes on soils and the practical exercises using CBR molds and compression molds particularly useful.

(3) Synergistic Effects with the Technical Cooperation Projects

Technical cooperation projects and country-wise training programs have been conducted for FEST-UNTL since 2006, and synergies with these interventions were confirmed. For example, first, effective equipment was selected. The curriculum and syllabus were revised in CEDEFEST to meet the industrial needs of Timor-Leste. With the confirmation of CADEFEST's experts, the equipment to be procured under the project was selected. In addition, equipment not covered by the project was deployed in CADEFEST 2. Thus, not only was the duplication of equipment for both projects avoided but equipment that would contribute to the educational objectives of each department was also selected following the syllabus. Second, the project has provided an opportunity for demonstrating the effects of the technical cooperation projects. Lecturers who have improved their research and teaching capacity through technical cooperation projects up to CADEFEST 2 have been teaching students using the facilities and equipment provided by the project.[17] The procured equipment has been used to put theoretical explanations into concrete practice. Thus, it can be said that the implementation of practical education has been synergistic effects of this project and a series of technical cooperation projects.

3.3.2 Impacts

3.3.2.1 Intended Impacts

The development of human resources in engineering-related fields was expected as a mid- to long-term impact of the project. CADEFEST 2 monitored the employment status of

[17] The equipment procured under this project will also be used for education and research in the master's program that started in May 2024.

graduates, and the monitoring survey in February 2023 showed that the employment rates of the graduates of June 2019, September 2020, May 2021, January 2022, and February 2023 were 93%, 76%, 100%, 75%, and 9%, respectively, as far as could be followed up.[18] The graduation rate increased one year after graduation. The statistical survey results indicated that department (Departments of Civil Engineering, Electrical and Electronic Engineering, and Mechanical Engineering), gender (male), and GPA (above average) were correlated with employment and preparation for employment. The analysis also showed that internship opportunities, connection with government/industry sectors, and the start of the job search process could also be employment factors. Because of the large number of external factors, this could not be strictly confirmed as an impact of the education at FEST-UNTL.

On the other hand, some employers of graduates provided positive comments. The director of Betano Polytechnic School expressed satisfaction with the working performance of the teacher of its civil engineering construction course, who graduated from the Department of Civil Engineering of FEST-UNTL in 2017. He said that the practical knowledge gained in FEST has been put into practice at the school. In addition, the previously mentioned private company that produces road construction materials employs several graduates, including students who interned at the company. The company representative said that she is mostly satisfied with the educational content of FEST and has further high expectations for the future.

3.3.2.2 Other Positive and Negative Impacts

1) Impacts on the Environment

This project was classified as Category C based on the *JICA Guidelines for Environmental and Social Considerations* (April 2010) for sensitive sectors because it was judged to have minimal undesirable impacts on the environment. The project had no environmental impact.

2) Resettlement and Land Acquisition

There was no resettlement or land acquisition in the project.

3) Gender Equality

Gender-related impact of the project could not be confirmed. According to FEST-UNTL, no specific gender considerations have been made in the educational activities. There have been no gender differences in terms of class participation, but female students have been more likely to participate in external conferences and symposiums and are more active than male students. Several female students interviewed said they have not experienced any difficulties in their education at FEST because they are female and that as long as they have academic ability, there

[18] JICA internal documents.

are no problems related to gender.[19] On the other hand, as previously mentioned, male students are more advantaged in terms of employment, suggesting that external factors have a significant impact on the generation of impact on female students.

4) Marginalized People

In this project, multipurpose restrooms and ramps were installed with wheelchair users, particularly among those with physical disabilities in mind. However, since there have been no students or lecturers with wheelchairs (Box 1), the impact on lecturers and students with disabilities has not been confirmed. On the other hand, the impact of ramps was confirmed as follows: walking on ramps around during pregnancy was easier than ascending and descending stairs; and furniture such as desks and large equipment could be easily transported with a cart on ramps (Photo 5).[20] Although it is anticipated that students with disabilities will be enrolled in the future, several faculty members believe that engineering education is not recommended for students with disabilities due to some of the hazards involved[21]and that some pathways are difficult to walk on outside of the school building, which is a room for future improvement (Photo 6).

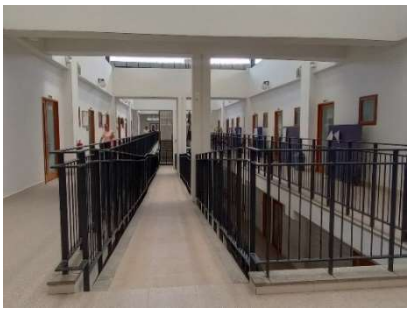


Photo 5 Ramp to Downstairs.

Photo 6 Pathway in Front of FEST.

Box 1 Enrolment of Students with Disabilities in Higher Education

The Association of Persons with Disabilities of Timor-Leste (ADTL) has conducted research on community-based rehabilitation as part of community development research in cooperation with the Faculty of Political Science of UNTL since 2015. In 2022, the research was upgraded to the faculty's undergraduate program as the community social inclusion program. In addition, ADTL recommends 15-25 students with disabilities as applicants for UNTL under the special regime, in collaboration with the Ministry of Higher Education. Students with disabilities could only enter that program until 2022, but from 2023, students may request admission to other faculties (Faculty of Education, the Faculty of Economics, and the Faculty of Policy Sciences), except for the Faculty of Medicine and Health Sciences and FEST. However, enrolment in other faculties has not yet been granted. Access to facilities has also been a major problem.

Source: Interview with ADTL.

[19] Interview results of a female student of the Department of Geology and Petroleum and a female graduate from the Department of Civil Engineering of FEST.
[20] Interview with the female lecturer of the Department of Geology and Petroleum of FEST.
[21] Interview with FEST vice dean.

5) Social Systems and Norms, People's Well-being and Human Rights, and Unintended Positive/Negative Impacts

The following positive impacts were identified. First, the large space has brought about positive changes. For example, the installation of the director's and sub-director's rooms of the five departments on the third floor of the Classroom Building has allowed them to spend more time together regularly, and regular meetings are punctually held due to improved flow lines.[22] This has facilitated communication between the departments. In addition, the cross corridor between the Classroom Building and the Common & Office Building is wide, where tables and chairs were set up by FEST. Many students used to go home as soon as classes were over, but the availability of this space has increased the number of students who stay after school to study on their own.[23] During the field survey, many students were seen self-studying, group studying, and chatting in the cross corridors, empty classrooms, and stairways (Photo 7).

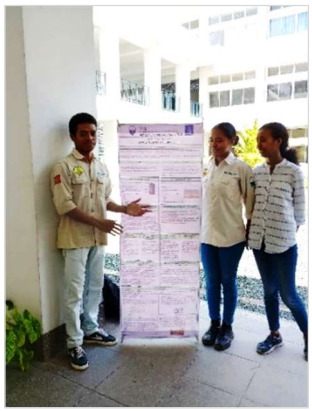


Photo 7 Student Group Practicing the Research Presentation

Second, the auditorium constructed under the project has been used for conferences and seminars of and with external organizations, contributing to the publicity of FEST. The auditorium is one of the distinctive facilities of the new building, with a staircase design that can accommodate approximately 400 persons, equipped with a large screen and an adjustable dimming system (Photo 8). In 2023, implemented activities include a meeting to hear public comments on the formulation of the national development strategy plan organized by the Prime Minister's Office, an international seminar on oil resource sustainability hosted by UNTL (attended by donors, embassies, researchers, etc.), and a seminar of the Association of Petroleum Engineers.[24] In addition, the Ministry of Public Works organized a seminar and showed its interest in the ramps and multipurpose restrooms at the FEST buildings, and similar facilities will be referred to in the design of other facilities.[25]

Photo 8 Auditorium during the Seminar

As a result of the development of classrooms, laboratories, and other facilities at FEST-UNTL, the number of registered students increased significantly. This led to a smaller floor area

[22] Interview with CADEFEST 2 expert.
[23] Interview with the lecturer of the Department of Civil Engineering of FEST.
[24] Interview with FEST vice dean.
[25] Interview with FEST vice dean.

per student than the target, but the situation is not overcrowded. In addition, as a synergistic effect with the technical cooperation projects, practical education has been provided, contributing to the development of human resources in engineering-related fields. Thus, this project has mostly achieved its objectives. Therefore, effectiveness and impacts of the project are high.

3.4 Sustainability (Rating: ②)

3.4.1 Policy and System

As mentioned earlier, *SDP* identifies the petroleum industry as a priority area for national development and states the importance of infrastructure development, human resource development, and related industries for this purpose. UNTL has been recognized as a core institution essential for human resource development and contribution to national development. The medium-term goals for 2020 include the expansion of UNTL, the construction of a modern complex facility of FEST, and the provision of a bachelor's degree program in geology and petroleum. *SDP* is valid until 2030, and the same was confirmed in the interviews with the Directorate General of Higher Education of the Ministry of Higher Education.

Therefore, it is judged that there are no issues regarding policy and system aspects, including the future prospect.

3.4.2 Institutional/Organizational Aspect

At UNTL, several administrative departments are established under the rector, which are in charge of logistics maintenance, and procurement. There are 10 faculties, including FEST. FEST has a dean and four vice deans, who take responsibility for academic matters, administration, students' affairs, and external cooperation. Each of the five departments in FEST has a director, sub-director, lecturers, and laboratory technicians. The Coordination Unit has been formed by the directors and sub-directors and meets monthly to share and discuss information related to faculty operations.

The table below shows the roles regarding the maintenance of facilities and equipment at FEST. There has been no change from the structure envisioned at planning. The budget for facilities and equipment maintenance is allocated to the administrative division of the headquarters and not to the individual faculties. When faculties need to repair facilities and equipment, they apply to the headquarters, which reviews and approves the application by the Rector's Council. If approved, the application is included in the next year's budget. In addition, if the applied cost is $5,000 or more, it will be publicly advertised and bid on according to the government procurement process. Competitive bidding takes at least four months (up to six months). In addition to the time required for these procedures and the difficulty in determining the timing for obtaining repair and spare parts, some personnel at headquarters are not familiar with the specifications and procurement routes for equipment and spare parts, making it time-

consuming to respond. This was pointed out even during the implementation of CADEFEST[26], but according to the rector, there are no plans to change this procurement system.

Table 6 Roles of Operation and Maintenance of Facility and Equipment at FEST

	Roles and Responsibilities
Headquarters	• Development of policies for operation and maintenance of UNTL. • Budgeting and allocation. • Approval of staffing plan. • Review and approval of applications from each faculty. • Order placing with manufacturers' agents, etc.
FEST (Faculty)	• Compilation of budget applications from each department and application to the headquarters office. • Collection of information from each department and reporting to the headquarters (Coordination Unit). • Application for equipment repair.
Departments	• Management and updating of inventory lists by department. • Information compilation regarding missing parts and consumables. • Handling of serious breakdowns (identifying the location of the malfunction, reporting to the department for repair application).
Each Department Laboratory (Technicians)	• Instructing and informing students on how to use the equipment. • Daily inspections. • Check for missing parts and consumables. • Handling of simple breakdowns (adjustment, repair, etc.).

Source: Interview results of FEST vice dean.

FEST has developed the facility development plan for the period 2024-2029, which for 2024 includes inspection of the new buildings and auditorium, repair of the exterior walls, and repair of the workshop of the Department of Electronics and Electrical Engineering. FEST has already submitted the plan to the headquarters with the human resource development plan (requesting additional staff) for the same period, but it is unclear whether the plan will be approved.[27]

In 2023, FEST was staffed with 76 lecturers (23 in the Department of Mechanical Engineering, 18 in the Department of Civil Engineering, 15 in the Department of Electrical and Electronic Engineering, 11 in the Department of Informatics, and nine in the Department of Geology and Petroleum), 12 laboratory technicians (three in the Department of Mechanical Engineering, one in the Department of Civil Engineering, two in the Department of Electrical and Electronic Engineering, three in the Department of Informatics, and three in the Department of Geology and Petroleum), 16 faculty officers, and 8 department officers. Of these, laboratory

[26] JICA (2015) *Terminal Evaluation Report of Project for Capacity Development of the Faculty of Engineering Science Technology, the National University Timor Lorosa'e.*
[27] Interview with FEST vice dean.

technicians from each department perform daily inspections of equipment and simple troubleshooting. According to the department directors, the number of lecturers in the Department of Civil Engineering and the Department of Geology and Petroleum was insufficient for the class content and the number of students. For 2024, a staffing plan has been submitted to the headquarters, as described above, requesting an increase of nine members, including two lecturers in the Department of Civil Engineering, two lecturers in the Department of Geology and Petroleum, and one laboratory technician in the Department of Geology and Petroleum.

In light of the above, some FEST departments have been short of lecturers. The laboratory technicians have conducted daily inspections of laboratory equipment and handled minor breakdowns, and FEST has needed to apply to the headquarters to address serious breakdowns or malfunctions or the purchase of expensive equipment. Although the role demarcation has been clear, the system has not allowed for timely maintenance, such as necessary repairs and equipment purchases, and there is no prospect for improvement.

3.4.3 Technical Aspect

At each department of FEST, equipment has been managed in the inventory, and simple repair and identification of missing spare parts and consumables have been performed by the laboratory technicians. According to the vide deans and the department directors, there are no technical problems related to the operation and maintenance of the equipment, as they were briefed on the equipment installation and received guidance from CADEFEST 2 experts. Technicians have been assigned to the laboratories, such as graduates of each department, who have basic knowledge of the operation and maintenance of the laboratory equipment. Manuals for the equipment have also been in place.

Therefore, it is judged that there are no technical problems in the operation and maintenance of the equipment.

3.4.4 Financial Aspect

The UNTL budget is independent of that of the Ministry of Higher Education. The planned budget allocation from the government to UNTL in 2024 was $17.28 million. The budget from the government has repeatedly increased and decreased since 2020, but the reasons for this could not be confirmed. UNTL also collects class registration fees from students, but the amount of these fees was not available in the ex-post evaluation.

Table 7 The Government Budget Allocation to UNTL (Unit: $1,000)

	2020	2021	2022	2023	2024 (plan)
Budget allocation to UNTL	14,002	19,055	16,577	19,323	17,281

Source: Data provided by UNTL headquarters.

The following table shows the expenditures for the maintenance of FEST since the project completion. As noted above, there have also been increases and decreases in the budget for FEST due to the priorities for repairs in the 10 UNTL faculties, in addition to increases and decreases in the government budget allocation.[28] The electricity costs after 2022 increased due to an increase in overall electricity use in FEST as facilities other than the new buildings were repaired and reused on the campus where FEST is located.[29] Fuel costs have not been spent because, as previously explained, no generator was installed and the existing generators have not been in use. The cost for facility and equipment maintenance for 2023 included repair to the student dormitories and elevated water tanks.[30]

Table 8 Expenditure of Maintenance at FEST-UNTL (Unit: $)

	Expected at the planning phase	2021	2022	2023	2024 (plan)
Electricity	0	19,584	92,129	90,242	90,242
Fuel	6,110	0	0	0	0
Communication	19,960	55,200	55,200	55,200	55,200
Facility and Equipment Maintenance	28,958	1,350	1,078	12,450	NA
Total	55,028	76,134	148,408	157,892	NA

Source: Preparatory Survey Report, data provided by UNTL headquarters.

As explained earlier, there has been no budget for facilities and equipment that FEST can manage, and any maintenance that requires expenditures must be applied for to UNTL headquarters on a case-by-case basis. Even if such maintenance is approved, FEST must wait until the following year to spend the funds. In addition to the time required, not all applications FEST submits are approved due to applications from other faculties. The fact that FEST has better facilities and equipment than the other nine faculties due to the long-term support from JICA also may affect the budget allocation among the faculties.[31] Because of this situation, the dean and four vice deans voluntarily have paid $20 per month to make small repairs and purchase furniture and other items.[32] In each department, the laboratory technicians have provided services for external use, and their fees have been used to make repairs and purchase consumables. For example, in the Department of Mechanical Engineering, 60% of the fees earned for services provided go to the compensation of the technicians and 40% to the

[28] Questionnaire answer from FEST.
[29] Questionnaire answer from FEST.
[30] Questionnaire answer from FEST.
[31] Interview with FEST vice dean and lecturers.
[32] Interview with FEST vice dean.

department's budget for maintenance purposes.[33]

Therefore, although the operating budget for facilities and equipment necessary for classes and practical exercises has been spent, not all necessary repairs and maintenance have been addressed, and it will take time until they are spent. This is not expected to be improved, which may affect facility maintenance in the medium to long term.

3.4.5 Environmental and Social Aspect

No negative environmental or social impacts or risks have been reported to UNTL or confirmed during the interviews at FEST. Presumably, they are not likely to occur in the future.

3.4.6 Preventative Measures to Risks

Risk factors identified during the preparatory survey for project implementation were the inflow of mudslides into the campus and accidents during construction. Countermeasures were taken against these risks, such as excavation of the riverbed and implementation of the safety management plan, and these risks could be avoided during construction. Delays in obtaining work visas for workers from third countries were also identified as a risk factor. To avoid a significant impact on the extension of the construction period, the initiation of procedures before entry into Timor-Leste and updating of information were implemented as risk mitigation measures.[34] Preconditions for the project implementation were the removal and clearing of existing structures on the proposed building construction site and the acquisition of construction permits and environmental licenses by the Timor-Leste side. These were implemented as planned and did not cause a risk to the project start.

3.4.7 Status of Operation and Maintenance

3.4.7.1 Current Status of the Facility and Equipment

(1) Facility

The facilities constructed under the project have been utilized as originally intended, except for the multipurpose restrooms. The multipurpose restroom has not been used because there have been no wheelchair users, and one restroom has been used as storage for the janitor, but it will be used as intended when the need arises.[35] During the implementation of the technical cooperation projects, Japanese experts used one of the guest lecturers' rooms and one multipurpose restroom.

On the other hand, direct observation during the ex-post evaluation survey revealed several problems. The most common problem was the malfunctioning of air conditioners

[33] Interview with the Department of Mechanical Engineering of FEST.
[34] Interview with the project main consultant.
[35] Interview with FEST vice dean.

(Photo 9). Nineteen air conditioners in the director's rooms, sub-director's rooms, secretary's rooms, lecturers' rooms, and the library have had problems with water leakage and temperature control. This could be attributed mainly to the fact that the drainpipes and filters were cleaned only once in 2022.[36] In addition, many rooms were observed during the field survey with the air conditioning set at 16 to 20 degrees Celsius, which was also considered a heavy burden on the air conditioners. Second, many projectors have been malfunctioning. So far, six projectors in the classrooms of the Department of Electrical and Electronical Engineering and the Department of Informatics have been repaired or replaced with funds from the respective departments. As of January 2024, 13 projectors were not functioning, but the reason for the malfunction could not be determined. Also, half of the uninterruptible power supplies in the PC laboratory room were malfunctioning, and the computers have been connected directly to the power supply. In addition, several power supplies connecting the computers in the library have failed and have been in the starburst connection.


Photo 9 Water Leak from the Air Conditioner

Moreover, six of the 10 restrooms have had problems with broken booth locks, water leaks, fallen sink levers, and broken latrine seats. Clogged drains have been common in the women's restrooms, mainly due to the flushing of used sanitary products. Students from rural areas are not accustomed to flushing toilets, and although the orientation for new students includes an explanation of how to use the facilities, including the toilets[37], the lack of trash cans in individual booths to dispose of used sanitary products is considered a more significant cause of this problem. The multipurpose restrooms are locked when not in use. When the door was opened to check the interior during the field survey, the deteriorated fittings were damaged. Another problem with the building's exterior was that the gutters were filled with waste and water was not flowing. This was also a problem pointed out during the defect inspection survey.

(2) Equipment

There have been generally no problems with the equipment procured during the project, and almost all the equipment has been in operation. In the Department of Geology and Petroleum, a handheld XRF analyzer had been out of service due to battery depletion. A Japanese university professor who was a CADEFEST 2 expert visited the department in March 2024 and replaced the battery with one brought from Japan, and the equipment has been working again. There has been an ingrained habit of having the equipment repaired by the

[36] Interview with the project main consultant.
[37] Interview with FEST vice dean.

Japanese side in past technical cooperation projects. Concerns include that several lecturers commented that they would like to ask JICA to do what they cannot.[38]

3.4.7.2 Operation and Maintenance of the Facility and Equipment

(1) Facility

As part of daily maintenance, floor wiping and other cleaning activities in the building have been carried out every day by a private company commissioned by UNTL headquarters (Photo 10). In addition, preventive maintenance envisaged at the time of planning included the repair of exterior walls and the roof inspection every three years, monthly cleaning around gutters and drains, annual inspection and repair of seals around fixtures, and inspection and cleaning of gutters and manholes. Of these, cracks in the mortar paint surface on the exterior walls were repaired at the time of the defect inspection survey. No other anticipated maintenance has been performed.

Photo 10 Well Maintained Classroom

Other inspections conducted by FEST include the inspection and cleaning of septic tanks every three months and the inspection of receiving water tanks and power transmission equipment every six months. Inspections of fire pumps and the alarm equipment have not yet been conducted, and FEST answered that they would like to conduct these inspections in 2024. This, along with other unimplemented maintenance, will be prioritized and initiated after the maintenance application is approved.[39]

(2) Equipment

Each department has inspected the operational status of the equipment when it is used for practical exercises. In addition, the condition of the laboratory rooms and equipment has been checked each semester, which is reported to the faculty office.

In light of the above, some issues have been observed in the institutional/organizational and financial aspects. They are not expected to be improved/resolved. Therefore, sustainability of the project effects is moderately low.

[38] At the time of the ex-post evaluation, preparations were underway to establish a new graduate school with JICA support, and a new technical cooperation project was being planned.
[39] Interview with FEST vice dean.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project was implemented to improve the quality and condition of the education and training delivered at FEST-UNTL, by constructing new buildings and procuring research and educational equipment, thereby contributing to the development of human resources for economic development. The project was relevant with the development policies of Timor-Leste, which have considered infrastructure development as an important issue for national development and with the development needs for improving the educational environment of FEST, which is responsible for human resource development for this purpose. Japan's assistance policy toward Timor-Leste also emphasized the importance of infrastructure development and industrial human resource development, and there was coordination and collaboration with other JICA projects during the project period; therefore, the project relevance and coherence are high. Although the project cost was within the plan, the project period significantly exceeded the plan due to the extended detailed design survey and construction period and unsuccessful bidding. Thus, efficiency of the project was moderately low. The number of registered students increased significantly as classrooms, laboratories, and other facilities were developed. Facilities and procured equipment have been utilized to provide practical education. Therefore, effectiveness and impact are high. Some minor issues have been observed in the institutional/organizational and financial aspects regarding the operation and maintenance of the facilities developed by the project, and they are not expected to be resolved. Thus, sustainability of the project effects is moderately low.

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

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

<u>Adequate Students Enrolment</u>

The number of registered students has continued to increase because only about half of the students have graduated in four years, whereas more than the planned number of students have enrolled. Subjects with many registration requests are sometimes taught in multiple classrooms, which may lead to a decline in the quality of education. This also places a burden on lecturers. It is recommended that the Ministry of Higher Education ensure that the number of students enrolled does not exceed 80 in each department.

<u>Prompt Repair of Restrooms</u>

There have been many problems with the locks on the individual booths of the restrooms. Booths without a lock are a major privacy problem. There have been also many blockages in the women's latrines. It is recommended that these problems be addressed as soon as possible using funds available from FEST. It is also recommended that all women's restrooms be

equipped with a trash can in each booth to dispose of used sanitary products.

Thorough Preventive Maintenance

Many air conditioner problems were observed. The water leakage problem has been caused by insufficient cleaning of filters and drainpipes. It is recommended to FEST that monthly filter cleaning and annual drainpipe cleaning be included in the cleaning company's responsibilities or, if this is not possible, that an application be made to UNTL headquarters to request a professional contractor to do this in the next year and later.

Publicity of the Universal Design of the Facilities

Of the facilities developed under the project, the auditorium has been particularly well received and frequently utilized as a venue for national and international seminars and conferences conducted by ministries and other agencies. It is recommended to UNTL that this opportunity be used to introduce the universal design of the facilities, such as the multipurpose restrooms and the ramps in the Classroom Building, to visitors through verbal explanations and poster displays. This is expected to promote universal design across the country.

Preparation for Accommodating Students with Disabilities

FEST-UNTL is the only facility in the country with multipurpose restrooms and ramps, and UNTL can play a major role in promoting equal educational opportunities by accepting students with and without disabilities. There is a possibility that students with disabilities will be enrolled in FEST in the future. FEST needs to be prepared in advance as to what existing facilities can accommodate such students according to the type and degree of disability and what new accommodations will be necessary. It is recommended that UNTL make preparations in stages, consulting with ADTL.

4.2.2 Recommendations to JICA

Introduction of Examples of Reasonable Accommodations for Students with Disabilities at Japanese Universities

The accommodation of students with disabilities at UNTL has not been well developed. To promote the guarantee of educational opportunities for students with disabilities, it is recommended that JICA introduce UNTL headquarters and FEST, specific examples of how engineering departments of Japanese universities provide support for students with disabilities, and handbooks prepared by the Japan Student Services Organization.

4.3 Lessons Learned

Establishment of Monitorable Impact Indicators

An impact expected in this project was the contribution to building a foundation for economic vitalization, and the number of graduates working in related fields was used as one of the verification indicators in the ex-post evaluation. FEST has managed the name list of graduates, not the results of follow-up surveys of employment. Fully understanding graduates' employment status was difficult, because some could not be contacted, and some started their businesses or took on fixed-term work as freelancers. There was no discussion on ex-post monitoring of impact indicators during the period of this project (grant aid project). When setting impact indicators in a grant aid project, it is desirable to use data the implementing agency has already managed. In the absence of such data, the main consultant needs to set indicators using data that the implementing agency might be able to manage, and after clarifying the section in charge of monitoring during the project period, the consultant should explain to the implementing agency the procedures and forms for data collection, analysis, and recording.

Utilization of Universally Designed Facilities

This project included installing restrooms and ramps for lecturers and students with physical disabilities as part of the universally designed facility. To date, no lecturers or students with disabilities have been enrolled, but there is a good chance that some will be at FEST in the future. On the other hand, unfortunately, the Ministry of Higher Education and UNTL (headquarters and FEST) made several comments indicating that engineering education is dangerous and not recommended for students with disabilities. In addition, UNTL has not compiled a policy or a system to provide reasonable accommodations for students with disabilities, and the organizational structure is not necessarily adequate. It is a prerequisite that future projects for facility development be planned with universal design, keeping in mind the diversity of users. In doing so, it is necessary, as a component to promote the facility usage, to fully explain the purpose of universal design to the implementing and supervising agencies, to consult with organizations of people with disabilities in the target countries to propose measures that can be taken to facilitate the acceptance of diverse users and to introduce examples of similar facilities in Japan that have taken such measures.

5. Non-Score Criteria

5.1 Performance

5.1.1 Objective Perspective

This project was implemented in Timor-Leste soon after the restoration of independence. Timor-Leste did not have construction regulations in place at the time of the preparatory survey. The following efforts were made: The consultant for the preparatory survey consulted with the

Timorese side and designed the facilities, including multipurpose restrooms and ramps, following Japanese standards. Quality control of major construction types was based on international standards. For construction materials, methods and materials common in Timor-Leste were used.

5.1.2 Subjective Perspectives (retrospective)

In Timor-Leste, there were various challenges in the project formation and implementation phases when the country had just become independent. As the project stakeholders commented, these challenges were addressed through their efforts and cooperation among the parties involved, leading to the completion of the project as described below. These issues and responses may serve as a reference for other countries and regions seeking to move from reconstruction to development.

(1) Bid Preparation and Implementation

According to the project main consultant, the construction market in Timor-Leste was not large, and the lack of competition in bidding was provoking issues related to bidding prices and extended construction periods. In addition, because construction equipment was not abundant in the country, the construction contractor decided to bring the necessary equipment from a third country, rather than renting it in Timor-Leste.

(2) Obtaining Visas for Foreign Workers

Many of the skilled Timorese workers were out of the country, and it was necessary to invite Indonesian workers to work on constructing the project. The project main consultant said, "The construction contractor had a lot of experience working in Indonesia, which helped in this regard. More than 150 workers joined the construction work every month. They had to apply for a work visa after entering the country with a tourist visa. This was difficult because even after submitting the documents, other documents were required, and it took a long time before the final approval was granted. Although there was an agreement with customs to issue the visas promptly, it was not followed through."

On the other hand, the construction contractor also recalled, "This project was our first work in Timor-Leste, and we were groping our way through the process. Challenges included the large number of documents required for visas and the number of places to submit them. We had to follow the process in which the workers had to leave Timor-Leste once after the work permit was issued and then re-enter the country to obtain the work visa." The construction contractor consulted with FEST and decided to apply for a special stay visa, but the day before that visa was issued, the immigration authorities considered it a labor violation and seized the applicant's passport. In the end, the company had to pay a penalty and newly apply for a work

visa.

(3) Equipment Procurement

According to the procurement contractor, “Difficulties arose in procuring additional equipment by air and courier. When additional materials were sent to Dili by courier, they were often returned from Singapore, the transit point, to the shipping point. Such a problem did not occur often in other countries.” The contractor presumed the reason, speculating that “At the time the project was implemented, the only air service to Dili was by LCCs, so there was little weight and space allocated for anything other than passengers and their luggage.” As a response to this, the contractor sent urgent equipment to third countries, such as Australia and Indonesia, and asked the manufacturer’s engineers and distributor’s staff to enter Timor-Leste from there, hand-carrying the equipment. The contractor received advice from JICA Timor-Leste office to smoothly obtain a permit for duty-free procedures at the time of customs clearance of the ocean-transported cargo.

(4) Accepting Student Interns and Graduates to the Construction Site

In response to FEST’s desire to have students gain practical experience, the construction contractor accepted interns and hired graduates at the construction site. The project main consultant said, “Although their work did not progress as fast as the Indonesian engineers’, many of the interns were quick to learn the work, and it was a good experience for them.” Although the construction period was delayed, the project was completed without incident.

The construction contractor also commented, “In addition to engineers from the third country, we hired FEST graduates. They were very willing for the work.” The Director of the Civil Engineering Department at the time coordinated with the project for this internship. According to a JICA expert of CADEFEST 2, which was being implemented at the time, “The Department of Civil Engineering was always looking for interns and was in direct contact with the construction contractor, without going through the technical cooperation project expert, to promote student intern and graduate employment.”

Not only FEST but also UNTL headquarters showed high expectations for the new building. According to JICA’s Human Development Department, “The rector was highly interested in the construction of the new building and visited the site frequently during the project implementation. This led to media coverage and made the construction contractor company aware that they were being watched, which resulted in the implementation of adequate safety measures.”

(5) Cooperation from FEST

FEST provided cooperation during the implementation of the project. Specifically, concrete

compression testing services were provided using the equipment that had been provided in the prior project. The project main consultant was grateful for this, saying “Normally we request this kind of service from an inspection agency in the country, but by outsourcing it to FEST, we were able to get the results quickly, and FEST responded to their request even outside of business hours.” The Director of the Department of Civil Engineering Department at the time commented, “The construction contractor seemed to think that FEST could perform the commissioned inspections when needed. However, classes of FEST should take precedence, so we set a time that would not interfere with classes. We wanted to support our new building construction project, and we were able to avoid major problems by coordinating with the consultants through full communication.” The vice dean, who was in charge of coordinating with the project, also said, “We did not spare any effort to cooperate with JICA for the development of FEST and would continue to do so in the future.”

The existing compression testing machine was not the latest model and had some defects, but the equipment procurement consultant used his experience in the previous work to repair it and instructed the laboratory technicians on how to utilize it. This made the above cooperation possible. The consultant said, “FEST lecturers and the construction contractor were very appreciative.” He recalled, “Although I was in charge of equipment procurement, it was good to be able to contribute, even if only partially, to the construction of the new school building.”

5.2 Additionality

None.

(End)