

BASIC DESIGN STUDY REPORT
ON
URGENT REHABILITATION OF THE FACULTY OF ENGINEERING
OF EAST TIMOR NATIONAL UNIVERSITY
IN
EAST TIMOR

November, 2001

Japan International cooperation Agency (JICA)

Kume Sekkei Co., Ltd.

Overseas Vocational Training Association (OVTA)

PREFACE

In response to a request from the UNTAET/ETTA (United Nation Transitional Administration in East Timor/East Timor Transition Administration), the Government of Japan decided to conduct a basic design study on the Project for Urgent Rehabilitation of the Faculty of Engineering of East Timor National University and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to East Timor a study team from July 21 to August 17, 2001.

The team held discussions with the officials concerned of the UNTAET/ETTA, and conducted a field study at the study area. After the team returned to Japan, further studies were made. Then, a mission was sent to East Timor in order to discuss a draft basic design, and as this result, the present report was finalized.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the UNTAET/ETTA for their close cooperation extended to the teams.

November, 2001



Takao Kawakami
President
Japan International Cooperation Agency

November, 2001

Letter of Transmittal

We are pleased to submit to you the basic design study report on the Project for Urgent Rehabilitation of the Faculty of Engineering of East Timor National University in East Timor.

This study was conducted by Kume Sekkei Co., Ltd. and Overseas Vocational Training Association Consortium, under a contract to JICA, during the period from July, 2001 to December 2001. In conducting the study, we have examined the feasibility and rational of the project with due consideration to the present situation of East Timor and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

Finally, we hope that this report will contribute to further promotion of the project.

Very truly yours,



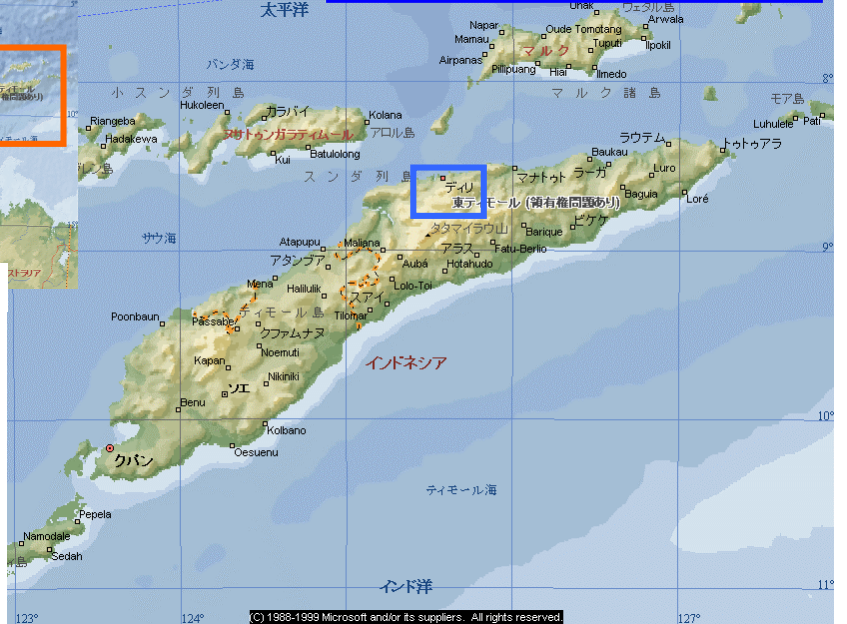
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Project Location Map

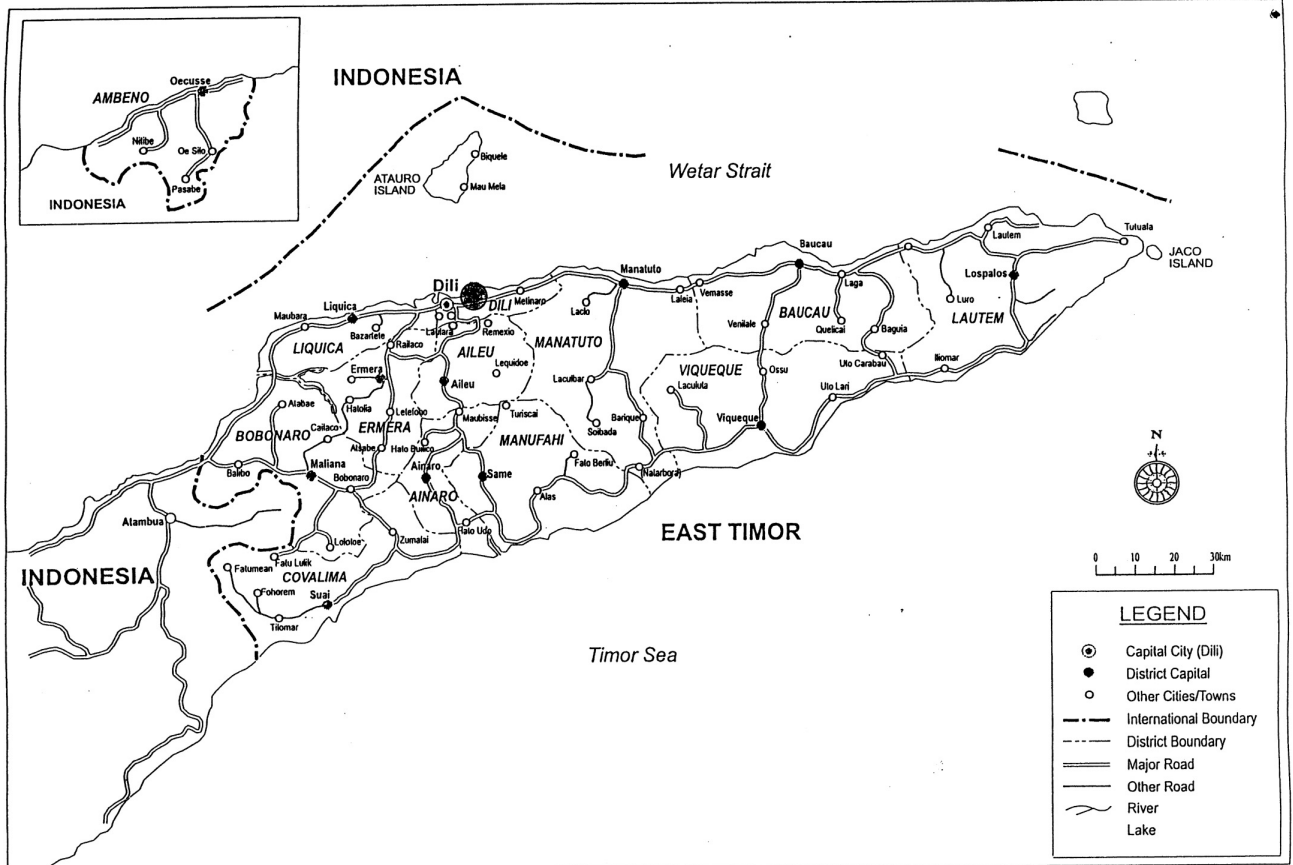
East of Indonesia



West Timor and East Timor



Project Location



Urgent Rehabilitation of Faculty of Engineering of East Timor National University



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List of Abbreviations

Abbreviation	Full Words
ACIAR	Australian Centre for International Agricultural Research
ACOP	Association of Construction Businesses, East Timor
ADB	Asian Development Bank
ASEAN	Association of South East Asian Nations
ASSET	Association of East Timorese Entrepreneurs
AusAID	Australian Agency for International Development
BNU	Banco Nacional Ultramarino
BOT	Build Operate and Transfer(BOT)
CAPET	Capacity Building Program for East Timor
DCU	Donor Coordination Unit
CCA	Common Country Assessment
CEP	Community Empowerment Project
CFET	Consolidated Fund for East Timor
CISPE	Civil Service and Public Employment Office
CNRT	Conselho Nacional da Resistencia Timorese
DLSS	Division of Labor and Social Services
DSA	Department of Social Affairs
EASMAT	East Asian Multi-disciplinary and Advisory Team
ESRP	Emergency Schools Readiness Project
ETDA	East Timor Development Agency
ETTA	East Timor Transitional Administration
FAO	Food and Agricultural Organization of the United Nations
GDP	Gross Domestic Product
HRMO	Human Resource Managing Office
HREOC	Human Rights and Equal Opportunity Commission
ILO	International Labor Organization
IMF	International Monetary Fund
JAM	Joint Assessment Mission
JICA	Japan International Cooperation Agency
LAIFET	Labor Advisory Institute for East Timor
LPMC	Land and Property Management Centre
MDT	Multi-disciplinary and Advisory Team
NC	National Council
NCBA	National Cooperative Business Association
NCC	National Consultative Committee

Abbreviation	Full Words
NGO	Non Government Organization
NPC	National Project Coordinator
NPDA	National Planning and Development Agency
OCHA	Office of Coordination for Humanitarian affairs
PAC	Program Advisory Committee
PMU	Project Management Unit
SA	Special Advisor
SCO	Swiss Contact Organization
SENAI	National Service for Industrial Apprenticeship
SIMPLAR	Strengthening and Improving Labor Relations in East Timor
SPG	Sekolah Pendidikan Gulu
SRSR	Special Representative of the Secretary General of the United Nation for East Timor
SSRP	School System Revitalization Program
TEP	Transitional Employment Projects
TFET	Trust Fund for East Timor
TOR	Terms of Reference
TVET	Technical and Vocational Education and Training
UN CIVPOL	United Nations Civilian Police
UNACB	United Nations Assessed Contribution Budget
UNAMET	United Nation Mission to East Timor
UNDP	United Nations Development Program
UNFPA	United Nations Population Fund
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UNOPS	United Nations Office for Project Services
UNTAET	United Nations Transitional Administration in East Timor
UNV	United Nations Volunteers
USAID	U.S. Agency for International Development
VT	Vocational Training
WB	World Bank
WFP	World Food Program
WHO	World Health Organization

SUMMARY

Prior to its integration to Indonesia in 1975, East Timor was under Portuguese colonial rule for more than 400 years. The withdrawal of Portugal prompted Indonesia to integrate East Timor as its 27th province even though the UN never recognized this move. In June 1998, Indonesia proposed limited autonomy for East Timor within Indonesia. Subsequent negotiations resulted in a set of agreements on 5th May, 1999 between Indonesia and Portugal, who both then entrusted the Secretary-General of the UN with the task of organizing “a referendum” to ascertain whether the people of East Timor accepted or rejected autonomy for East Timor within Indonesia. On 30th August 1999, some 98% of the registered voters voted by a margin of 94,388 (21.5%) to 344,580 (78.5%) to reject the proposed autonomy in favor of eventual independence.

The result of this referendum favoring independence was immediately followed by widespread violence, looting and arson by force of integration who against the result of referendum. Many East Timorese were killed and displaced and some were even forced to leave the territory by force. This major civil unrest resulted in the destruction or inoperable of more than 70% of the infrastructure, including educational facilities. The former polytechnic which will be renovated as East Timor National University was no exception as its facilities were severely damaged by arson while much of the equipment was either stolen or destroyed.

Meanwhile, the withdrawal of Indonesians who used to occupy most of the positions of middle class engineers, managers and technical staff in East Timor prior to the referendum caused the collapse of public services, including legal, health, education and community services, provided under Indonesian rule. To make the situation worse, many of the few East Timorese who had obtained qualifications and skills during the period of Indonesian rule left East Timor for Indonesia or other countries. The evacuation of middle-class engineers and managers from East Timor makes the training of public servants in technical fields and engineers in the private sector, who will play a crucial role in national building in the coming years, essential.

The United Nation Transitional Administration in East Timor (UNTAET) was established pursuant to United Nation Security Council Resolution 1272(1999) of October 25th,1999, and is responsible for administering the transition of independence together with East Timor Transitional Administration(ETTA).

On 30th August, 2001, a general election was held to establish the Constitutional Assembly, followed by the formation of the Cabinet in September when the ETTA was reviewed to give birth to the Second Transitional Administration of East Timor and the Ministry of Social Affairs of the original Transitional Administration was reorganized as the Ministry of Education, Culture, Youth and Sports. At present, the process of replacing the UN staff occupying Transitional Administration positions by East Timorese is in progress. Towards the planned independence in May 2002, the establishment of various systems, including the Constitution, is urgently necessary to make East Timor a truly independent country. In the field of educational administration, the priority tasks are the enactment of the Basic Education Law and the firm establishment and operation of the school education system.

The school education system in East Timor has inherited the previous Indonesian system and the Division of Education, Culture and Youth of the former Ministry of Social Affairs commenced the establishment of the education system and the recruitment of school staff, including teachers, in

accordance with this Indonesian system. The school education system, therefore, consists of two years of pre-school education, six years of primary education, three years of junior secondary education and three years of senior secondary education. Higher education consists of D3 and S1 level education lasting for 3 – 4 years.

When the social unrest calmed down, the East Timor National University was established by integrating the former National University of East Timor Lorosae (a private university), the former Poly-tech and the former Teachers' College under the policy of the UNTAET/CNRT in order to re-open the university as soon as possible to deal with the shortage of human resources in East Timor and to stabilize the life of younger generation. The new East Timor National University consists of five faculties (Engineering, Education, Agriculture, Economics and Social Science) and commenced teaching in November 2001 as the sole university in East Timor. The University uses once destroyed school buildings that have been repaired and the classrooms, teachers' rooms and other facilities are inadequate, preventing efficient teaching. In the case of the Faculty of Engineering, the total lack of workshops, laboratory and other equipment for practical teaching means that teaching consists entirely of classroom lectures.

Against this background, there is an overwhelming need to establish the Faculty of Engineering to train core engineers as well as managers, of which there is currently a shortage, and to change the existing industrial structure. Given the fact that there is already a sufficient number of applicants, the UNTAET/ETTA has formulated a project to rehabilitate the former Poly-tech facilities in Hera area to recommence engineering teaching in the new term commencing in October, 2002 and has made a request to the Government of Japan for the provision of grant aid for the rehabilitation of the former Poly-tech facilities and the procurement of equipment.

In response to this request, the Background Study Mission for the Request for Rebuilding of the Faculty of Engineering of the East Timor National University was conducted in March 2001. The field survey team clarified the current situation of higher education on engineering subjects through a study on the relevant facilities, the situation of the facilities and equipment of the former Poly-tech, the curriculum and syllabus of the newly established Faculty of Engineering and the number and careers of teaching staff, etc. and confirmed the urgent necessity for the Project.

This study was followed by the "Assistance for the Planning of Curriculum for the Faculty of Engineering" which was conducted from 14th July to 25th July 2001 to prepare the new curriculum jointly with teachers of the Faculty of Engineering of the East Timor National University. New Curriculum consisted Electrical Engineering, Mechanical Engineering and Civil Engineering, and two classes of 25 each for each year, total of 450 students, three years (D3 level curriculum) with 108 units. In addition, the priority ranking of the equipment to be procured for basic practical training was decided.

Based on the findings of these preliminary studies, the Government of Japan decided to conduct the Basic Design Study and the Japan International Cooperation Agency (JICA) dispatched the Basic Design Study Team to East Timor for 28 days from 21st July to 17th August 2001. The Basic Design Study Team reconfirmed the contents of the request and the project implementation system based on the curriculum contents planned by the Curriculum Planning Assistance Study Team. The Basic Design Study Team also conducted field surveys on various subjects, including the former Poly-tech buildings, damage to existing equipment, situation of infrastructure, activities of other aid

organizations, natural conditions, related laws and regulations and conditions of similar facilities.

On its return to Japan and based on the results of consultations and the field surveys, the Basic Design Study Team analyzed the facility plan, equipment plan, scale, construction schedule, project cost, the construction cost to be born by the East Timorese side and the suitability of the Project and prepared the Draft Report for the Basic Design for the Project which was explained to the East Timorese side in the nine days from 27th September to 5th October, 2001.

For the purpose of the Project, the existing buildings are classified into those to be rehabilitated, those of which the demolition is desirable and those, which can be rehabilitated as shown in the table below.

Existing Building	Summary of Inspection Results	Response Under the Project
Buildings to be Rehabilitated		
Physics and Chemistry Laboratory	No problems in regard to the concrete strength or neutralisation. Several roof leakage can be seen.	To be renovated as the new administration and lecture building (classrooms, computer room and library, etc.) The roof tiles are replaced
Mechanical Engineering Workshop	Extensive fire damage to the lower section and weakening concrete strength in some parts; these areas require rebuilding above the ground level.	To be rehabilitated as the new Electrical engineering and Mechanical engineering workshop
Civil Engineering Workshop	As above	To be rehabilitated as the new civil engineering workshop building
Canteen	Several roof leakage can be seen. Deterioration of the concrete block walls due to through the fire damage to the kitchen	Roof, kitchen and toilets to be rehabilitated.
Building of Which the Demolition is Desirable		
Administration Building	Extensive fire damage due to the presence of a bulk amount of combustible papers has substantially reduced the concrete strength, making the demolition of this building desirable.	It is dangerous for the students' activity, so to be demolished.
Lecture Building	While the concrete strength is satisfactory, advanced neutralisation of the concrete was discovered, making the demolition of this building desirable.	No work is planned because lower priority.
Library Building	Extensive fire damage due to the presence of a bulk amount of combustible papers has substantially reduced the concrete strength, making the demolition of this building desirable.	No work is planned because lower priority.
Staff Accommodation	The reduced concrete strength and advanced neutralization of the concrete makes the demolition of this building necessary.	No work is planned because lower priority.
Student Dormitories	Three of one buildings (center building) with fire damage makes the demolition of this building desirable.	No work is planned because lower priority.
Building Which Can be Rehabilitated		
Electrical Engineering Workshop	Extensive fire damage to the lower section and weakening concrete strength in some parts; these areas require rebuilding above the ground level.	No work is planned because lower priority.
Assembly Hall	No problems in regard to the concrete strength of neutralisation	No work is planned because lower priority.
Student Dormitories	Three of two buildings without fire damage can be rehabilitated.	No work is planned because lower priority.

Based on the result of the condition of Poly-tech building, curriculum, required rooms and selection of equipment, the plan of renovation is decided as follows;

Building Name and M & E Works	Components	Remarks
New administration Classroom buildings	Head of Subject (1), Office (1), Conference Rm. (1), Class Rms. (9), Computer Rm. (1), Library (1), Storage (1), Toilet M/F(2)	Former Physical and Chemical Lab Building renovate as new administration and Lecture Rm. Building.
Electrical and Mechanical Workshop	Workshop(2), Class Rm. (1), Teachers Rm. (1), Drawing Rm. (1), Storage (2), Toilet M/F/T(1)	Former Mechanical Workshop renovate as Electrical and Mechanical Workshop
Civil Workshop	Workshop(1), Class Rm.(1), Teacher Rm. (1), Storage(2)	Former Civil Workshop renovate as Civil Workshop
Canteen	Dining apace, Kitchen, Toilet	Changing of roofing material, renovation of kitchen and toilet
Gate House		Demolish and rebuilding
Electrical Facility	Newly installation of Transformer (1), Main Distribution Panel Board (1), AVR(1)	Renewal of Power receiving system. Back up generators for equipment.
Mechanical and Plumbing Facility	Installation of Deepwell pump, Lift pump, Sewage septic tank	Existing deep well renovation.

The equipment selection criteria are as follows;

- Educational equipment which is the minimum requirement to implement the curriculum,
- Equipment used by the former Poly-tech,
- Equipment which can be used and guidance provided by teachers,
- Equipment which does not involve an excessive maintenance cost
- Equipment of which the installation does not require large-scale equipment or major construction work.

The planned equipment is outlined below.

Allocation	Major Equipment
Electrical Engineering	Oscilloscope; Device for experiment of an electrical circuit; Single phase and three phase AC measuring and loading devices; Three phase induction motor ; Experimental device for a logic circuit ; Experimental device for relay circuit
Mechanical Engineering	Normal lathe; Vertical milling machine; Welding machine; Bending machine; Shearing machine; Bench drill; Air compressor; Pneumatic training device; Oil hydraulics training device; Automobile cut model
Civil Engineering	Concrete compression test machine; Soil test machine; Surveying equipment; Marshall compression tester
Lecture Room	PC; UPS; TV; VTR;
Others	Drawing equipment; Physics laboratory equipment; Generator; Furniture, and Generators sets (3).

In the case of the Project's implementation with Japanese grant aid, the total project cost is estimated to be approximately ¥574 million (¥574 million to be born by the Japanese side and ¥0.37 million to be born by the East Timorese side). The total duration of the Project is expected to be some 14 months, including the period for the detailed design. As East Timor is not yet an independent country, the Government of Japan cannot provide direct assistance. All of the work up to the basic design will be conducted in accordance with the grant aid scheme of the Government of Japan while

the work from the detailed design stage will be conducted under the control of the UNDP.

The annual running and maintenance costs of the facilities/equipment planned under the Project will consist of the electricity charge and cost of diesel oil in the case of the running cost, building services maintenance cost, equipment maintenance cost and cost of consumables in the case of the maintenance cost. Assuming that no power cuts take place, the estimated total cost is US\$ 42,000/year. In the case of power cuts of three hours in a day, the estimated total cost is US\$ 32,000/year.

The implementation of the Project is expected to have the following effects.

The general election on 30th August 2001 determined the composition of the political parties of the Assembly for the formulation of the Constitution, creating the Second Transitional Administration of East Timor with cabinet positions occupied by East Timorese. A shift to appoint East Timorese nationals to administration positions is also in progress. As foreign staff working for the UNTAET have begun to return to their own countries, it is said that the entire administrative work will have been transferred to East Timorese staff by February 2002. The recruitment of new staff, however, is based on somewhat ambiguous criteria, as the strict application of the official recruitment criteria will not enable the filling of the vacant positions. However, the inadequate academic career and experience of some of the newly appointed administration officials are believed to pose a threat to the administrative efficiency of the Administration of East Timor. The Project aims at improving of the facilities and equipment of the Faculty of Engineering of the East Timor National University in order to train homegrown engineers to alleviate the shortage of human resources and is expected to have the following effects.

- (1) In the short-term, it will become possible for local students to receive D3-level engineering education in East Timor as the Project will develop the teaching facilities to produce 150 graduates/year (50 each from the electrical, mechanical and civil engineering courses) who are expected to become core middle level technical engineers and science and engineering teachers in for which there is currently an urgent demand in East Timor.
- (2) At present, East Timor has no genuine testing machinery, except that of a temporary nature, which is essential for building and construction work. As the equipment to be procured under the Project includes concrete and asphalt strength test machine and soil test machines, these can be used as a public laboratory which will be able to issue official certificate of the test result to improve the technical capability of the construction industry in East Timor.

There are some difficulties in East Timor for the execution of this Project, so it is required to resolve these problems.

- (1) Operation budget for East Timor National University

Operation budget for East Timor National University for the year 2001/02 was approved the same amount as previous year by the UNTAET/ETTA because of severe UNTAET/ETTA budget. However, East Timor National University including Faculty of Engineering having plans to spend additional budget like school building maintenance plan, employment of new teachers and this makes more economically difficult the operation of the university. In

addition, after completion of renovation work in the year 2002/03, it is needed additional operational cost for electricity charge and cost of diesel oil in the case of the running cost, building services maintenance cost, equipment maintenance cost and cost of consumables in the case of the maintenance cost. The estimated total cost is US\$ 42,000/year, and equivalent to 3.2% of East Timor National University budget need additionally, so it is important to allocate this additional budget for the operation of Faculty of Engineering.

(2) Appointment of and Re-Education for Teachers of the Faculty of Engineering

The syllabus based on the curriculum prepared by the Faculty of Engineering demands 20 teachers for each of the three departments, totaling 60 teachers. At present, 50 full-time and part-time teachers have been appointed, making the recruitment of additional 10 teachers the first step to implementing the curriculum of each department. Because of the extreme scarcity of people with the necessary teaching qualifications in East Timor, however, the recruitment of suitable teachers is difficult, posing a problem in regard to the quality of education. The second step is to provide re- education for all teaching staff to improve the quality of teaching by means of the upgrading of teachers.

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