CHAPTER 1 BACKGROUND OF THE PROJECT

1.1 Background of the Request

1.1.1 Education Condition before Turbulence (Period of Indonesian Rule)

(1) Historical Background

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. To conduct the referendum, the Security Council established the United Nations Mission in East Timor (UNAMET) on 11th June, 1999. 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 pro-integration militia. 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 inoperability of more than 70% of the infrastructure, including educational facilities. The former polytechnic 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 from East Timor makes difficult 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 to 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 2000 as the sole university in East Timor. The University uses once destroyed school buildings that have been repaired by USAID and Portuguese Mission 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.

(2) Educational System Before Turbulence

For a period of five years after the annexing of East Timor by Indonesia in 1975, the educational system ceased to function in East Timor because of the fiercely chaotic social conditions. Consequently, the educational system based on the Indonesian model functioned for a period of 20 years from 1980 to 1999. As shown in Fig. 1-1, this Indonesian model consisted of pre-school education (two years), primary education (six years), junior secondary education (three years), senior secondary education or vocational high school (three years) and higher education (either four years at a university or two to three years at a college/technical college). Prior to 1994 when compulsory education up to junior secondary education was introduced, various vocational high schools (specializing in engineering, domestic science and commerce, etc.) coexisted with ordinary high schools as seen today. Apart from these state schools, privately-run Christian schools and Islamic schools also existed at each stage of education. Islamic schools were under the jurisdiction of the Ministry of Religion. The educational level and the quality of teachers were said to be the highest at Christian schools, followed by ordinary state schools and Islamic schools in that order, and children of poor families in rural areas showed a tendency to attend Islamic schools. In view of the fact that almost 90% of the local population are Christians in East Timor, the ratio of pupils studying at Islamic schools was as low as 2.9%, indicating the limited status of these schools which provided basic education for poor children.

Fig. 1-1：School Education System in East Timor

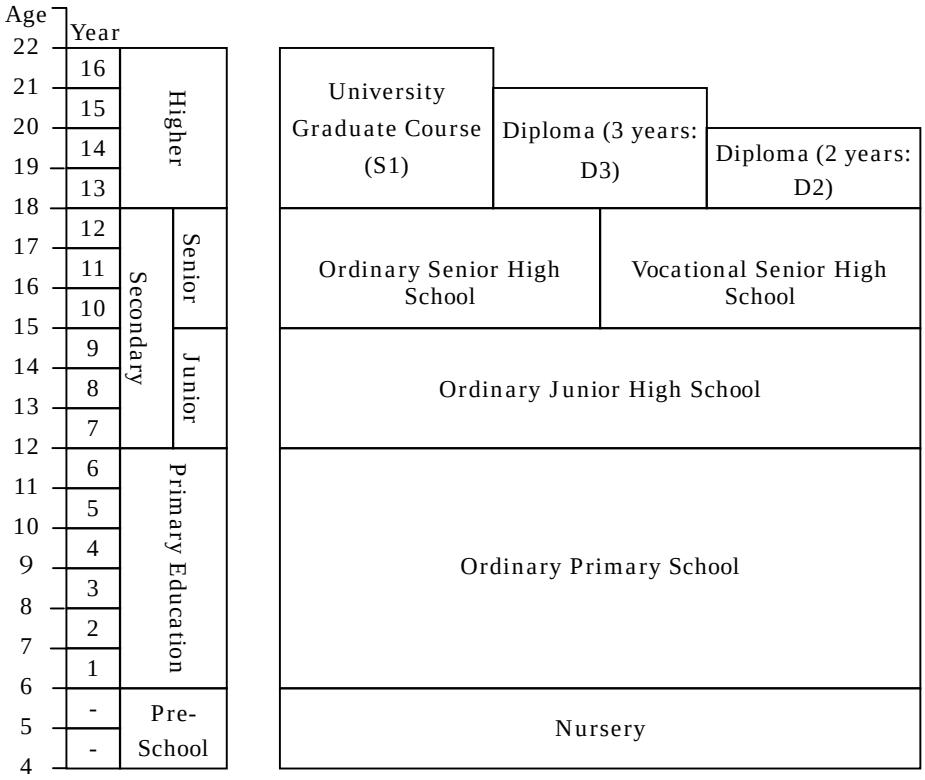


Table 1-1 shows the ratio of East Timorese teachers during the period of Indonesian rule. At primary schools, they accounted for 78% which declined to 3.3% at junior high schools, 8.2% at ordinary senior high schools and 11.5% at vocational senior high schools. Meanwhile, in the field of higher education, East Timorese teachers accounted for 46% at the university level (National University of East Timor) and 32% at the polytechnic level. The high ratio of East Timorese teachers at primary schools can be presumably attributed to the fact that teaching qualifications were awarded to those completing the two year diploma course (D2) or a course at the National Teacher Training College in Dili (*1: SPG) after leaving senior high school under the Indonesian educational system. In reality, however, more than half of primary school teachers were substitute teachers who had simply completed the junior high school level of education. Moreover, unqualified teachers whose educational background was primary education accounted for more than 10%, suggesting a fairly low quality of teachers even by the Indonesian average. Unlike primary schools, most secondary education teachers were Indonesians from outside East Timor due to the absence of a state university/college which could award teaching qualifications for junior high schools (*2: S1) or senior high schools (*2: S2, S3). Many of these teachers were graduates of the College of Education in Jogjakarta and taught in East Timor for a salary of three times higher than average because of the remote area allowance.

Notes:

*1：SPG stands for Sekolah Pendidikan Gulu, meaning a two year teacher training college for senior high school leavers under the educational system in Indonesia. In East Timor, there used to be a national teacher training college at Dili.

*2 : S1, S2 and S3 mean the completion of the relevant year of a three year college course, indicating the condition for the awarding of the relevant teaching qualification.

Table 1-1 Number of Schools, Pupils (Students) and Teachers and Ratio of East Timorese Teachers Under Indonesian Rule (FY 1998/99)

	Number of Schools	Number of Pupils (Students)	Number of Teachers	Number of Pupils/Students per Teacher	Number of East Timorese Teachers	Ratio of East Timorese Teachers (%)
Health Nursery School	66	2,168	183	12	30	16.4
School for the Blind	1	45	13	3	0	0
Elementary School	788	167,181	6,672	25	5,172	77.5
Junior High School	114	32,197	1,963	16	65	3.3
Senior High School	37	14,626	1,059	14	87	8.2
Technical High School	17	4,347	478	9	55	11.5
University	1	3,498	78	45	36	46.2
Polytechnic	1	450	160	3	60	37.5
Catholic University	1	260	16	16	2	12.5
Accounting College	1	473	32	15	17	53.1
Teacher Training College	1	40	7	6	1	14.3
School of Nursing	1	400	32	13	12	37.5
Total	1,029	225,685	10,693	21	5,537	51.8

Source: East Timor Provincial Bureau for Development Planning, East Timor Statistics 1997

(3) Language Used for Education

The national curriculum and textbooks of Indonesia were used in East Timor under Indonesian rule and lessons from the second year of primary education onwards were taught in Indonesian (as the use of the local language was permitted up to the second year of primary education in Indonesia). However, because of the customary review of the curriculum approximately every 10 years in Indonesia, teaching hours called “local contents” where each provincial government could freely decide the teaching contents, were added in FY 1994/95. Tetun, the local language in East Timor, was taught in these hours.

(4) Extension of Higher Education in East Timor

Table 1-2 shows the number of East Timorese completing post-graduate, graduate and college courses at universities in Indonesia using reference materials compiled near the end of Indonesian rule (August, 1999). The ratio of graduates by subject is 13% (161) for economics and business management, 13% (159) for civil, construction and mechanical engineering, 12% (145) for agriculture and livestock, 10% (123) for social science and politics and 8.1% (100) for teaching and education. These figures suggest the popularity of economics, engineering, social science, politics and agricultural science among East Timorese although most courses have students from East Timor. The total number of graduates is 1,233 (1999) and this level appears to have been roughly maintained every year. Even though there are no

statistics regarding their employment situation, it may be safe to infer that most seek employment in Indonesia or abroad because of the lack of an industrial base to absorb these graduates together with the unlikely prospect of receiving a suitable salary in East Timor.

Table 1-2 Number of East Timorese Completing Higher Education in Indonesia by Course in August, 1999

Course	Number of Graduates	Ratio (%)
1. Economics, Business Management	161	13.0
2. Social Science, Politics	123	10.0
3. Civil, Architectural or Mechanical Engineering	159	12.9
4. Agricultural & Livestock Breeding	145	11.8
5. Professorship	100	8.1
6. Administration & Secretarial	52	4.2
7. Electronic Engineering	66	5.4
8. Law	44	3.6
9. Language	51	4.1
10. Dietetics & Nursing Care	45	3.6
11. Portuguese	41	3.3
12. Public Health	48	3.9
13. Livestock breeding	36	2.9
14. General Medicine	34	2.8
15. Piscatorial Industry	31	2.5
16. Philosophy and Theology	22	1.8
17. Biology, Mathematics, Chemistry, Geology	18	1.5
18. Sociology, Entropy, History	13	1.0
19. Information, Communication, Computers Scien.	7	0.5
20. Travel & Tourism	5	0.4
21. Librarian, Architect, Geography	6	0.5
22. Psychology	2	0.2
23. Commerce	24	1.9
Total	1,233	100.0

Source：UNDP, Forum of Graduate Pro-Referendum and Development、Training Need Analysis(TNA), March 2001

Prior to 1999, higher education institutions in East Timor were the National University of East Timor (a private university), the National Teacher Training College of Indonesia (training primary school teachers and awarding the SPG qualification), Dili Poly-tech (a technical college) and the Catholic College (a private college of theology). All universities and colleges in Indonesia except state universities were ranked by the University Course Evaluation Agency of the Government of Indonesia based on the contents and levels of teaching and teachers. The National University of East Timor, which was the only four year university in East Timor, was ranked below state universities as it had only three faculties, i.e. Agricultural Science, Economics and Social Science. From table 1-1, we can know that there is about total number of 5,121 students in higher education in East Timor in 1998/99, and if we take average education year as 2.5 years, there is about 2,048 new students in a year. From table 1-2, we can also know that there are 1,233 students who went to Indonesia for taking higher education. It means that there is about 3,300 student who have higher education in East Timor every year.

According to Table 1-1, the total number of students at ordinary and vocational senior high schools in FY 1998/99 was 18,973 and if we take education year as 3 years, we presume that there is about 6,350 new students and graduates in a year. Supposing that the number of higher education students staying outside East Timor was 1,233 and 6,350 in East Timor, the higher educational enrolment rate is about 52% and approximately 37% of senior high school graduates estimated to go to Indonesia for study in a year.

(5) Condition of Former Poly-tech

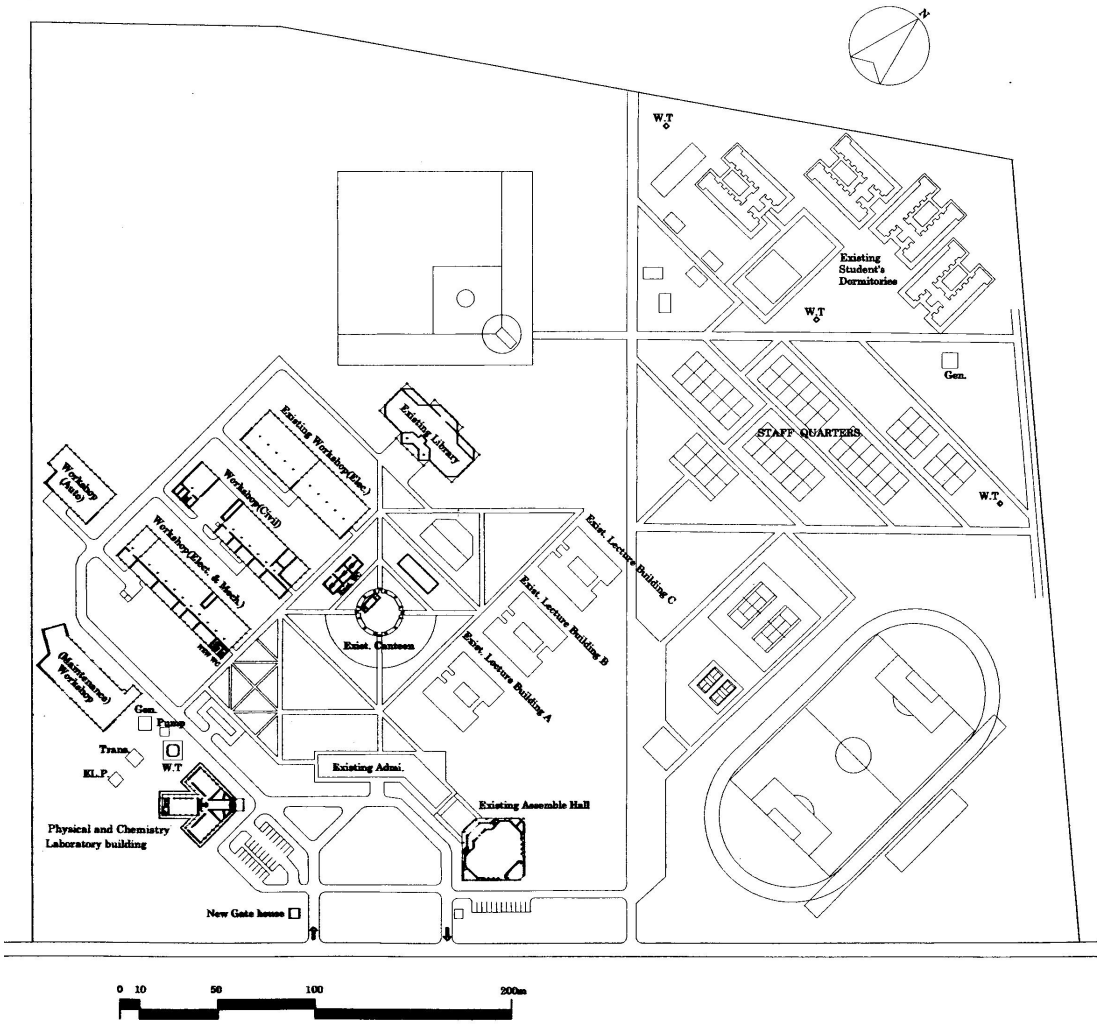
The former campus of the Poly-tech was established in 1987 during the Indonesian rule (1975 – 1999) in the Hera area located 12 km northwest of Dili over an area of 23 ha with complete facilities, including an administration building, lecture hall, physics and chemistry laboratory building, mechanical engineering workshop, civil engineering workshop, electrical engineering workshop, maintenance workshop, automobile workshop, library, three classroom buildings, canteen, teachers' accommodation, student dormitories, athletic tracks and baseball ground (see the facility layout map). Teaching was based on the Indonesian curricula for two year polytechnic courses (D2 level). (Because of the loss of curriculum documents by fire, some of the relevant information here is based on the interview results.) There were five courses, i.e. mechanical engineering, civil engineering, electrical engineering, accounting and secretarial. There were some 77 teachers and the total number of students was an average of 186 for each semester (see Table 1-3).

Table1-3 Number of Lectures and Students in former Poly-tech

	1992/93				1993/94				1994/95				1995/96				1996/97				1997/98			
A. No. of Class rm.	12				16				16				16				16				16			
B. No. of Lecturers	71				75				77				77				77				77			
C. No. of Students	I +III=365 II +IV=330				I +III=363 II +IV=311				I +III=404 II +IV=348				I +III=411 II +IV=352				I +III=214 II +IV=190				I +III=245 II +IV=190			
Semester	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
a.Machine M	50	46	34	34	46	35	31	30	53	51	46	32	45	42	44	37	37	31			57	31		
F	4	4	4	4	3	2	2	2	1	1	1	1	7	1	5	5	5	4			3	4		
Sub Total M+F	54	50	38	38	49	37	33	32	54	52	47	33	52	43	49	42	42	35			60	35		
b.Civil M	44	35	34	32	39	34	29	29	45	34	28	26	43	37	44	32	40	33			53	33		
F	4	4	4	3	9	8	8	8	10	9	8	9	10	7	5	3	14	14			7	14		
Sub total M+F	48	39	38	35	48	42	37	37	55	43	36	35	53	44	49	35	54	47			60	47		
c.Electrical M	44	35	29	28	43	36	33	28	39	37	38	35	42	35	38	33	43	40			47	40		
F	6	6	5	5	8	5	5	5	13	12	11	9	10	10	7	11	11	11			12	11		
Sub Total M+F	50	41	34	33	51	41	38	33	52	49	49	44	52	45	45	44	54	51			59	51		
d.Accounting M	18	18	12	10	20	17	15	11	24	19	19	19	24	19	18	18	22	20			13	20		
F	11	8	6	6	12	9	8	7	8	6	6	5	7	6	6	6	10	9			20	9		
Sub Total M+F	29	26	18	16	32	26	23	18	32	25	25	24	31	25	24	24	32	29			33	29		
e.Secretary M	20	18	16	15	20	16	14	13	21	14	13	12	14	18	12	12	20	16			15	16		
F	11	11	9	8	10	8	8	8	12	9	8	8	17	8	13	12	12	12			18	12		
Sub Total M+F	31	29	25	23	30	24	22	21	33	23	21	20	31	26	25	24	32	28			33	28		
Drop out(%)	12.7		5.2		19.0		7.8		15.0		12.4		16.3		12.0		11.2		—		22.5		—	
Total	212	185	153	145	210	170	153	141	226	192	178	156	219	183	192	169	214	190			245	190		

Source : East Timor in Figures 1997, Central Board of Statistics in East Timor

Fig. 1-2 Master Plan of Former Poly-Tech



The allocation of lessons under the former Poly-tech was 60 – 75% for special subjects (mainly practical training) and 25 – 40% for general subjects which differs from the corresponding allocation of lessons at comparable Japanese technical schools controlled by the Ministry of Education. In short, the Poly-tech aimed at producing intermediate-class engineers by making the students undergo fairly intensive practical training.

1) Maintenance System

Under Indonesian rule, maintenance staff working for higher education institutions were given group training at Bandung because a Swiss aid organization (Swiss Contact Organization: SCO) based at Bandung provided assistance for the preparation of the curriculum, textbooks and education and training of maintenance staff for polytechnics throughout Indonesia. The SCO also invited some maintenance staff to Switzerland for further training and the present head of the Faculty of Engineering received such training in Switzerland for 18 months in 1993 and 1994.

Table 1-4 Maintenance Staffs of Former Poly-Tech

Course	No. of Staff	Educational Background	Age	Working Years
Mechanical Engineering	2	Diploma III (D3) Diploma II (D2)	39 26	9 3
Electrical Engineering	1	Diploma III (D3)	28	6
Electronic Engineering	1	Diploma II (D2)	28	1

Source: Interview with head of the Faculty of Engineering.

1-1-2 Educational Condition After Turbulence

(1) Idea of Education

The bodies responsible for the educational administration in East Timor under the control of the UNTAET were the Division of Education, Youth and Cultural Services of the Department of Social Affairs (Department of Education, Culture, Youth and Sports since September, 2001) at the central level and the provincial and district educational committees at the local level where officials in charge of education were appointed at the local administration offices belonging to the Department of Internal Administration of the UNTAET. Following the general election to select assembly members to draft the constitution on 30th August, 2001, the new cabinet members were appointed in September for the Second Transitional Administration of East Timor created based on the original Transitional Administration of East Timor. Under the new arrangements, the Department of Social Affairs, consisting of the Division of Health Services, Division of Education, Youth and Cultural Services and the Division of Labour and Social Services, was withdrawn and the new Department of Education, Culture, Youth and Sports was set up. Along with the replacement of government officials from UN staff members to East Timorese, the development of the governing system,

including the establishment of the constitution, is currently in progress towards planned independence at the end of May, 2002. In the educational field, the priority task is the establishment of the school education system and school management system in addition to the enactment of the Fundamentals of Education Law.

The former Division of Education, Youth and Cultural Services sets forth the basic idea of education to administer education focusing on the following five issues.

- Education primarily focusing on children
- Complete restoration of education
- Qualitative improvement of education
- Education based on democracy and humanitarism
- Creation of the sense of a nation state as well as a sense of values throughout East Timor

The languages used for education are Tetum, Indonesian and English. Under the policy formulated by the leaders of East Timor, mainly those at the CNRT, the former Division of Education, Youth and Cultural Services decided to make Portuguese the national language instead of Indonesian and preparations are in progress to this effect.

(2) Educational System

The school educational system in East Timor has inherited the system under Indonesian rule and the former Division of Education, Youth and Cultural Services commenced the establishment of the educational system and the recruitment of school staff, including teachers, based on the inherited system. It was decided that the school educational system would consist of two years of pre-school education, six-years of primary education, three years of junior secondary education, three years of senior secondary education and three to four years of higher education (D3 or S1 level) (see Fig. 1-1).

(3) Educational Facilities

The number of primary and secondary schools has declined by some 11% from 956 before the turbulence to 847 as of March, 2001 (see Table 1-5) because of the following reasons.

① Some school buildings were destroyed in the period of turbulence and are no longer usable.

② Some schools cannot be opened because of a teacher shortage as many teachers have left East Timor for Indonesia.

③ Some schools have been closed down due to merger or withdrawal.

Many of the schools opened have, in fact, sustained considerable damage to their buildings, including the loss of such furniture as desks and chairs and teaching materials and destruction of the water supply and toilet facilities, creating grave concern in regard to sanitation. This situation makes the improvement of an appropriate educational environment an urgent task.

Table 1-5 Number of Primary and Secondary Schools by District (Year 2000/2001)

District	Primary Schools	Junior High Schools	Senior/Vocational High Schools
1. Aileu	42	6	2
2. Ainaro	38	4	1
3. Baucau	72	14	6
4. Bobonaro	91	8	2
5. Covalima	65	9	1
6. Dili	67	15	15
7. Ermera	64	7	2
8. Lau Tem	53	5	2
9.Liquica	38	4	1
10. Manatuto	35	6	1
11. Manufahi	49	8	3
12. Ambeno (Oecusse)	43	5	2
13. Viqueque	52	7	3
Total	708	98	41
Grand Total	847		

Source：Education in East Timor, 2001

In regard to the number of pupils, the number of primary school pupils increased by 14% from 167,181 in Year 1998/99 to 189,959 in Year 2000/01. Meanwhile, the number of pupils of junior high schools and senior high schools in Year 1998/99 was 32,197 and 14,626 respectively, totalling 46,823. In Year 2000/01, the total number slightly declined to 46,102. One reason for the increase of primary school pupils in Year 2000/01 is assumed to be the free uniforms and textbooks provided by the ETTA against the background of a worsening economic situation. The average number of pupils per school was 268 for primary schools, 297 for junior high schools and 414 for senior high schools. More than 50% of senior high school pupils lived in Dili.

Table 1-6：Number of Schools and Pupils (Year 1998/99 – Year 2000/01)

Type of School	Number of Schools		Number of Pupils	Number of Pupils per School
	Year 1998/99	Year 2000/01	Year 2000/01	Year 2000/01
Primary Schools	788	708	189,959	268
Junior High Schools	114	98	29,145	297
Senior High Schools (including Vocational/Technical High Schools)	54	41	16,957	414
Total	956	847	236,061	279

Source：Edited from Education in East Timor, May 2001

Note: The number of junior and senior high school pupils was estimated in proportion to the respective number of schools.

Private schools include nurseries, primary schools, junior and senior high schools and vocational/technical high schools run by the Catholic Church, accounting for some 11% of the total number of pupils in East Timor, and their teacher-pupil rate is superior to that of state schools. The curriculum used by these schools follows the national curriculum and teachers' salaries are almost entirely paid by the government.

(4) Reality of Teachers

Almost one year after the reopening of schools in October 2000, the teacher shortage is still a difficult problem yet to be solved. The new recruitment of volunteers and unqualified teachers (including university/college students) has failed to catch up with the increase of primary school pupils and the teacher/pupil ratio is steadily increasing. Prior to the turbulence, the total number of teachers at primary schools, junior and senior high schools and vocational/technical schools was 10,172 (of which 5,379 were East Timorese in 1998/99) which has now dropped by more than half to 4,832. The urgent recruitment of East Timorese principals and head teachers to replace the departing Indonesians has produced new problems of insufficient experience as well as inadequate management capability. Moreover, there is no accurate survey data on the question of the qualifications possessed by existing teachers. Additional problems include the teachers' salary scheme which lacks incentives, shortage of school furniture and shortage of teaching materials. The absence of science rooms, laboratory materials and electricity and/or water supply means that it is practically impossible to conduct scientific experiments. The number of teachers as of February, 2001 is as follows based on statistics of the Division of Education.

Table1-7 Number of Schools, Teachers and Pupils (Year 2000/01)

School Level	Number of Schools	Number of Teachers	Number of Pupils	Teacher-Pupil Ratio
Primary Schools	707	2,991	185,180	62
Junior High Schools	99	955	28,639	30
Senior High Schools	38	634	15,820	25
Vocational/Technical High Schools	9	252	2,504	10
Total	853	4,832	232,143	48

Source：Data of the Joint Donor Education Sector Mission, 20the March – 16th April, 2001 and AIDE-MEMOIRE Part C, February, 2001 updated by the Division of Education (Figures are updated by reports)

While the qualification required of a primary school teacher is SPG or D2, there are unqualified teachers who do not possess the minimum SPG qualification. Meanwhile, the qualification required of a junior or senior high school teacher is D3 or S1 but many existing teachers do not possess such qualification.

(5) Establishment of East Timor National University

Most of the facilities of these institutions, however, were burned down in the process of independence, leaving some 4,000 students registered at these institutions and some 2,000 students which had been studying at universities/colleges in Indonesia and which returned to East Timor without completing their courses around the time of the referendum with the intention of not returning to Indonesia for security and/or financial reasons without learning facilities. There was strong pressure by these students to reopen the universities, etc. in East Timor.

For reasons of meeting the need for human resources development and maintaining law and order in East Timor, the UATAET and CNRT wanted to reopen higher education in East

Timor as soon as possible and prepared the Proposal for the Plan to Reopen the University of East Timor, integrating all of the below-mentioned institutions and marking the beginning of preparations to restart higher education.

During the period of Indonesian rule, East Timor had such higher education institutions as follow.

1) National University of East Timor Lorosae (a private university despite the use of the word "National"),
2) Poly-tech (a polytechnic established by the government),
3) Catholic University (a private college), the
4) Academy of Economics (a private university)
5) Teachers' College (a teaching training college established by the government).

The reborn University of East Timor would consist of five faculties, i.e. the Faculty of Education (based on the former Teachers' College), the Faculty of Agriculture (based on the Faculty of Agriculture of the former National University of East Timor), the Faculty of Economics (based on the Faculty of Economics of the former National University of East Timor), the Faculty of Social Science (based on the Faculty of Social Science of the former National University of East Timor) and the Faculty of Engineering (based on the former Poly-tech). The recruitment of teachers, registration of students and rehabilitation of the existing facilities were earnestly conducted with a target reopening date for the university of October, 2000. As a result, the new university was opened on schedule even though the educational environment, including the curricula and teaching materials, was hardly established. At present, five faculties are in operation using the rehabilitated buildings in Dili. In the case of the Faculty of Engineering, only theoretical teaching is provided without important practical training to verify theories, which is of crucial importance for engineering education, because of the absence of workshops.

(6) Present Situation of Faculty of Engineering, East Timor National University

1) Conditions of Facilities

As described earlier, many of the facilities of the former National University of East Timor and the Poly-tech were burned down. In view of the facts that a huge cost and long time will be required to restore these facilities and that the campus of the former National University of East Timor is small, urgent repair work has been conducted to repair the fire-damaged schools near the UNTAET Head Office in Dili to make classroom teaching for five faculties possible. Despite this repair work, however, there is a shortage of classrooms, teachers' rooms, laboratories and other facilities.

The Faculty of Engineering has only four classrooms of some 55 m^2 each and cannot fully accommodate classes for students of its three year courses. The total lack of workshops and equipment for practical training means that none of the laboratory experiments and practical training specified in the curriculum can be conducted. One room of some 67 m^2 is shared by the Head of the Faculty, teachers, instructors and administrative staff and the room is over-crowded even though the number of desks and chairs is not sufficient to serve everyone using

the room.

② Students and Staff

The total number of students of the five faculties is 3,985 and the number of teachers is 137. The average teacher-student ratio is 29 to 1. Apart from the absolute shortage of teachers, there is also a shortage of qualified teachers. Only 10 teachers (some 7% of all teachers) of the five faculties have either a master's degree or a doctor's degree which is essential for a university teacher (see Table 1-8).

Table 1-8 Number of Students and Staff of East Timor National University

Faculty	Department	No. of Students		No. of Teachers by Qualification			Administrative Staff
Engineering	Electrical Engineering Mechanical Engineering Civil Engineering	128 131 119	(Total) 378	S1 (19) D3 (15) D2 (4) External Lecturer(6)		(Total) 44	10 (including technicians)
Education	Mathematics Biology Indonesian English (Chemistry, Physics and Portuguese will be added in October, 2001)	106 175 178 358	817	Ph.D (1) MA (3) S3 (1) S2 (1) S1 (21)		27	7 (excluding library and printing office staff)
Agricultural Science	Livestock Agricultural Science Agroeconomics		751	Ph.D (1) MA (1) S1 (23)		25	3
Economics	Management Economic Development	310 257	567	S2 (2) S1 (1) D3 (9)		12	3
Social Science and Politics	Public Administration Science Government Science		1,472	MA (4) S1 (17) Part-Time (8)		29	4
Total			3,985	Ph.D (2) MA (8) S3 (1) S2 (3)	S1 (81) D3 (24) D2 (4) External Lecturer (14)	137	27

Source: Interviews with each faculty head in August, 2001.

There were some 4,500 applicants for enrolment in Year 2000 which were classified in the following four categories (cited from Building Block for a Nation, November, 2000).

① Students already studying at the former National University of East Timor or former Poly-tech

② Students studying at a university in Indonesia who cannot return to Indonesia to continue their studies

③ Students or teachers working in the educational field

④ Senior high school leavers

The selection priority was given to the above order and acceptance was finalised based on the entrance examination results. It was finally decided to take 200 existing students and 180 senior high school leavers. A further 100 students were accepted for practical training only

(see Table 1-9).

Checking of the situation of student enrolment at the Faculty of Engineering for Year 2001/02) found some 5,000 applicants. As it was necessary to accept students who had already completed some units, 171 students were accepted for the bridging course (students who had completed at least 16 units), bringing the number of newly enrolled students to 90 for three departments. The current students of the Faculty can, therefore, be classified in the following three categories.

A : Students who have already completed at least 16 units

B : Students who have newly enrolled after passing the entrance examination

C : Students who can only undergo practical training

Because of the lack of workshops and equipment, Category C students are currently receiving practical training on electronic technologies and automotive technologies by JICA experts dispatched on a short-term basis who have installed the necessary equipment in a rented warehouse as well as a workshop belonging to another organization.

Table 1-9 Number of Students of Faculty of Engineering (2000 – 2004)

(Unit: students)

	2000-01	2001-02	2002-03 (Planned)	2003-04 (Planned)
First Year	A : 200 B : 180	A : 171 B : 90	150	150
Second Year	C : (100)	A : 200 B : 180	A : 171 B : 90	150
Third Year	—	C : (100)	A : 200 B : 180	A : 171 B : 90
Total	380 (100)	641 (100)	791	561

Note

A: Bridging course (for those who have already completed at least 16 units)

B: Newly enrolled students

C: Students receiving practical training only

Source: Interview survey at the Faculty of Engineering of East Timor National University (September, 2001)

1.1.3 Present Conditions of Former Poly-tech

(1) Master Plan

The Hera campus of the former Poly-tech runs along the trunk road linking Dili and Baucau, the second largest city in East Timor. The campus has a total area of some 234,000 m^2 and such educational facilities as the administration building, lecture building and workshop building are located in the south area near the trunk road while staff accommodation and the dormitory building, etc. are located in the north area further away from the trunk road.(Referred to Fig. 2-2)

The principal concept for the new layout of the educational facilities is to spread the facilities towards the north area as three lecturer buildings and three workshop buildings will be located to the north and west of the core administration building.

(2) Conditions of Existing Facilities

① Buildings

- The existing buildings were damaged mainly by fire after the election for independence from Indonesia which took place in September, 1999. The state of the structural damage is shown in Table 1-10.

  - Administration building: both the ground floor and first floor have been severely damaged by fire and are beyond rehabilitation. The demolition of this building is desirable.
  - Assembly hall: although the roof has been burned down, the structure is still sound, making the rehabilitation of this building possible.
  - Lecture buildings: all three buildings have sustained severe damage on the first floor. The concrete for the ground floor has been neutralized and has lost its structural durability. These buildings are beyond rehabilitation.
  - Laboratory building: the building has sustained partial fire damage but its structure is sound. The rehabilitation of this building is possible.
  - Workshop buildings (electrical, mechanical and civil engineering): the structure of the upper section of all three buildings housing the workshop is sound. These buildings can be re-used provided that the lower section where the concrete has been neutralized by fire is rebuilt.
  - Canteen: no structural damage has been caused by fire and the building can be re-used provided that the roof and the fire-damaged kitchen area is rehabilitated.
  - Library: both the ground floor and first floor have been severely damaged by fire and are beyond rehabilitation. The demolition of this building is desirable.
  - Student Dormitory: of the three buildings, two can be rehabilitated because of lesser damage.

- Staff Quarters: the structural concrete of this two story building has been neutralized by fire to the point that the building is beyond rehabilitation.

② Infrastructure Facilities

As in the case of the existing buildings, infrastructure facilities sustained fire damage as well as the destruction of the electrical connection and control sections as shown in Table 1-11.

i. Sanitary Facilities

- The reservoir water tank and elevated water tank can be re-used once rehabilitated.
- The submerged water pump and pumping-up pump are unusable and new pumps are required.
- All of the control panels have been damaged and require replacement by new panels.
- Neither the septic tank nor the drainage pipes are usable and require replacement by new ones.

ii. Electrical Installation

- The transformer can be re-used provided that the oil is replaced.
- Such panels as the high voltage panel and distribution panel have all been damaged and require replacement by new ones.
- The generator can no longer be used due to fire damage.
- The lightning rods on the roof cannot properly perform their function because of the lack of a grounding connection.

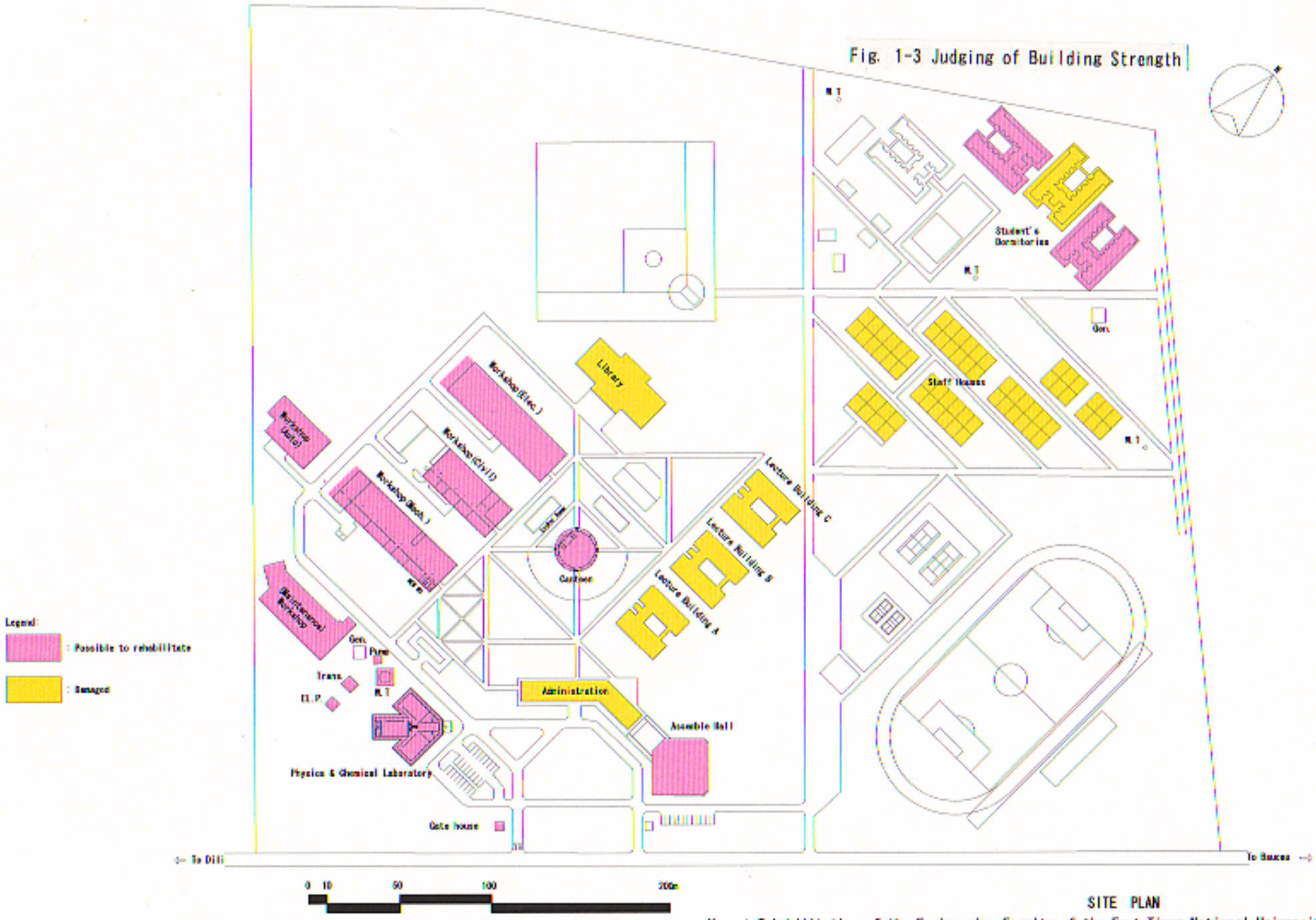
iii. Communication System

- There is no communication system, including a telephone system, on the campus.

Table 1-10 Condition of Reinforced Concrete Structure of Existing Facilities

Building Name		Judgment	Summary	Major Cause
Administration		Damaged	-Concrete has required strength, but it is fragile. -Concrete neutralizing reach to reinforced bar. -No durability as reinforced concrete.	Fire
Assembly Hall		Possible to rehabilitate	-Concrete has required strength. -Concrete neutralizing is in normal speed.	
Lecture Building A		Damaged	-Concrete has required strength. -Concrete neutralizing reach to reinforced bar. -No durability as reinforced concrete.	Low Quality Control
Lecture Building B		Damaged	-Concrete has required strength, but it is fragile. -Concrete neutralizing reach to reinforced bar. -No durability as reinforced concrete.	Fire, Low Quality Control
Lecture Building C		Damaged	-Concrete has required strength, but it is fragile. -Concrete neutralizing reach to reinforced bar. -No durability as reinforced concrete.	Low Quality Control
Laboratory		Possible to rehabilitate	-Concrete has required strength. -Concrete neutralizing is in normal speed.	
Workshop Mech.	Low-rise	Damaged	-Concrete has weak strength, and it is fragile. -Concrete neutralizing reach to reinforced bar. -No durability as reinforced concrete.	Fire
	High-rise	Possible to rehabilitate	-Concrete has required strength. -Concrete neutralizing is in normal speed.	
Civil	Low-rise	Damaged	-Concrete has weak strength, and it is fragile. -Concrete neutralizing reach to reinforced bar. -No durability as reinforced concrete.	Fire
	High-rise	Possible to rehabilitate	-Concrete has required strength. -Concrete neutralizing is in normal speed.	
Elec.	Low-rise	Damaged (Except Extension Area)	-Concrete has weak strength, and it is fragile. -Concrete neutralizing reach to reinforced bar. -No durability as reinforced concrete.	Fire
	High-rise	Possible to rehabilitate	-Concrete has required strength. -Concrete neutralizing is in normal speed.	
Automobile		Possible to rehabilitate	-Concrete has no damage.	
Mainte.	Low-rise	Damaged	-Concrete neutralizing reach to reinforced bar.	Fire
	High-rise	Possible to rehabilitate	-Concrete neutralizing is in normal speed.	
Canteen		Possible to rehabilitate	-Concrete has required strength. -Concrete neutralizing is in normal speed.	
Library		Damaged	-Concrete has weak strength, and it is fragile. -Concrete neutralizing reach to reinforced bar. -No durability as reinforced concrete.	Fire, Low Quality Control
Dormitory	2 Block	Possible to rehabilitate	-Concrete has little damage.	
	1 Block	Damaged	-Concrete neutralizing reach to reinforced bar.	Fire
Staff House	2 Story	Damaged	-Concrete neutralizing reach to reinforced bar.	Fire
	1 Story	Possible to rehabilitate	-Concrete has little damage.	
Toilet/Shower		Possible to rehabilitate	-Concrete has no damage.	
Gate House		Damaged	-Concrete neutralizing reach to reinforced bar.	Fire

Fig. 1-3 Judging of Building Strength



SITE PLAN

Urgent Rehabilitation of the Engineering Faculty of the East Timor National University

Table 1-11 Condition of Infrastructure

Educational Zone ○：Possible to Use

Water and Drainage System ×：Damaged

Name of System/Equipment			Judgment	Summary
1	Water Supply			
	(1)	Deep Well (72m depth, 6inch diameter)	○	54 ton/5 hours capacity by pumping test. Mud is settled at bottom of well.
		Water Pump	×	No use in last 2 years.
		Piping (Well to Reservoir)	○	PVC 65 pipe is possible to use.
		Concrete Water Reservoir (50 ton)	○	Mud is settled at bottom of well. Ball-tap is damaged.
		Piping (Reservoir to Pump)	○	PVC 65 pipe is possible to use.
	(2)	Elevated Pump	×	Broken. Pump revolution is 2,950rpm, but pumping capacity is unknown.
		Control Panel	×	Broken.
		Piping (Pump to Water Tank)	○	PVC 65 pipe is possible to use.
		Pressure Tank (1,000liter)	×	Rusted. For fire hydrant.
	(3)	Elevated Water Tank (20 ton)	○	Mud is settled at bottom. Ball-tap is damaged.
		Piping to Buildings	×	Valves and piping location are unknown.
	(4)	Piping in Buildings	×	No piping shaft. Piping location and capability are unknown.
2	Drainage			
	(1)	Piping	×	No piping shaft. Piping location and capability are unknown.
	(2)	Penetration Septic Tank	×	Tanks for laboratory, administration and lecture buildings are found, but others are unknown. Tank capability, piping location and etc. are unknown.
3	Rain Water Drainage		○	Rain water is discharged to a river located at north side through ditches around buildings. No flood record.

Electrical System

Name of System/Equipment			Judgment	Summary
1	Power Incoming			
	(1)	Cable from Pole to Transformer (Power supplier's work)	○	Cable is possible to use (by UNTAET Infrastructure inspection). No hand-hole.
	(2)	WHM	×	Nil
2	Transformation and Supply System			
	(1)	Main Control Panel	×	Panel is damaged (by UNTAET Infrastructure inspection).
	(2)	Cable (Panel to Transformer)	×	Cable is damaged (by UNTAET Infrastructure inspection).
	(3)	Transformer (20,000V、50HZ、400kVA)	○	Transformer is possible to use with oil supply (by UNTAET Infrastructure inspection).
	(4)	Cable (Transformer to Distribution Panel)	×	Cable is damaged (by UNTAET Infrastructure inspection).
	(5)	Distribution Panel	×	Burn out
	(6)	Wiring (Panel to Buildings)	×	Wiring capability and branching method etc. are unknown. Underground wiring indication are installed.
	(7)	Main Panel in Buildings	×	Broken.
	(8)	Wiring (Main panel to sub panels in buildings)	×	Wiring location and capability are unknown. Some wires go across burn out area.
	(9)	Wiring (Panel to fixtures in buildings)		
		In Ceiling	×	Wiring location and capability are unknown. Some wires go across burn out area.
		In wall	×	Wiring location and capability are unknown. Some wires go across burn out area.
		In Floor Pit	×	Supply capacity will be changed for new equipment.
3	Generator		×	Burn out. Capacity is unknown.

(3) Existing Equipment

The findings of the survey on the existing equipment of the electrical, mechanical and civil engineering workshops of the former Poly-tech are shown in Table 1-12 through Table 1-14.

The roof and windows of all three workshop buildings have been either completely or partially destroyed. Rainwater has caused the widespread rusting of much of the equipment. The rehabilitation of this equipment will require work by maintenance experts and will incur a huge cost.

The existing equipment originated from many different countries. There is no guarantee that the manufacturers still stock spare parts for equipment which is 10 years of age or more and the procurement of spare parts will be lengthy as well as costly operation.

In general, hardly any of the existing equipment can be used without prior repair. Equipment which fits any of the following descriptions is judged to be unusable.

A. Burnt out equipment
B. Equipment with rust spreading over a wide area of the surface plate and/or sliding face
C. Equipment of which the accessories have been lost
D. Equipment of which the electrical wiring has been cut
E. Equipment of which the instruments and control panel have been damaged

(4) Relocation of Existing Equipment

The Faculty of Engineering hopes to use the existing equipment as teaching aids to explain the equipment mechanism by means of assembly and disassembly even if the equipment in question is unusable.

According to the Dean of the Faculty, new students will be used to move the existing equipment. The Faculty's lack of moving machinery, however, means that the equipment must be moved manually. As it will be practically impossible for the Faculty to move heavy equipment in particular, it was agreed at the meeting between the Study Team and the East Timorese side that the relocation of heavy items will be conducted by the Japanese side. Following the field survey by the Study Team members and the Dean of the Faculty on the equipment to be relocated by the Japanese side, it was judged that the maximum weight for manual removal would be 80 kg (four people bearing 20 kg each) and it was confirmed that any equipment weighing more than 80 kg would be relocated by the Japanese side while lighter equipment would be relocated by the East Timorese side. All equipment was then given an identification marking as indicated in Table 1-12 through Table 1-14.

Table 1-12 Condition of Existing Equipment (Electrical Workshop)

NO.	Name of Equipment	Manufactured	Model/Ser. No.	Year	Size (mm) L×W×H	Light or Heavy	Moved by the Project (○)	Condition	Result
E-1	Drilling Machine	China	ZQ4116/3100782	-	300×350×1000	L		B,C	×
E-2	Drilling Machine	China	ZQ4116/3100815	-	300×350×1000	L		B,C	×
E-3	Drilling Machine	China	Z525/25140	1994	500×700×1900	H	○	B,C	×
E-4	Lathe	Britain	ZSI. 65976/-	1994	1300×600×1300	H	○	B,C	×
E-5	Cutting Machine	China	001-1×1000/-	1994	1300×1000×1200	H	○	B,C	×
E-6	Lathe	China	X422A/0328/-	-	1900×500×700	H	○	B,C	×
E-7	Bending Machine	China	WH-06-2.5×1220/-	1994	1800×900×1200	H	○	B,C	×
E-8	Wood Lathe	Taiwan	JH1000B/-	-	1300×600×1300	H	○	B,C	×
E-9	Motor	-	D5	-	300×150×200	L		B,C	×
E-10	Diesel Generator	-			150×1000×100	H	○	-	-

NOTE

(1)Light or Heavy L ; less than 80kg(estimated) H ; Heavier than 80Kg(estimated)

(2)Condition A ;Burned
B ; Rust spread out widely
C ; Lack of essential parts
D ; Broken cables, damaged covers in electrical Circuit
E ; Broken operation panel or gauges Indispensable part is missing

(3)Result
× ; Unusable
○ ; Usable

Table 1-13 Condition of Existing Equipment (Mechanical Workshop)

NO.	Name of Equipment	Manufactured	Model/Ser. No.	Year	Size(mm) L×W×H	Light or Heavy	Moved by The Project (○)	Condition	Result
M-1	CNC	Austria	FIA GI 006	1993	2000×1700×800	H	○	A,C	×
M-2	CNC	Austria	FIA GI 009	1993	2000×1700×800	H	○	A,C	×
M-3	CNC	Austria	FIA GI 010	1993	2000×1700×800	H	○	A,C	×
M-4	CNC	Austria	FIA GI 007	1993	2000×1700×800	H	○	A,C	×
M-5	CNC	Austria	AGAGI 006	1993	1300×1500×８00	H	○	A,C	×
M-6	CNC	Austria	AGAGI 004	1993	1300×1500×８00	H	○	A,C	×
M-7	CNC	Austria	AGAGI 009	1993	1300×1500×８00	H	○	A,C	×
M-8	CNC	Austria	AGAGI 003	1993	1300×1500×８00	H	○	A,C	×
M-9	CNC	Austria	A7B F6 F7 006	1993	2000×1700×900	H	○	A,C	×
M-10	CNC	Austria	FIS F6 F7 006	1993	2000×1700×900	H	○	A,C	×
M-11	Grinding Machine	Germany	LH172	1990	９00×600×450	L		A,C	×
M-12	Lathe(M)	China	6250B×1500	-	3000×2400×1000	H	○	A,C	×
M-13	Lathe(S)	Britain	T300 / 68600H100-34	-	1500×1300×750	H	○	A,C	×
M-14	Lathe(S)	Britain	T300 / 68600H100-35	-	1500×1300×750	H	○	A,C	×
M-15	Lathe(S)	Britain	T300 / 68600H100-36	1973	1500×1300×750	H	○	A,C	×
M-16	Lathe(S)	Britain	T300 / 68600H100-37	-	1500×1300×750	H	○	A,C	×
M-17	Plane Machine	-	11780	-	1500×1300×750	H	○	A,C	×
M-18	Lathe(S)	China	CZ300 / 940440	1994	1300×1200×600	H	○	A,C	×
M-19	Lathe(S)	China	CZ300 / 940437	1994	1300×1200×600	H	○	A,C	×
M-20	Lathe(S)	China	CZ300 / 940446	1994	1300×1200×600	H	○	A,C	×
M-21	Milling Machine	China	21521	1996	1000×2000×600	H	○	A,C	×
M-22	Milling Machine	Swiss	WF35A / 366522	1992	1000×2000×600	H	○	A,C	×
M-23	Milling Machine	Swiss	SCHAUBLIN-13 / 320027	-	6000×1800×400	H	○	A,C	×
M-24	Drilling Machine	China	ZX-28 / 607005	1995	600×1800×400	H	○	A,C	×
M-25	Shaper	China	B635-1 / 1224	1997	150×140×80	H	○	A,C	×
M-26	Shaper	China	B6050 / 2880	-	200×150×120	L		A,C	×
M-27	Pneumatic Experiment	Germany	-	-	1100×250×700	L		A,C	×

M-28	Hydraulic Experiment	Germany	-	-	1500×1900×900	H	○	A,C	×
M-29	Material Testing	Swiss	DEL-1 / 33339	1990	1500×2900×600	H	○	A,C	×
M-30	Tool Cutting	Swiss	AU100 / 411	-	1000×1350×650	H	○	A,C	×
M-31	Drilling Cutting	Swiss	-3755	-	800×1400×800	H	○	A,C	×
M-32	Drilling Machine	China	H5-32/ 9339	-	700×1800×500	H	○	A,C	×
M-33	Drilling Machine	China	H5-32 / 9149	-	700×1800×500	H	○	A,C	×
M-34	Drilling Machine	China	H5-32 / 9269	-	700×1800×500	H	○	A,C	×
M-35	Drilling Machine	China	No.T.terbaca	-	500×1100×300	H	○	A,C	×
M-36	Drilling Machine	China	No.T.terbaca	-	500×1100×300	H	○	A,C	×
M-37	Drilling Machine	China	No.T.terbaca	-	500×1100×300	H	○	A,C	×
M-38	Cylinder	China	No.T.terbaca	-	1900×2100×1300	H	○	A,B,C	×
M-39	Plane Machine	China	10150	-	2000×2100×1300	H	○	A,C	×
M-40	Cylindrical Cutting	China	602	-	4000×2100×1100	H	○	A,C	×
M-41	Lathe(S)	China	350	-	2600×1300×800	H	○	A,C	×
M-42	Lathe(M)	China	6024	-	3600×1300×900	H	○	A,C	×
M-43	Radial Boring	China	712	-	1500×1850×700	H	○	A,C	×
M-44	Radial Boring	China	1086	-	2400×2600×1000	H	○	A,C	×
M-45	Bending Machine	Italy	9509 / 104 / L106	-	2900×2200×1200	H	○	A,B,C	×
M-46	Shear	Italy	9509 / 105 / L101	-	2700×2000×2100	H	○	A,B,C	×
M-47	Press Machine	China	9705052	1997	2150×1400×2150	H	○	A,C	×
M-48	Plane Machine(S)	China	0239	-	1200×1600×650	H	○	A,C	×
M-49	Press Machine	China	134	-	500×1800×500	H	○	A,C	×
M-50	Hydraulic Press Machine	China	231	-	1200×2000×800	H	○	A,C	×
M-51	Hand Bending	China	4732 / 3	-	1700×1000×600	H	○	A,C	×
M-52	Hand Bending	China	100343002	-	850×1100×350	H	○	A,C	×
M-53	Hand Press	China	100336001	-	1600×1100×260	H	○	A,C	×
M-54	Hand 3 Roll	China	911055	-	400×300×400	H	○	A,C	×
M-55	Hand Bending	China	100382001	-	250×1000×250	H	○	A,C	×
M-56	Hand Bending	China	100359001	-	1450×800×800	H	○	A,C	×
M-57	Hand Bending	China	100357002	-	1500×1100×800	L		A,C	×

M-58	Hand Press	-	-	-	400×500×200	L		A,C	×
M-59	Pipe Screw Cutting	Japan	767593	-	750×450×400	H	○	○	○
M-60	Oil Press	China	31466	-	1100×1700×200	L		A,C	×
M-61	Hacksaw	China	P28149	-	1200×900×750	L		A,C	×
M-62	Spot Welder	Italy	063892 / 971	-	850×1300×300	H		A,C	×
M-63	Spot Welder	Germany	100/14/90	-	1000×1700×700	H		A,C	×
M-64	Welder	Indonesia	SP0558	-	600×1100×600	H		A,C	×
M-65	Gas Welder	Germany	C199506652	1995	1200×1400×1000	H	○	A,C	×
M-66	Flat Surface Table	Japan	-	-	600×1100×500	H	○	○	○
M-67	Flat Surface Table	Japan	-	-	600×1100×500	H	○	○	○
M-68	Flat Surface Table	Japan	-	-	600×1100×500	H	○	○	○
M-69	Flat Surface Table	Japan	-	-	350×200×150	H	○	○	○
M-70	Vise	-	-	-	350×200×150	L		○	○

NOTE : Same as Electrical Workshop

Table 1-14 Existing Equipment Examination Result (Civil Workshop)

NO.	Name of Equipment	Manufactured	Model/Ser.No.	Year	Size (mm) L×W×H	Light or Heavy	Moved by The Project (○)	Condition	Result
C-1	Drilling/wood	Italy	SP-540 / 716905	1995	600×800×1400	H	○	A,C	×
C-2	Drilling/wood	Italy	TT25 / 07158	-	500×600×1800	H	○	A,C	×
C-3	Drilling/wood	Italy	TT16 / 04215	-	25×60×1000	H	○	A,C	×
C-4	Drilling/wood	-	-	-	700×800×1500	H	○	A,C	×
C-5	Drilling/wood	Italy	TT25 / 16211	-	500×600×1800	H	○	A,C	×
C-6	Drilling/wood	Taiwan	ODH-201 / 0702266	-	800×400×1400	H	○	A,C	×
C-7	Lathe/wood	Indonesia	YHL—1008 / 1817	-	1800×500×1200	H	○	A,C	×
C-8	Lathe/wood	Italy	T124 / 027083	-	1800×500×1200	H	○	A,C	×
C-9	Plane	Italy	DT530/-	-	2900×1400×1000	H	○	A,C	×
C-10	Plane	Italy	RT520 / 2900	-	900×1000×1600	H	○	A,C	×
C-11	Thickning Plane	Italy	FN700 / 2320690	1990	1100×700×1000	H	○	A,C	×

C-12	Thickning Plane	Italy	TR-001484 / 00481	-	1100×800×1800	H	○	A,C	×
C-13	Sandpaper Machine	Brazil	-/ 1426	-	600×500×1300	H	○	A,C	×
C-14	Bandsaw	Taiwan	RE-SE-3848 / 4060	1990	850×350×650	L		A,C	×
C-15	Pipe Cutting	Taiwan	-/ 8945	-	900×500×400	L		A,B,C	×
C-16	Contour Machine	?	IPM268 X26 / -	-	700×700×1400	H	○	A,C	×
C-17	Contour Machine	?	IPM268 X26 / -	-	700×700×1400	H	○	A,C	×
C-18	Jig Saw	Italy	700 / -	-	1200×800×2300	H	○	A,C	×
C-19	Round Saw	Italy	SR1020 / 2305	-	3400×1700×1350	H	○	A,C	×
C-20	Band Saw	Italy	SC1800 / 42664	1990	1800×2100×1000	H	○	A,C	×
C-21	Elec.Bending Ma.	China	WH06-2.5×1220 / -	1994	1800×1300×1200	H	○	A,C	×
C-22	Elec.Shear+B38	China	011-3×1200 / -	1996	2000×1600×1200	H	○	A,C	×
C-23	Dust Collecting	-	FL4 / -	-	1300×500×1300	L		A,C	×
C-24	Marshal Test	Indonesia	AS-100 / -	-	600 × 500 × 1300 / 300×300×1500	H	○	A,C	×
C-25	Scales	-	- / -	-	300×500×1000	L		A,C	×
C-26	Pressure Machine	-	- / -	-	700×600×1600 / 450×300×1500	H	○	A,C	×
C-27	ＣＢＲ Test	Indonesia	136-12-659 / -	-	500×300×1300	H	○	A,C	×
C-28	Cooling Tank Heater	Indonesia	BT-390 / -	-	1100×650×450	L		A,C	×
C-29	Material Test	Indonesia	S0-361A / -	-	500×600×1250	H	○	A,C	×
C-30	Material Test	Indonesia	- / -	-	700×650×1600	H	○	A,C	×
C-31	Elec. Oven	#VALUE!	LCO/8H/CLAD/200 / A91J102	-	1350×510×920	H	○	○	○
C-32	Material Test	Indonesia	ADTM-D1883 / -	-	400×300×1250	H	○	A,C	×
C-33	Material Test	Indonesia	? / No.9224	-	950×300×1200	H	○	A,C	×
C-34	Scales	Italy	- /-	-	500×200×700	L		A,C	×
C-35	Soil Test	-	- /-	-	500×500×1600	H	○	A,C	×
C-36	Material Test	-	- /-	-	600×900×1500	L		A,C	×
C-37	Sieve	Japan?	- /-	-	210×210×70 / 310×310×90	L		○	○
C-38	Block Producer	-	- /-	-	1600×400×1800	H	○	A,C	×
C-39	Concrete Mixer	Indonesia	TB350 /51097921	-	2000×1000×1600	H	○	A,C	×

NOTE: Same as Electrical Workshop

1.1.4 Curricula for Faculty of Engineering

The Faculty of Engineering of East Timor University has prepared the curricula for three courses (electrical, mechanical and civil engineering) of the Faculty with the assistance of the Study Team to Assist Curricula Development in view of the commencement of three year courses in the academic year beginning in October, 2002. The curricula have been finalised based on the assumed size of the Faculty of Engineering described below.

- Three year courses :50 students/course (25 students/class x 2);(electrical, mechanical and civil engineering) total of 450 students
- Two terms/year :total of six terms

The curricula are outlined in Table 1-15. Each curriculum includes subjects for practical learning which are essential for engineering students. In each of the three courses, students must successfully complete 108 units consisting of general subjects, basic specialist subjects, specialist subjects and practical training subjects. 36 units, i.e. one-third of the total number of units, cover such general subjects as mathematics, physics and computers, which are common to all three courses.

Tab.1-15 Necessary Credits of Curriculum in Three Years

Subject		Elec. Eng.		Mech. Eng.		Civil Eng.		Total	
		Credit	Ratio (%)	Credit	Ratio (%)	Credit	Ratio (%)	Credit	Ratio (%)
General Subject	Lecture	31	-	31	-	31	-	93	-
	Practice	5	-	5	-	5	-	15	-
	Subtotal	36	-	36	-	36	-	108	-
Basic Special Subject	Lecture	28	-	4	-	7	-	39	-
	Practice	3	-	3	-	1	-	7	-
	Subtotal	31	-	7	-	8	-	46	-
Special Subject	Lecture	22	-	38	-	50	-	110	-
	Practice	4	-	2	-	3	-	9	-
	Subtotal	26	-	40	-	53	-	119	-
Practice Subject	Lecture	0	-	0	-	0	-	0	-
	Practice	15	-	25	-	11	-	51	-
	Subtotal	15	-	25	-	11	-	51	-
Total	Lecture	81	75	73	68	88	81	242	75
	Practice	27	25	35	32	20	19	82	25
	Subtotal	108	100	108	100	108	100	324	100

The unit ratios of theoretical study and practical training vary from one course to another. The average ratios are 75% for theoretical study and 25% for practical training. The basic number of lessons to complete a unit is one lesson/week for theoretical study and three lessons/week for practical training. Consequently, the total number of lessons is almost the same for both theoretical study and practical training.

As the curriculum-related documents of the former Poly-tech have been lost due to fire, the curriculum

details are unknown. However, the Poly-tech aimed at the training of skilled technicians and many lessons were allocated to practical training to teach various skills. While the Faculty of Engineering introduced three 3 years engineering (electrical, civil and mechanical) courses at the university's main campus at Dili in November, 2000, all lessons have so far been conducted in the classrooms because of the inability to secure practical training facilities. The newly prepared curricula for these three courses emphasize theoretical teaching and practical training has a supporting role. As a result, the share of practical training lessons is smaller than that of the former Poly-tech. (Referred to Table 1-16)

(1) Electrical Engineering Course

The teaching starts with materials, circuits, measuring and drawing as the basics of electricity, moving on to magnetism, electronics, computer theory, digitalization, control, communication and electrical engineering. This flow of teaching with the scope of general purpose application is appropriate given the present conditions of society. As electricity is invisible, its understanding through experiments and practical training is essential. Therefore, the curriculum incorporates (i) experiments using various instruments, testing equipment and parts and (ii) practice on paper and PCs.

(2) Mechanical Engineering Course

The curriculum is designed to teach students the theory of converting various types of energy to kinetic (mechanical energy) and also the basics of specialist skills through scientific experiments and practical training using machines and parts. The key subjects are drawing, material science, dynamics, machine basics, machine elements, energy and heat transfer. There is emphasis on equipment maintenance in response to the social need.

(3) Civil Engineering Course

In the field of civil engineering, students are required to learn applied technologies which are highly useful for public works and which are suitable vis-à-vis the natural environment and economic situation in East Timor. The basic knowledge required is similar to that required in neighbouring countries or areas. Firstly, students study such basic subjects as drawing, dynamics, materials and surveying, moving on to the study of wood, steel, concrete and other materials, their structure, water, the environment and construction work. Practical training focuses on CAD, surveying and soil/material testing, all of which represent the essential skills required of civil engineers. With completion of the course, students have learned the minimum theoretical knowledge and practical skills required by East Timorese society.

Table 1-16 Curiculum

Faculty of Engineering **General Subject (GS)**

National University of East Timor (UNTIL)

Subject	Group	Credit	Credit					
			Sem. 1	Sem. 2	Sem. 3	Sem. 4	Sem. 5	Sem. 6
Portuguese Ⅰ	GS	2	2					
English Ⅰ	GS	2	2					
Human Rights	GS	2	2					
Mathematics Ⅰ (Basic Math)	GS	3	3					
Chemistry	GS	2	2					
Computer Ⅰ	GS	1	1					
Portuguese Ⅱ	GS	2		2				
English Ⅱ	GS	2		2				
Ethics & Moral	GS	2		2				
Mathematics Ⅱ (Calc. Ⅰ)	GS	3		3				
Physics	GS	2		2				
Physics Lab.	GS	1		1				
Portuguese Ⅲ	GS	2			2			
English Ⅲ	GS	2			2			
Mathematics Ⅲ (Calc. Ⅱ)	GS	3			3			
Statistics	GS	1			1			
Portuguese Ⅳ	GS	2				2		
English Ⅳ	GS	2				2		
Subtotal		36	12	12	8	4	0	0

Basic Special Subject (BSS)
Special Subject (SS)
Practice Subject (PS)

Electrical Engineering Department

Subject	Group	Credit	Credit					
			Sem. 1	Sem. 2	Sem. 3	Sem. 4	Sem. 5	Sem. 6
Electrical Materials	BSS	1	1					
Electric Circuit Ⅰ	BSS	2	2					
Electric Measurement Ⅰ	BSS	2	2					
Technical Drawing	BSS	2	2					
Electromagnetics Ⅰ	BSS	2		2				
Electric Circuit Ⅱ	BSS	1		1				
Electric Measurement Ⅱ	BSS	1		1				
Electronic Devices Ⅰ	BSS	2		2				
C Language & Assembly	BSS	2		2				
Electromagnetics Ⅱ	BSS	2			2			
Electric Circuit Ⅲ	BSS	1			1			
Electronic Devices Ⅱ	BSS	2			2			
Mathematics Ⅳ	BSS	3				3		
Electronic Circuit Ⅰ	BSS	2				2		
Digital Electronics Ⅰ	BSS	2				2		
Electronic Circuit Ⅱ	BSS	2					2	
Digital Electronics Ⅱ	BSS	2					2	
Basic Installation	SS	2	2					
Advanced C Language	SS	2			2			
Electrical Machine	SS	1			1			
Electric Power System	SS	1			1			
Numerical Analysis	SS	2				2		
Electrical Machine Ⅱ	SS	2				2		
Control System Ⅰ	SS	1				1		
Communication System Ⅰ	SS	1				1		
Microprocessor & Interface	SS	2					2	
Power Electronics Ⅰ	SS	2					2	
Distribution & Transmission	SS	1					1	
Control System Ⅱ	SS	1					1	
Microprocessor & Interface Ⅱ	SS	3						3
Power Electronics Ⅱ	SS	2						2
Introduction to High Voltage Tech.	SS	1						1
Communication System Ⅱ	SS	2						2
Practice Ⅰ	PS	1		1				
Practice Ⅱ	PS	1		1				
Practice Ⅲ	PS	1			1			
Practice Ⅳ	PS	1			1			
Practice Ⅴ	PS	1				1		
Practice Ⅵ	PS	1				1		
Practice Ⅶ	PS	1					1	
Practice Ⅷ	PS	1					1	
Practice Ⅸ	PS	1						1
Electrical Workshop Ⅰ	PS	2					2	
Electrical Workshop Ⅱ	PS	1						1
PKL (Project Work)	PS	3						3
Subtotal		29~72	9	10	11	15	14	13

Basic Special Subject (BSS)
Special Subject (SS)
Practice Subject (PS)

Mechanical Engineering Department

Subject	Group	Credit	Credit					
			Sem. 1	Sem. 2	Sem. 3	Sem. 4	Sem. 5	Sem. 6
Engineering / Technical Drawing Ⅰ	BSS	2	2					
Engineering / Technical Drawing Ⅱ	BSS	2		2				
Engineering Mathematics	BSS	2			2			
Computer Programming	BSS	1		1				
Material Technology	SS	2	2					
Basic Electrical	SS	2		2				
Static Structure Ⅰ	SS	2		2				
Machine Introduction Ⅰ	SS	2		2				
Engineering Dynamics	SS	2			2			
Machine Conversion Energy	SS	2			2			
Machine Element Ⅰ	SS	2			2			
Material Strength	SS	2			2			
Thermodynamics	SS	2				2		
Fluid Mechanic	SS	2				2		
Machine Element Ⅱ	SS	2				2		
Static Structure Ⅱ	SS	2				2		
Automotive Engine System	SS	2					2	
Heat Transfer	SS	2					2	
Measurement Engineering	SS	2					2	
Choice Subject Ⅰ*	SS	2					2	
Management Production	SS	2						2
Maintenance and Services	SS	2						2
Choice Subject Ⅱ*	SS	2						2
Thesis	SS	2						2
Practice Workshop Ⅰ	PS	4	4					
Practice Workshop Ⅱ	PS	4		4				
Practice Workshop Ⅲ	PS	4			4			
Practice Workshop Ⅳ	PS	4				4		
Practice Workshop Ⅴ	PS	4					4	
Practice Workshop Ⅵ	PS	4						4
CAD / CAM System	PS	1						1
Subtotal		72	8	13	14	12	12	13

Basic Special Subject (BSS)
Special Subject (SS)

Civil Engineering Department

Practice Subject (PS)

Subject	Group	Credit	Credit					
			Sem. 1	Sem. 2	Sem. 3	Sem. 4	Sem. 5	Sem. 6
Engineering / Technical Drawing Ⅰ	BSS	2	2					
Statics	BSS	2	2					
Strength of Material	BSS	2		2				
Fluid Mechanics	BSS	2			2			
Building Construction	SS	2		2				
Surveying	SS	2		2				
Material Technology Ⅰ	SS	1		1				
Material Technology Ⅱ	SS	1			1			
Structural Analysis Ⅰ	SS	2			2			
Road Construction Ⅰ	SS	2			2			
Soil Mechanics Ⅰ	SS	2			2			
Timber Structures	SS	2			2			
Structural Analysis Ⅱ	SS	2				2		
Road Construction Ⅱ	SS	2				2		
Soil Mechanics Ⅱ	SS	2				2		
Hydrology	SS	2				2		
Steel Structures Ⅰ	SS	2				2		
Reinforced Concrete Structures Ⅰ	SS	2				2		
Foundation Engineering	SS	2				2		
Steel Structures Ⅱ	SS	2					2	
Reinforced Concrete Structures Ⅱ	SS	2					2	
Seismic Engineering	SS	1					1	
Hydraulics	SS	2					2	
Water Supply	SS	1					1	
Urban Drainage	SS	1					1	
Irrigation & Hydro Infrastructure	SS	2					2	
Construction Techniques &	SS	1					1	
Bridge Structures	SS	1					1	
Traffics Engineering	SS	2					2	
Environmental Effect Analyses	SS	1						1
Construction Project Management	SS	2						2
Engineering Economy	SS	2						2
Hygiene & Safety Work	SS	1						1
Research Method	SS	1						1
Project Work	SS	3						3
Building Material Testing (Lab)	PS	2		2				
Surveying (Practices)	PS	2			2			
Soil Testing (Lab)	PS	2					2	
Pavement Material Testing (Lab)	PS	2					2	
Workshop	PS	2						2
CAD	PS	1						1
Subtotal		72	4	9	13	14	19	13

1-2 International Assistance in Education Sector

(1) Emergency School Readiness Project (ESRP)

The UNTAET/ETTA implemented the ESRP with the assistance of the World Bank and the UNICEF with completion in September, 2001 and the Division of Education, Youth and Cultural Services of the former Department of Social Affairs was responsible for this project. The main purpose of the project was the rehabilitation and qualitative improvement of the school system in the field of basic education. Its contents overlapped with the initial stage of the three year School System Revitalisation Programme (SSRP) which commenced in 2000. The ESRP planned the rehabilitation of 2,964 classrooms of primary, junior high and senior high schools by September, 2001 together with the provision of such school furniture as desks and chairs, textbooks and teaching aids and did not have any component to assist higher education.

Project Contents : ・Repair of buildings and furniture (US$ 8.75 million)
・Provision of textbooks and teaching aids (US$ 3.2 million)
・Assistance for policy planning (US$ 0.5 million
- Others

1.2.1 Request for the Assistance

In view of the urgency of training middle-class manager, administrative and technical engineer to fill the current shortage of such engineers and managers and also to achieve the transformation of the industrial structure in East Timor, a plan was formulated to rehabilitate the facilities of the former Poly-tech for use for engineering education from the new semester in October, 2000. The background of this plan was that the establishment of engineering education with proper facilities was urgently required, that there was already a sufficient number of applicants for engineering courses and that the rehabilitation of the existing facilities would be initially sufficient to provide engineering courses at the university level without the construction of new workshop buildings.

Considering the importance and urgency of the role to be played by the Faculty of Engineering of the National University of East Timor, the UNTAET made a request to the Government of Japan for the provision of grant aid for the supply of equipment and the rehabilitation of existing facilities to enable engineering students to conduct scientific experiments and to receive practical training.

(1) Contents of the request
The contents of requested from Department of Social Affairs and National University of East Timor are as follows.

(1) Requested Year :In the year 2001

(2) Requested Amount :Not specified.

(3) Contents

1) Number of Students

Total number of the students in the Faculty of Engineering of the National University of East Timor is 450 students, i.e. 50 for each of the electrical, civil and mechanical engineering courses (1class 25 students - two classes) for each of three years under the D3 level curricula

2) Renovation of the Facilities or construction of new building

- Requested renovation of the Facilities or construction of new building are as follows.
  - ① Administration Building
  - ② Workshops
  - ③ Lecture Building
  - ④ Toilet
  - ⑤ Canteen
  - ⑥ Infrastructure
  - ⑦ Others likes urgently necessary facilities

- Equipment

Necessary educational equipment for 3 courses including furniture like desks, chairs, cabinets