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Appendix-1 Member List of the Study Team

Member List of the Study Team

1. 1st Preparatory Survey

No.	Name	Position	Organization
1	Mr. Masazumi OGAWA	Team Leader	Senior Advisor to the Director General Human Development Department JICA
2	Ms. Yutori SADAMOTO	Project Coordinator	Assistant Director, Healthcare Administration Division Human Development Department JICA
3	Mr. Masamichi MIYASHITA	Procurement Superviser	Project Manager, Project Division Japan International Cooperation System
4	Mr. Shigehito AKAGI	Project Manager/ Equipment Planner	International Total Engineering Corporation (ITEC)
5	Mr. Fumitaka KAMON	Facilities Planner/Solar Power Generation System	YAMASHITA SEKKEI INC.
6	Ms. Reiko SUMI	Healthcare System	International Total Engineering Corporation (ITEC)
7	Mr. Tsukasa HANEDA	Electrical Condition	YAMASHITA SEKKEI INC.
8	Mr. Hironori NAKAJIMA	Procurement/ Cost Planner	International Total Engineering Corporation (ITEC)
9	Ms. Kuniko YOKOO	Interpreter	Translation Centre Pioneer Co., Ltd.
10	Mr. Albertus Prasetyo Heru Nugroho	Interpreter	Translation Centre Pioneer Co., Ltd.

2. 2nd Preparatory Survey

No.	Name	Position	Organization
1	Mr. Hiroshi ENOMOTO	Team Leader	Chief Representative JICA Timor-Leste Office
2	MS. Michiko HAYASHI	Project Coordinator	Assistant Director, South East Asia /Oceania and South East Asia Division JICA
3	Mr. Shigehito AKAGI	Project Manager/ Equipment Planner	International Total Engineering Corporation (ITEC)
4	Mr. Masayoshi Masuzawa	Facilities Planner/Solar Power Generation System	YAMASHITA SEKKEI INC.
5	Mr. Hirokazu Sato	Electrical Condition	YAMASHITA SEKKEI INC.
6	Mr. Hironori NAKAJIMA	Procurement/ Cost Planner	International Total Engineering Corporation (ITEC)
7	Mr. Albertus Prasetyo Heru Nugroho	Interpreter	Translation Centre Pioneer Co., Ltd.

3. 3rd Preparatory Survey

No.	Name	Position	Organization
1	Mr. Hiroshi ENOMOTO	Team Leader	Chief Representative JICA Timor-Leste Office
2	Ms. Yutori SADAMOTO	Project Coordinator	Assistant Director, Healthcare Administration Division Human Development Department JICA
3	Mr. Shigehito AKAGI	Project Manager/ Equipment Planner	International Total Engineering Corporation (ITEC)

Appendix-2 Study Schedule

1st Preparatory Survey Schedule

Day	Date		Official Members	Project Manager/ Equipment Planner	Facilities Planner (Solar Power Generation System)	Healthcare System	Electrical Condition	Procurement/ Cost Planner	Interpreter Ⅰ	Interpreter Ⅱ
				Mr. Shigehito AKAGI	Mr. Fumitaka KAMON	Ms. Reiko SUMI	Mr. Tsukasa HANEDA	Mr. Hironori NAKAJIMA	Ms. Kuniko YOKOO	Mr. Albertus Prasetyo Heru Nugroho
1	8-Jul	Wed		Tokyo-Singapore Singapore-Denpasar						
2	9-Jul	Thu		Denpasar-Dili Courtesy call Ministry of Energy and JICA office, explanation of inseption report、confirmation of survey schedule and submisshion of questionnaire						
3	10-Jul	Fri		AM Survey on Engineeing Faculty TNTL PM Courtesy call on MOH and MOE, explanation of inseption report、confirmation of survey schedule and submisshion of questionnaire						
4	11-Jul	Sat		Team meeting・organaizing information						
5	12-Jul	Sun		Move Dili-（Baukau）-Viqueque			Move Dili-Suai		Same as Project Manager	Same as Electrical Condition
6	13-Jul	Mon		Survey on Viqueque hub hospital			Survey on Suaihospital		Same as Project Manager	Same as Electrical Condition
7	14-Jul	Tue		Survey on Viqueque hub hospital			Survey on Suai hospital		Same as Project Manager	Same as Electrical Condition
8	15-Jul	Wed		Move Viqueque-（Baukau）-Dili			Move Suai-Maubesi		Same as Project Manager	Same as Electrical Condition
9	16-Jul	Thu		Move Dili-Maliana Survey on Maliana hospital			Survey on Maubesi hub hospital		Same as Project Manager	Same as Electrical Condition
10	17-Jul	Fri		MalianaSurvey on hospital			Survey on Maubesi hub hospital		Same as Project Manager	Same as Electrical Condition
11	18-Jul	Sat		Move Maliana-Dili			Move Maubesi-Dili		Same as Project Manager	Same as Electrical Condition
12	19-Jul	Sun		Team meeting・ organaizing						
13	20-Jul	Mon		Survey on Dili National hospital			Survey on engineering department of TNTL		Same as Project Manager	Same as Electrical Condition
14	21-Jul	Tue	Tokyo-Denpasar	Survey on Dili National hospital			Survey on engineering department of TNTL		Same as Project Manager	Same as Electrical Condition
15	22-Jul	Wed	Denpasar-Dili	Summarise interium report Interim report to official members by consultant						
16	23-Jul	Thu	Courtesy call on JICA office、EOJ、MOH、MOE、Ministry of Industrial Development				Move Dili－Oecussi Survey on Oecussi district Oecussi hub		Same as Project Manager	Same as Electrical Condition
17	24-Jul	Fri	Survey on Dili National hospital Survey on engineering department				urvey on Oecussi district Oecussi hub hospital		Same as Project Manager	Same as Electrical Condition
18	25-Jul	Sat	Team meeting・organaizing information				Move Oecussi-Dili		Same as Project Manager	Same as Electrical Condition
19	26-Jul	Sun	Team meeting・organaizing information							
20	27-Jul	Mon	Discussion regarding Minutes							
21	28-Jul	Tue	Discussion regarding Minutes							
22	29-Jul	Wed	Report to JICA office and EOJ	Dili-Denpasar Denpasar-Singapore-						
23	30-Jul	Thu	Denpasar-Tokyo	Arrival Tokyo						

MOH=Ministry of Health　　EOJ=Embassy of Japan
MOE= Ministry of Education　　JICA=Japan International Cooperation Agency

2nd Preparatory Survey Schedule

Day	Date		Official Members	Project Manager/ Equipment Planner	Facilities Planner (Solar Power Generation System)	Electrical Condition	Procurement/ Cost Planner	Interpreter I
				Mr. Shigehito AKAGI	Mr. Masayoshi Masuzawa	Mr. Hirokazu SATO	Mr. Hironori NAKAJIMA	Mr. Albertus Prasetyo Heru Nugroho
1	30-Nov	Mon		Tokyo-Denpasar				Same as Project Manager
2	1-Dec	Tue		Denpasar-Dili Courtesy cal an dmeeting at JICA office				Same as Project Manager
3	2-Dec	Wed		Courtesy call and discussion with EOJ, SEPE and MOE, confirmation of targeted site andsurvey schedule, and submission of				Same as Project Manager
4	3-Dec	Thu		Survey on main campus, TNTL (contents of activity, site survey, electrical condition e.t.c.)			Tokyo-Denpasar	Same as Project Manager
5	4-Dec	Fri		Survey on main campus, TNTL (contents of activity, site survey, electrical condition e.t.c.)			Denpasar-Dili	Same as Project Manager
6	5-Dec	Sat		Survey on elementary school(Atauro Island)				Same as Project Manager
7	6-Dec	Sun		supplemental survey Team meeting・organaizing information				Same as Project Manager
8	7-Dec	Mon		Engineering department of Hera campus, TNTL (contents of activity, site survey, electrical condition e.t.c.)				Same as Project Manager
9	8-Dec	Tue		Engineering department of Hera campus, TNTL (contents of activity, site survey, electrical condition e.t.c.)				Same as Project Manager
10	9-Dec	Wed	Arrival Dili	Survey on facilities of MOE				Same as Project Manager
11	10-Dec	Thu	Discussion with SEPE and MOE		Survey on elementary school		Survey local agent and procurement	Same as Project Manager
12	11-Dec	Fri	Discussion with SEPE and MOE		Survey on elementary school		Survey local agent and procurement	Same as Project Manager
13	12-Dec	Sat	supplemental survey Team meeting・organaizing information					Same as Project Manager
14	13-Dec	Sun	supplemental survey Team meeting・organaizing information					Same as Project Manager
15	14-Dec	Mon	Discussion with SEPE and MOE		Survey on elementary school		Survey local agent and procurement	Same as Project Manager
16	15-Dec	Tue	Discussion with SEPE and MOE (summarised result of site survey)				Survey local agent and procurement	Same as Project Manager
17	16-Dec	Wed	Discussion regarding Minutes				Survey local agent and procurement	Same as Project Manager
18	17-Dec	Thu	Discussion regarding Minutes Report to JICA office and EOJ		Dili-Denpasar			Same as Project Manager
19	18-Dec	Fri		Dili-Denpasar	Denpasar-Tokyo			Same as Project Manager
20	19-Dec	Sat		Denpasar-Tokyo				Same as Project Manager

MOH=Ministry of Health EOJ=Embassy of Japan
MOE= Ministry of Education JICA=Japan International Cooperation Agency

3rd Preparatory Survey Schedule

Day	Date		Official Members	Project Manager/ Equipment Planner
				Mr. Shigehito AKAGI
1	24-Apr	Sat		Tokyo-Denpasar
2	25-Apr	Sun		Denpasar-Dili
3	26-Apr	Mon		Discussion with JICA office, MOE and SEPE,
4	27-Apr	Tue	Arrival Dili Courtesy call on EOJ	Site survey Courtesy call on EOJ
5	28-Apr	Wed	Site survey	
6	29-Apr	Thu	Courtesy call on MOE Site survey	
7	30-Apr	Fri	Discussion regarding Minutes,Discussion with Ministry of Finance, Report to JICA office and EOJ	
8	1-May	Sat	Team meeting	
9	2-May	Sun	Dili-Denpasar	
10	3-May	Mon	Arrival Tokyo	

MOH=Ministry of Health
MOE= Ministry of Education
EOJ=Embassy of Japan
JICA=Japan International Cooperation Agency

Appendix-3 List of Parties Concerned in the Recipient County

List of Parties Concerned in the Recipient Country

1. State Department for Energy Policy

1.1	Mr. Avelino Maria Coelho da Silva	: Secretary of State
1.2	Mr. Antonio A. Soares Martinus	: Chief DPEA
1.3	Mr. Marcos Dos Santos	: Director General
1.4	Mr. Lino M. N. C. Correia	: Technical Advisor
1.5	Ms. Lara Graca	: Leagal Advisor
1.6	Ms. Lucinda P. Borges Da Cruz	: Staff

2. Ministry of Education

3.1	Mr. Joao Cancio Freitas	: Minister of Education
3.2	Mr. Paulo Belo	: Vice Minister
3.3	Mr. Abarão Dos Santos	: Director of Higher Education
3.4	Ms. Ana Maria dos Reis Noronha	: Advisor for Minister
3.5	Ms. Dirce Belo	: Advisor for Minister
3.6	Mr. Almerio da S.R.Soares	: Director, Infrastructure
3.7	Mr. Samuel da Cruz	: Coordinator, Management unit
3.8	Mr. Julio da Costa Soares	: Coordinator, Infrastructure
3.9	Mr. Saturnino da C. Alues	: Coordinator, BMIS ME
3.10	Mr. Francisco da Costa	: Staff, Electrical Engineer

3. Ministry of Finance

4.1	Mr. Joao Coimbra	: Head, Partner & External Assistance
4.2	Mr. Helder Da Costa, Phd	: Interim Director
4.3	Mr. Jose Antonio Fatima Abilio	: Chief of Staff

4. Ministry of Health

2.1	Ms. Madalena F. M. H. C. Soares	: Vice Minister
2.2	Mr. Ivo Ireneu Da C. Freitas	: Head of Department of Partner Management
2.3	Mr. Avelino A. Brites	: Chief of Programe
2.4	Mr. Moises Ximenes	: Chief of Depertment E.M.
2.5	Mr. Jose Gelestino G. Pereira	: Teknik Solar Gell & Radio SSB
2.6	Mr. Marcelo Amaral	: Head of Department of Planning, Monitoring and Evaluation

5. Universidade National De Timor Lorosae

5.1	Mr. Victor Da C. Soares, M. Eng.	: Decano
5.2	Mr. Armindo Maia	: Vice Rector
5.3	Mr. Tomas Xavia	: Vice Rector
5.4	Mr. Miguel Maia	: Vice Rector

6. Hospital Nacional Guido Valadare Dili

6.1	Dr. Odete S. Viegas	: Director General
6.2	Mr. Rui Manuel Gago Expoto	: Administrador
6.3	Mr. Zacarias Nai Buti	: Head of Department of Human Resources
6.4	Ms. Angera	: Secretary, Director General

7. Hospital Referal Maliana

7.1	Dr. Vitorino Bere Talo	: Director General
7.2	Antonio L. Serrano	: Chief of Support Department

8. Hospital Referal Maubisse

8.1	Mr. Horacio Sarmento da Costa	: Director General
8.2	Mr. Gaspar da Costa	: Administrador
8.3	Mr. Moises Andrade	: Chief of Nurse

9. Hospital Referal Suai

9.1	Mr. Alberto Coli	: Administrador
9.2	Mr. Elizeu Gusmao	: Director of Nurse
9.3	Justino Mendouca	: Chies of Equipment Maintenance
9.4	Deniz Pereira	: Electrician, Electrical & Facilities Maintenance
9.5	Adriano Pereira	: Electrician, Electrical & Facilities Maintenance

10. Hospital Referal Oecusse

10.1	Maximiano Neno	: Director General

11. CSI Viqueque

11.1	Dr. Celestina Da Costa Alves	: Chief CSI
11.2	Mr. Mariano CS Soares	: Chief of Health Department
11.3	Mr. Hemenegido De Araujo	: Staff

12. Embassy of Japan in Timor-Leste

12.1	Mr. Iwao Kitahara	: Ambassador
12.2	Ms. Yasuko Hayashi	: First Secretary
12.3	Mr. Masamichi Abe	: First Secretary
12.4	Mr.Ken Iwata	: Third Secretary
12.5	Mr. Daichi Nou	: Researcher
12.6	Ms. Maiko Shimizu	: Researcher

13. JICA

13.1	Mr. Hiroshi Enomoto	: Representative
13.2	Mr. Masami Okumura	: Staff
13.3	Ms. Tomomi Uchikawa	: Staff
13.4	Ms. Fransiska Woro Yodiningrum	: Program Officer
13.5	Mr. Masaru Todoroki	: Aid Coordination Advisor, Ministry of Finance
13.6	Mr. Hiroaki Yamanishi	: Aid Coordination Advisor, Ministry of Finance
13.7	Mr. Hidehiko Kazama	: Chief Adviser, Engineering Education, Project for the Capacity Development of Teaching staff in the Faculty of Engineering UTL
13.8	Mr. Rikuo Ogawa	: Chief Adviser, Basic Engineering Education, Project for the Capacity Development of Teaching staff in the Faculty of Engineering UTL
13.9	Mr. Hideki Shimazu	: Project Coordinator/ Basic Education, Project for the Capacity Development of Teaching staff in the Faculty of Engineering UTL

Appendix-4 Minutes of Discussions (Second Site Survey)

Minutes of Discussions
on the Preparatory Survey (2)
for the Project for Introduction of Clean Energy
by Solar Electricity Generation System

The Government of Japan (hereinafter referred to as "GOJ") has started the Cool Earth Partnership as a new financial mechanism in 2008, through which, GOJ is working together actively with partner developing countries to reduce greenhouse gasses emissions to promote clean energy. In the meantime, a new scheme of grant aid, "Programme Grant Aid for Environment and Climate Change" was also established by GOJ as a component of this financial mechanism, the Cool Earth Partnership.

Along with the initiative of Cool Earth Partnership, for the project formation purpose, the Japan International Cooperation Agency (hereinafter referred to as "JICA"), in consultation with GOJ, decided to conduct a Preparatory Survey (hereinafter referred to as "the Survey") on the Project for Introduction of clean energy by solar electricity generation system in Timor-Leste (hereinafter referred to as "the Project").

JICA dispatched the Preparatory Survey (2) Team (hereinafter referred to as "the Team") to Timor-Leste, headed by Mr. Hiroshi ENOMOTO, Chief Representative, JICA Timor-Leste Office, from December 1 to December 18, 2009, followed by the Preparatory Survey (1) in July, 2009. The Team held discussions with the concerned officials of the Government of Timor-Leste (hereinafter referred to as "GOTL) and conducted a field survey.

Based on the course of discussions and the field survey, both sides confirmed the main items described in the attachment.

Dili, December 21, 2009

榎本 宏

Mr. Hiroshi ENOMOTO
Leader
Preparatory Survey Team
Japan International Cooperation Agency
JAPAN

Avelino Maria Coelho da Silva, S.H.
Secretary of State for Energy Policy
Democratic Republic of Timor-Leste

Witness,

Mr. João Cançio Freitas
Minister for Education
Democratic Republic of Timor-Leste

Ms. Emília Pires
Minister for Finance
Democratic Republic for Timor-Leste

ATTACHMENT

1. Object of the Study

Based on the result of the Study (Preparatory Survey (2)), the Detailed Design and the Draft Tender Documents shall be prepared by the Team for the Japanese Cabinet approval.

2. Schedule of the Study

2-1. Programme Grant Aid for Environment and Climate Change

GOTL understood the Japan's Programme Grant Aid for Environment and Climate Change scheme explained by the Team. (Annex-1,2, and 3).

2-2. Schedule after the Study

After the completion of the Study (Preparatory Survey (2)), the Team will report the results to JICA Headquarters and GOJ.

2-3. Preparatory Survey (3)

After the Japanese Cabinet approves the Project based on the results of the Preparatory Survey (2), JICA shall conduct the Preparatory Survey (3) for explanation and confirmation of the final component to GOTL in March, 2010.

3. Objective of the Project

The objective of the Project is to promote clean energy utilization and emissions reduction by installing the photovoltaic system (hereinafter referred to as "PV system") and connecting the system to the existing grid in the each respective site.

The Project shall cover the University of Timor-Leste (hereinafter referred to as "UNTL") to develop human resources through photovoltaic system research and development by installing off-grid system, which is expected to contribute to the achievement of the clean energy promotion and emissions reduction in this country.

4. Implementation structure of the Project

4-1. Responsible Organization

The responsible organization shall be the Secretary of State for Energy Policy (hereinafter referred to as "SEPE") (The organization chart of the responsible ministry is described in Annex-4.) and responsible for the coordination with Ministry of Finance (hereinafter referred to as "MOF") and related organizations.

1

4-2. Implementing Agency

The implementing agency shall be the Ministry of Education (hereinafter referred to as "MOE"). (The organization chart of the implementing organization is described in Annex-5.)

4-3. Implementation structure of the Project

As described in Annex-6, GOTL, including SEPE as the responsible organization and MOE as the implementing agency, shall supervise the whole process of the implementation of the Project. The procurement agency will report to the progress of the Project to GOTL and GOJ including the Consultative Committee described in the paragraph 4-4).

4-4. Consultative Committee

GOTL understood that GOTL shall establish the Consultative Committee in order to discuss any matter that may arise from or in connection with the Grant Agreement (hereinafter referred to as "G/A"). The Terms of Reference of the Consultative Committee is described in Annex-7.

5. Operation and Maintenance of the Project

5-1. Responsibilities of both parties

The Team explained that GOJ shall install the equipment (described in the paragraph 6) and provide training for end-users. GOTL agreed that implementing organization, MOE, shall secure the necessary budget and personnel for the Operation and Maintenance (hereinafter referred to as "O&M") of PV system procured and installed under the Project.

5-2. Counterpart for the O&M

The Logistics Unit under the Directorate of Administration and Finance, MOE, shall be responsible for the O&M of the Project.

The daily maintenance of solar power systems to be installed in schools and UNTL campuses listed in paragraph 7 shall be taken care of by themselves respectively and report to the counterpart department in MOE, if necessary.

6. Items requested by GOTL

After discussion with the Team, GOTL requested followings to Japan;

(1) Installation of the on-grid power generating system using photovoltaic system

(2) Solar module (panel) - total capacity might be around 200kWh (explained in paragraph 7)

(3) Junction Box

(4) Power Conditioner

(5) Transformer

(6) Data collecting instruments, and

(7) Display device

2

7. Project site

7-1. Final candidate sites

GOTL officially requested Japan to install the power generating system in the UNTL campuses in Dili and Hera, the building of MOE, and 15 schools in Dili and Liquica Districts as candidate sites/facilities. GOTL explained that there is no duplication between requested contents of the Project and any other plans to be implemented by the other donors or GOTL.

After the site surveys the Team, reported to GOTL that the final candidate sites for the Project have been selected as listed in Annex-8.

However, GOTL requested the Team to include four schools, which were excluded from the candidate sites by the Team, as they are private schools in Annex 8. The Team explained GOTL to bring this issue back to Japan and discuss with GOJ. The results shall be reported back to GOTL right after the consultation with GOJ.

In the meantime, the Team asked GOTL to provide supporting documents by the end of December, 2010, that those four school services are operated in the Government system (under the administration of GOTL) and/or GOTL will be responsible for the implementation of the Project in those four private schools.

7-2. Location for solar power panel installation

Both parties agreed the location of the solar power panel installation in each site as described in Annex-9.

GOTL understood that the final component and the design of the Project shall be confirmed at the Preparatory Survey (3).

8. Capacity of solar power

8-1. Schools

Both parties agreed that the Project shall provide 2kWh solar power panels for each school.

8-2. Total capacity

The total capacity shall be around 200kWh, and the total capacity for each site is requested by GOTL as follows;

(1) UNTL Head Office, Faculty of Agriculture and Law in Dili – 20-30kWh

(2) UNTL Faculty of Economics, Education and Health Science in Dili – 20-30kWh

(3) UNTL Faculty of Engineering in Hera – approximately 70kWh

(4) Ministry of Education – 20-50kWh, and

(5) Schools (including private schools) – approximately 40kWh

GOTL understood that the final component and the design of the Project shall be confirmed at the timing of Preparatory Survey (3).

9. Responsibilities for future actions

9-1. Major Undertakings to be taken by each Government

Both parties confirmed that each major undertaking as shown in Annex-10 shall be taken by each government at its own budget. In addition, GOTL agreed that they shall be responsible for securing necessary land for PV Modules, Power Conditioners, and cables between PV Modules and Power Conditioners.

9-2. Land Acquisition Procedures

GOTL agreed to complete all necessary procedures for official land acquisition mentioned in the paragraph 9-1 by the end of May, 2010.

9-3. Site Clearance

GOTL agreed to complete all necessary site clearance mentioned in the paragraph 9-1 by May 2010.

9-4. Site preparation

GOTL agreed to prepare and level the ground of each site before the installation starts.

9-5. Distance learning equipments

The solar power systems shall be installed for schools are for the distance learning purposes, and those equipments, including TV sets, VCRs (video equipments) and computers will be provided by GOTL with its own budget. GOTL agreed.

10. Other relevant issues

10-1. Procurement of Equipment

The Team explained that, in accordance with the policy of GOJ, products of Japan shall be procured for major equipments in the Project. GOTL agreed.

10-2. Application of the Related Laws and Regulations

The Responsible Organization for the Project, SEPE, shall be responsible for the application of related laws and regulations for the operation of the PV system before commissioning of the Project.

10-3. Customs and Tax exemption

GOTL agreed that the implementing organization, MOE, shall be responsible for the exemption of all customs, tax, levies for implementation of the Project.

10-4. Security

GOTL shall ensure the security of all concerned Japanese nationals working for the Project, if deemed necessary.

10-5. Bank Commission

GOTL agreed that the implementing organization, MOE, secure the budget for bank commission.

###

5

List of Annex

6

Programme Grant Aid for Environment and Climate Change of the Government of Japan

(Provisional)

The Government of Japan (hereinafter referred to as "the GOJ") is implementing the organizational reforms to improve the quality of ODA operations, and as a part of this realignment, the new JICA law was entered into effect on October 1, 2008. Based on the law and the decision of GOJ, Japan International Cooperation Agency (hereinafter referred to as "JICA") has become the executing agency of the Programme Grant Aid for Environment and Climate Change (hereinafter referred to as "GAEC").

The Grant Aid provides a recipient country (hereinafter referred to as "the Recipient") with non-reimbursable funds to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials as such.

GAEC aims toward emission reduction such as achievement of energy saving (environmental-easing measures) and environmental damage control by climate change. Multiple components can be combined to effectively meet the needs. Contractors, suppliers or consultants are not confined to Japanese firms only, and construction can be done based on the local method.

1. Procedures for GAEC

GAEC is executed through the following procedures.

Application	(Request made by the Recipient)
Study	(Outline Design Study conducted by JICA)
Appraisal & Approval	(Appraisal by GOJ and Approval by the Cabinet)
Determination of Implementation	(The Notes exchanged between the GOJ and the Recipient)
Grant Agreement (hereinafter referred to as "the G/A")	(Agreement concluded between JICA and the Recipient)

Firstly, the application or request for a GAEC programme submitted by the Recipient is examined by GOJ (the Ministry of Foreign Affairs) to determine whether or not it is eligible for GAEC.

Secondly, if the request is deemed appropriate, JICA conducts the Outline Design Study, using Japanese consulting firms.

Thirdly, GOJ appraises the programme to see whether or not it is suitable for Japan's GAEC, based on the Outline Design Study report prepared by JICA, and the results are then submitted to the Cabinet for approval.

Fourthly, the programme, once approved by the Cabinet, becomes official with the Exchange of Notes (E/N) signed by GOJ and the Recipient. Simultaneously, the Grant will be made available by concluding a grant agreement between the Government of the Recipient or its designated authority and JICA (hereinafter referred to as "the G/A").

JICA is designated by GOJ as an organization responsible for the execution of the Grant.

Procurement Agent ("the Agent") is designated to conduct the procurement services of products and services (including fund management, preparing tenders, contracts and so on) for GAEC on behalf of the Recipient. The Agent is an impartial and specialized organization and shall render services according to the Agent Agreement with the Recipient. The Agent is recommended to the Recipient by GOJ and agreed between the two Governments in the Agreed Minutes ("A/M").

2. Outline Design Study

1) Contents of the Study

The aim of the Outline Design Study ("the Study"), conducted by JICA on a requested programme ("the Programme"), is to provide a basic document necessary for the appraisal of the Programme by GOJ.

The contents of the Study are as follows:

(1) Confirmation of the background, objectives, and benefits of the Programme and also institutional capacity of agencies and communities concerned of the recipient country necessary for the Programme's implementation.
(2) Evaluation of the appropriateness of the Programme to be implemented under the Grant Aid Scheme for Environment and Climate Change from a technical, social and economic point of view;
(3) Confirmation of items agreed upon by both parties concerning the basic concept of the Programme.
(4) Preparation of an outline design of the Programme.
(5) Estimation of cost for the Programme.

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid programme. The Outline Design of the Programme is confirmed considering the guidelines of Japan's Grant Aid scheme.

GOJ requests the Government of the Recipient to take whatever measures are necessary to ensure its self-reliance in the implementation of the Programme. Such

measures must be guaranteed even through they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Programme. Therefore, the implementation of the Programme is confirmed by all relevant organizations of the Recipient through the Minutes of Discussions.

2) Selection of Consultants

For smooth implementation of the Study, JICA uses registered consulting firms. JICA selects firms based on proposals submitted by interested firms. The firms selected carry out an Outline Design Study and write a report, based upon terms of reference set by JICA.

The consulting firms to work on the Programme's implementation after the Exchange of Notes could be, in principle, of any nationality as long as the Firm satisfies the conditions speciified in the tender documents.

3. Implementation of GAEC after the E/N

1) Exchange of Notes (E/N) and Grant Agreement (G/A)

GAEC is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the programme, period of execution, conditions and amount of the Grant Aid, etc., are confirmed. The conclusion of the Grant Agreement (hereinafter referred to as "the G/A") between JICA and the recipient government will be followed to define the necessary engagement to implement the project such as payment conditions, responsibilities of the recipient government and procurement conditions.

2) Procedural details

Procedural details on the procurement of products and services under GAEC will be agreed upon between the Recipient and JICA at the time of the signing of the E/N and G/A.

Essential points to be agreed upon are outlined as follows:

a) JICA is in a position to expedite the proper execution of the program.
b) The products and services shall be procured and provided in accordance with "Procurement Guidelines for Environment and Climate Change of JICA".
c) The Recipient shall conclude an employment contract with the Agent.
d) The Agent is the representative acting in the name of the Recipient conceming all transfers of funds to the Agent.

3) Focal Points of "The Procurement Guidelines of Japan's (Type I - E) Grant Aid for Environment and Climate Change"

a) The Agent

The Agent is the organization which provides procurement services of products and services on behalf of the Recipient according to the Agent Agreement with the Recipient. The Agent is recommended to the Recipient by GOJ and agreed between the two Governments in the A/M.

b) Agent Agreement

The Recipient shall conclude an Agent Agreement, within one month after the date of entry into force of the E/N and the G/A, in accordance with the A/M. The scope of the Agent's services shall be clearly specified in the Agent Agreement.

c) Approval of the Agent Agreement

The Agent Agreement, which is prepared as two identical documents, shall be submitted to JICA by the Recipient through the Agent. JICA confirms whether or not the Agent Agreement is concluded in conformity with the G/A and the Procurement Guidelines for Disaster Reconstruction Grant Aid, and approves the Agreement.

The Agent Agreement concluded between the Recipient and the Agent shall become effective after the approval by JICA in a written form.

d) Payment Methods

The Agent Agreement shall stipulate that "regarding all transfers of the fund to the Agent, the Recipient shall designate the Agent to act on behalf of the Recipient and issue a Blanket Disbursement Authorization ("the BDA") to conduct the transfer of the fund (Advances) to the Procurement Account from the Recipient Account."

The Agent Agreement shall clearly state that the payment to the Agent shall be made in Japanese yen from the Advances and that the final payment to the Agent shall be made when the total Remaining Amount becomes less than 3 % of the Grant and its accrued interest.

e) Products and Services Eligible for Procurement

Products and services to be procured shall be selected from those defined in the G/A.

f) Firms

In principle, a firm of any nationality could be contracted as long as the Firm satisfies the conditions specified in the tender documents.

The Firm, with approval by JICA, may be Japanese nationals and the products to be procured may be the products made in Japan or produced or manufactured by Japanese manufacturer(s) and/or its (their) affiliate(s) in any country.

g) Experts for Technical Assistance

Expert(s) could be deployed to carry out technical assistance. The expert(s) may be recommended by JICA when the conceptual consistency with the Studies is required. In principle, expert(s) is/are preferable to be Japanese nationals if appropriate.

h) Method of Procurement

In implementing procurement, sufficient attention shall be paid so that there is no unfairness among tenderers who are eligible for the procurement of products and services.

For this purpose, competitive tendering shall be employed in principle.

i) Tender Documents

The tender documents should contain all information necessary to enable tenderers to prepare valid offers for the products and services to be procured by GAEC.

The rights and obligations of the Recipient, the Agent and the Suppliers of the products and services should be stipulated in the tender documents to be prepared by the Agent. Besides this, the tender documents shall be prepared in consultation with the Recipient.

j) Pre-qualification Examination of Tenderers

The Agent may conduct a pre-qualification examination of tenderers in advance of the tender so that the invitation to the tender can be extended only to eligible firms. The pre-qualification examination should be performed only with respect to whether or not the prospective tenderers have the capability of accomplishing the contracts concerned without fail. In this case, the following points should be taken into consideration:

(1) Experience and past performance in contracts of a similar kind
(2) Property foundation or financial credibility
(3) Existence of offices, etc. to be specified in the tender documents.

k) Tender Evaluation

The tender evaluation should be implemented on the basis of the conditions specified in the tender documents.

Those tenders which substantially conform to the technical specifications, and are responsive to other stipulations of the tender documents, shall be judged in principle on the basis of the submitted price, and the tenderer who offers the lowest price shall be designated as the successful tenderer.

The Agent shall prepare a detailed tender evaluation report clarifying the reasons for the successful tender and the disqualification and submit it to the Recipient to obtain confirmation before concluding the contract with the successful tenderer.

The Agent shall furnish JICA with a detailed evaluation report of tenders, giving the reasons for the acceptance or rejection of tenders.

l) Additional Procurement

If there is an additional procurement fund after competitive and / or selective tendering and / or direct negotiation for a contract, and the Recipient would like an additional procurement, the Agent is allowed to conduct an additional procurement, following the points mentioned below:

(1) Procurement of the same products and services

When the products and services to be additionally procured are identical with the initial tender and a competitive tendering is judged to be disadvantageous, the additional procurement can be implemented by a direct contract with the successful tenderer of the initial tender.

(2) Other procurements

When products and services other than those mentioned above in (1) are to be procured, the procurement should be implemented through a competitive tendering. In this case, the products and services for additional procurement shall be selected from among those in accordance with the G/A.

m) Conclusion of the Contracts

In order to procure products and services in accordance with the G/A, the Agent shall conclude contracts with firms selected by tendering or other methods.

n) Terms of Payment

The contract shall clearly state the terms of payment. The Agent shall make payment from the "Advances", against the submission of the necessary documents from the Firm on the basis of the conditions specified in the contract, after the obligations of the Firm have been fulfilled. When the services are the object of procurement, the Agent may pay certain portion of the contract amount in advance to the firms on the conditions that such firms submit the advance payment guarantee worth the amount of the advance payment to the Agent.

4) Undertakings required to the Government of the recipient country

In the implementation of the Grant Aid Programme, the recipient country is required to undertake such necessary measures as the following:

a) To secure land necessary for the sites of the Programme and to clear, level and reclaim the land prior to commencement of the Programme,
b) To provide facilities for the distribution of electricity, water supply and drainage and other incidental facilities in and around the sites,
c) To secure buildings prior to the procurement in case the installation of the equipment,
d) To ensure prompt unloading and customs clearance at the port of disembarkation and to assist internal transportation therein,
e) To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the purchase of the Components including the employment of the Agent,
f) To accord all the concerned parties, whose services may be required in connection with supply of the products and services under the contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work,
g) To ensure that the Facilities and/or the Components be maintained and used properly and effectively for the implementation of the Programme,
h) To bear all the expenses, other than those covered by the Grant and its accrued interest, necessary for the implementation of the Programme, and
i) To give due environmental and social consideration in the implementation of the Programme.

5) Proper Use

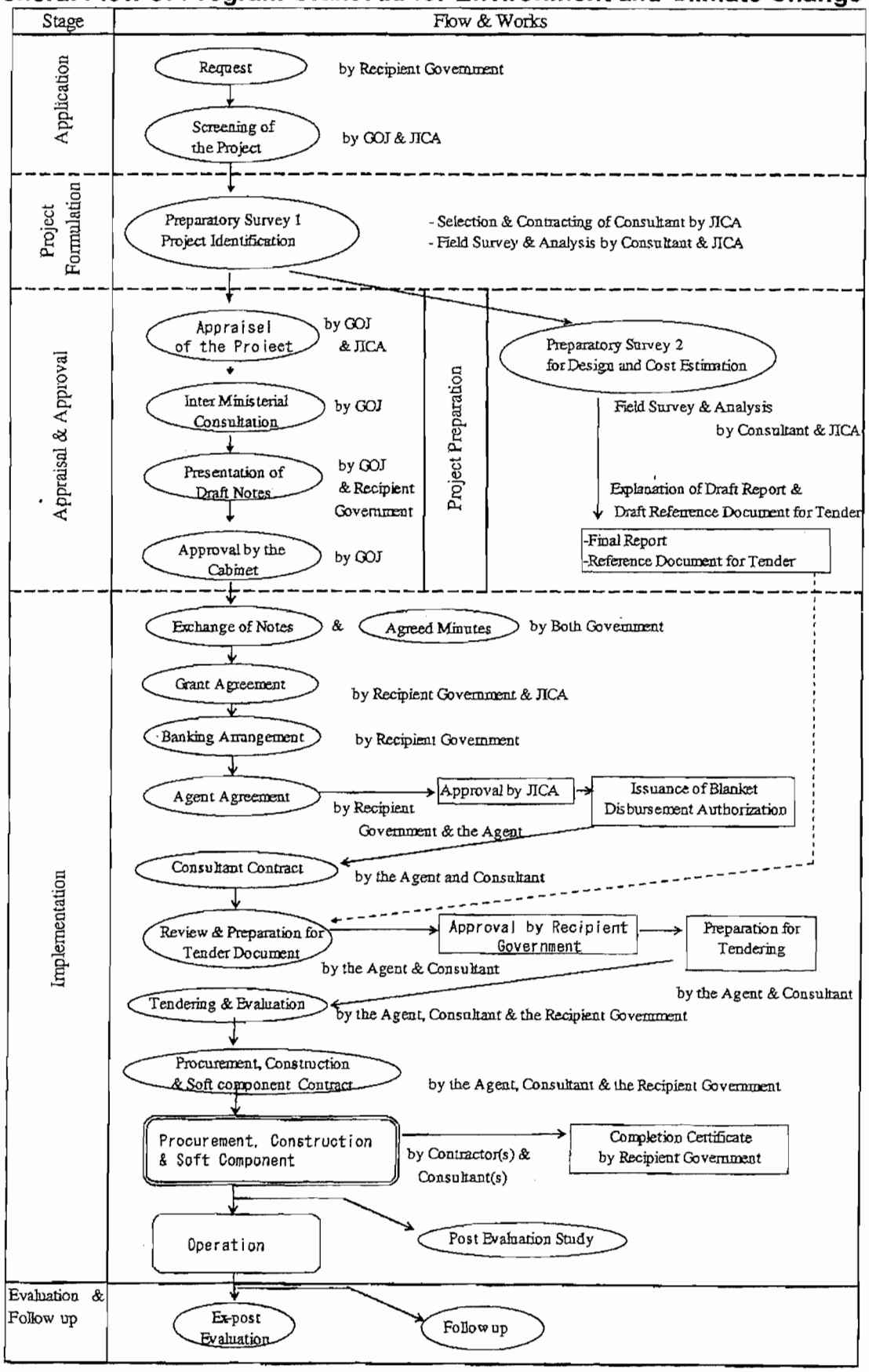
The recipient country is required to operate and maintain the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.

6) Re-export

The products purchased under the Grant Aid should not be re-exported from the recipient country.

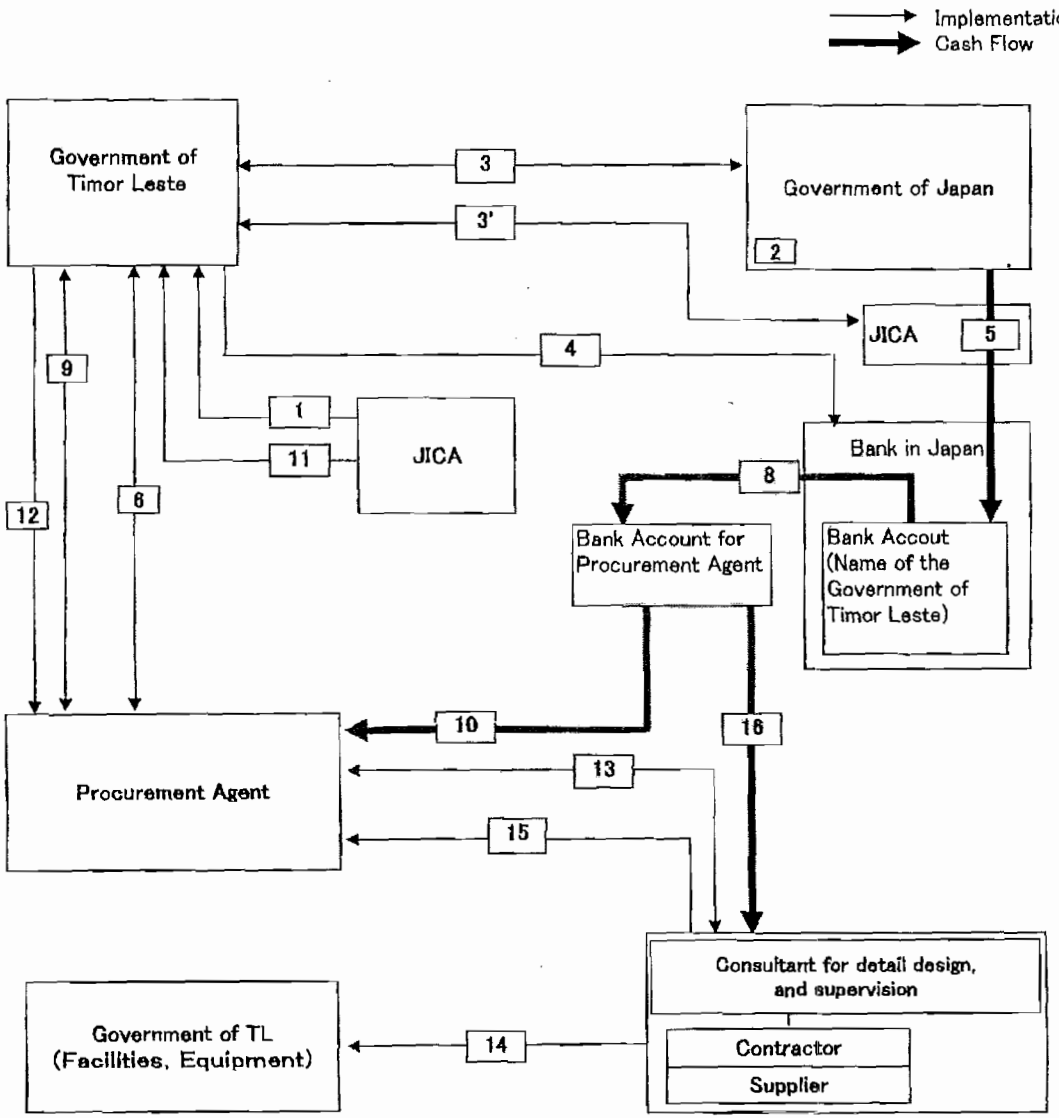
7

General Flow of Program Grant Aid for Environment and Climate Change



Annex-3

Flow of Funds for Project Implementation



1 Preparatory Survey / Reference Document for Tender

2 Approval of Cabinet

3 Signing of Exchange of Notes (E/N)

3' Signing of Grant Agreement (G/A)

4 Banking Arrangement (B/A)

5 Disbursement of Funds from the Government of Japan

6 Signing of Agent Agreement (A/A) +BDA

7 N/A

8 Transfer of Funds

9 Decision of Project Components

10 Payment of Remuneration for Agent

11 Recommendation of Consultant for Detail Design/Supervision (JICA→Government of TL)

12 Recommendation of Consultant for Detail Design / Supervision (Govarnment of TL→Procurement Agent)

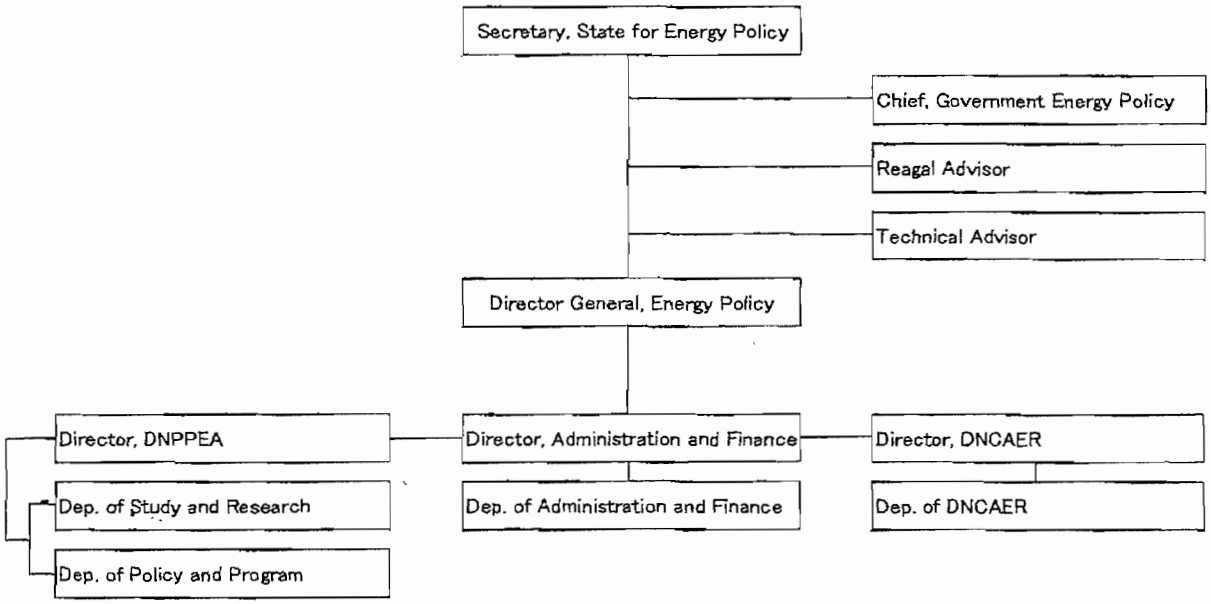
13 Conclusion of Contract

14 Construction and Procurement

15 Application for Payment

16 Payment

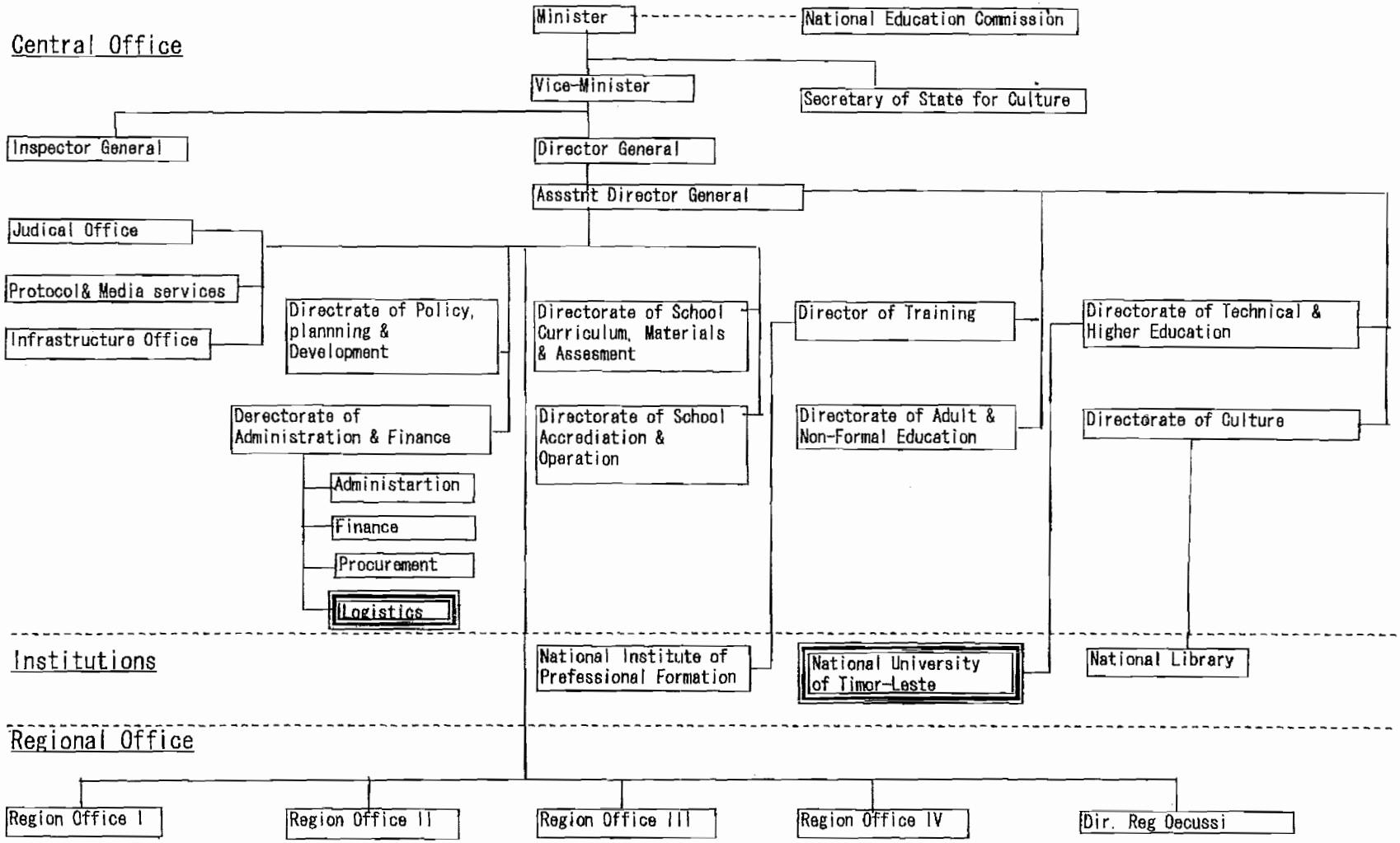
Organization Chart of Secretary of State for Energy Policy



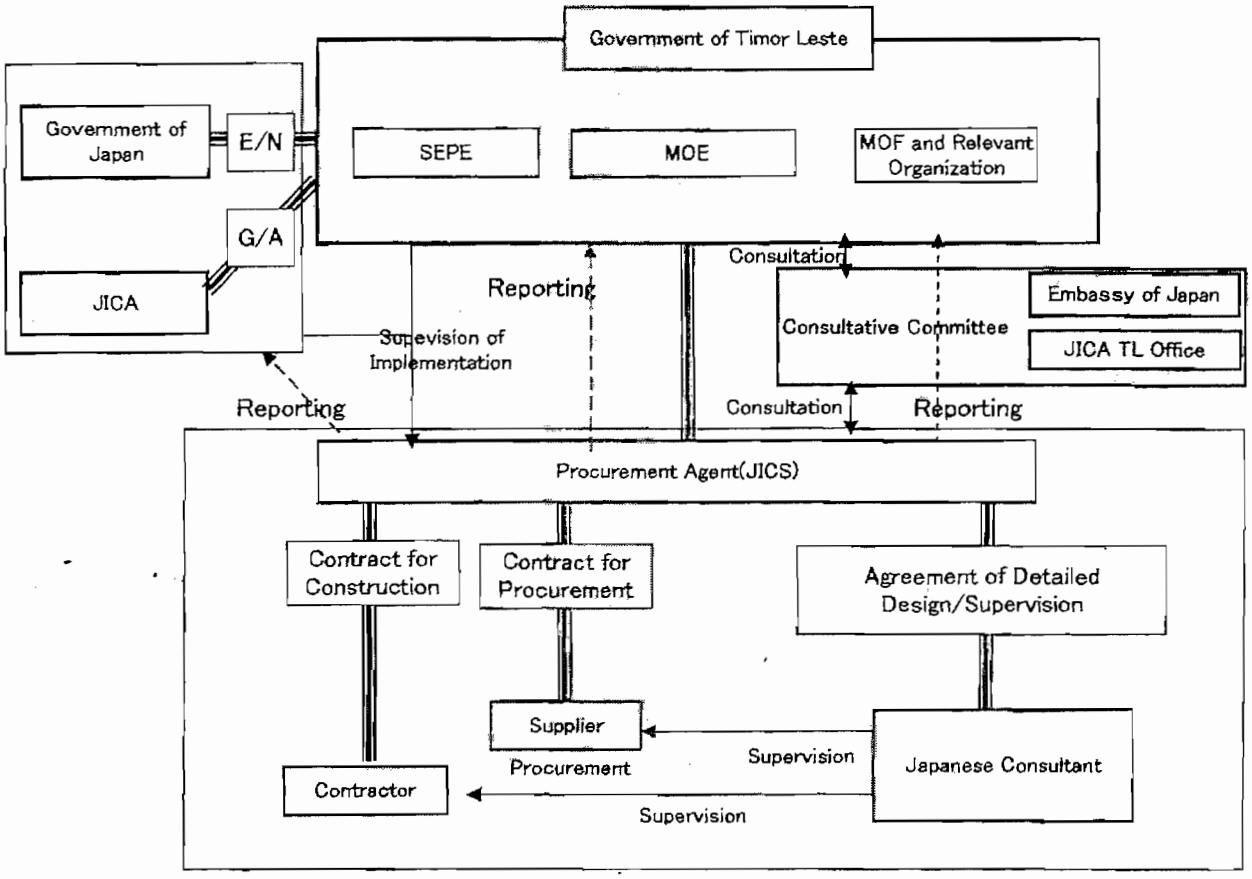
* DNPPEA : National Department for Coordination Activity of Renewable Energy
* DNCAER : National Department Research and Planing for Renewable Energy

Annex-5

Organization Chart of Implementation Agency (Ministry of Education)



Implementation Structure of the Project



Terms of Reference of the Consultative Committee

1. To confirm an implementation schedule of the Programme for the speedy and effective utilization of the Grant and its accrued interest;

2. To discuss determination and/or modification of the Components, taking into account of the products enumerated in the list attached to the Procurement Guidelines and/or the result of the preparatory survey for the Programme by JICA;

3. To discuss modifications of the Programme;

4. To exchange views on allocations of the Grant and its accrued interest as well as on potential end-users;

5. To identify problems which may delay the utilization of the Grant and its accrued interest, and to explore solutions to such problems;

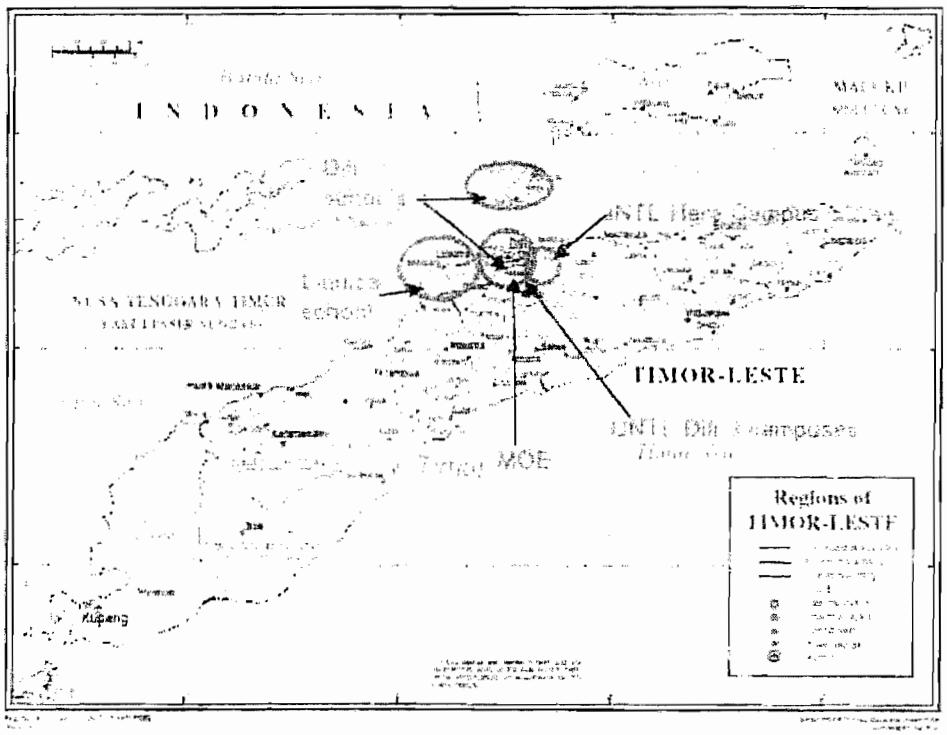
6. To exchange views on publicity related to the utilization of the Grant and its accrued interest; and

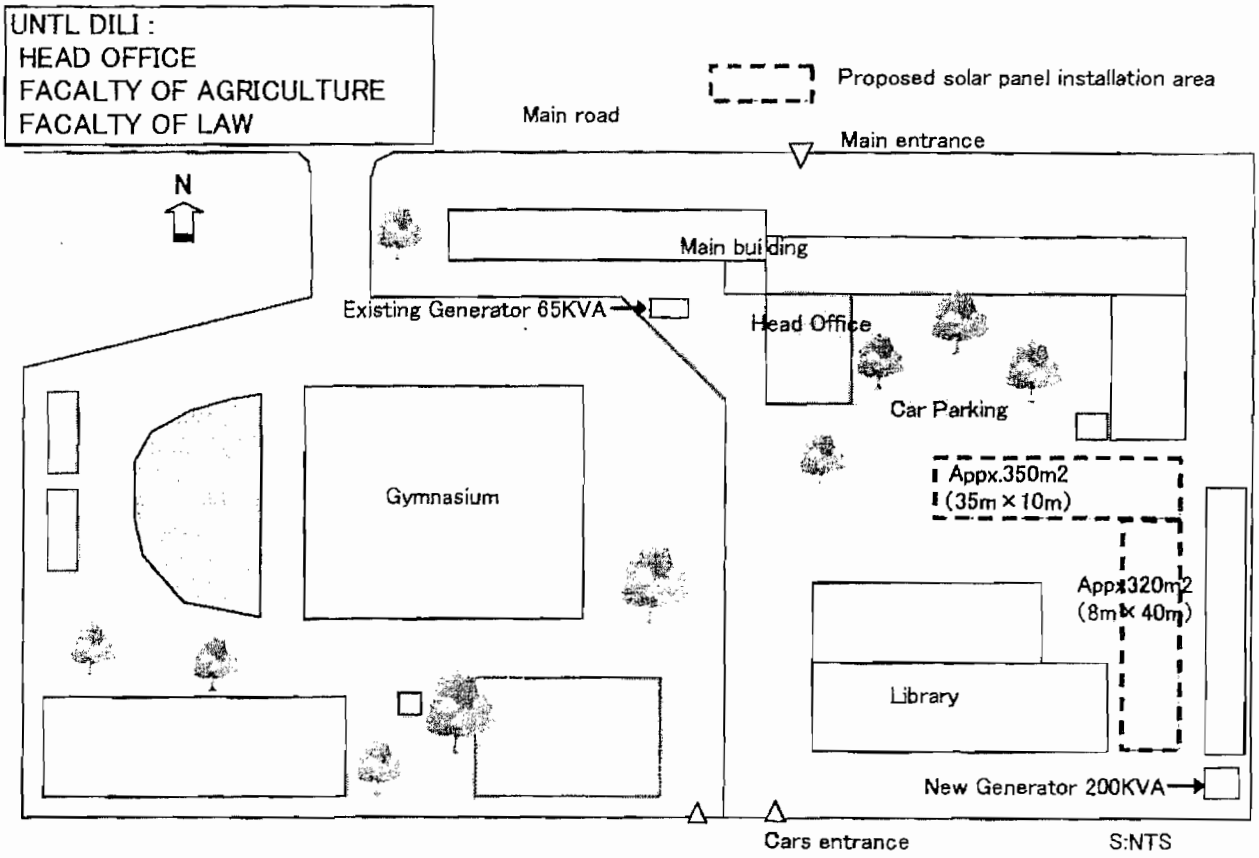
7. To discuss any other matters that may arise from or in connection with the G/A.

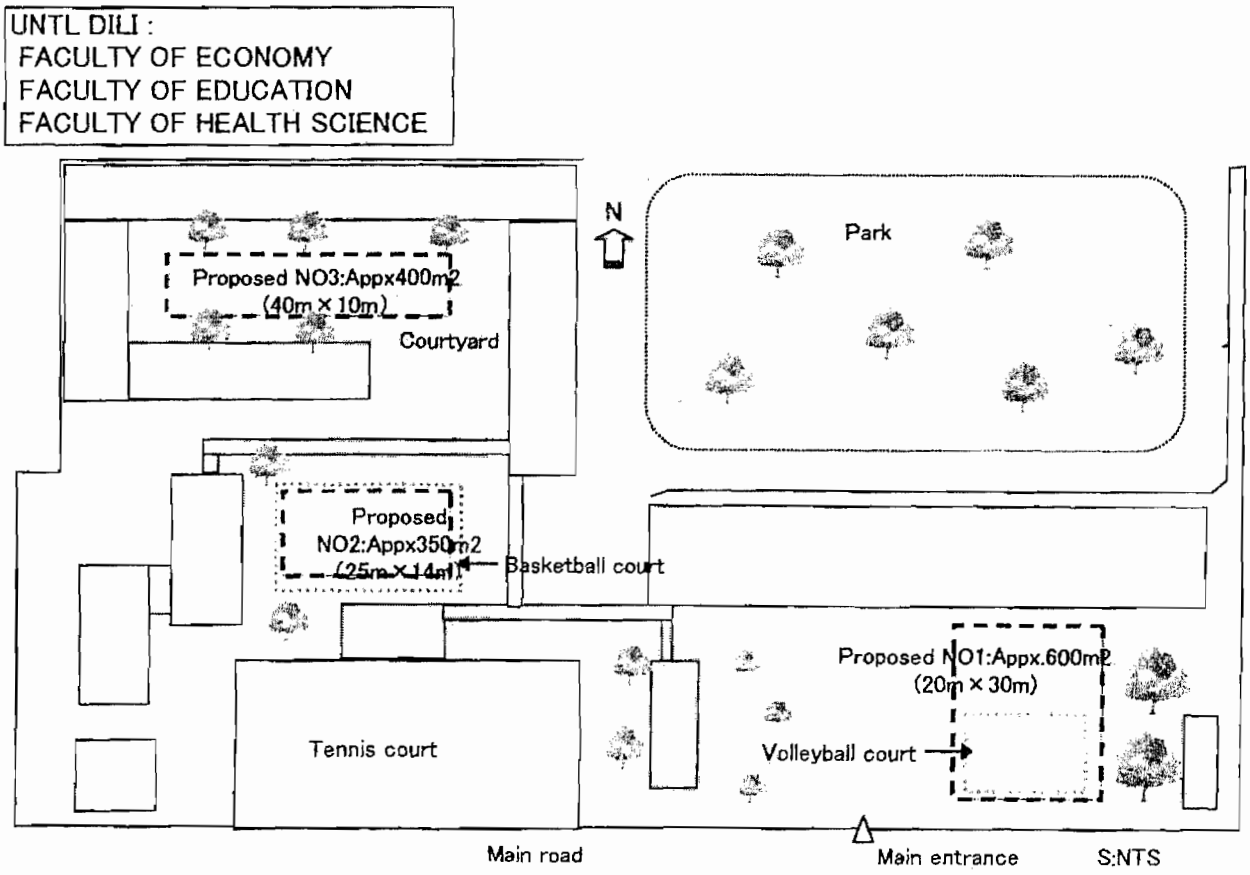
Annex-8

Final Candidate Sites

1. University of East Timor	
	1) Head Office, Facalty of Agriculture, Law in Dili
	2) Facalty of Economics, Education, Health Science in Dili
	3) Facalty of Engineering in Hera
2. Ministry of Education	
	1) Main Building
3. Basic School	
DILI	1) Atauro
	2) Biqueli
	3) 30 de Agosto
	4) Fatumeta
	5) Manleuana
	6) Farol
	7) Bidau Acadiruhun
	8) Hera
	9) Metinaro
LIQUICA	10) Liquica
	11) Darulete
	12) Bazartete
	13) Leorema
	14) Casait
	15) Maubara
	16) Loes
4. Private School	
	17) São Pedro
	18) Paulo VI
	19) Cristal
	20) Sao Francisco Xavier

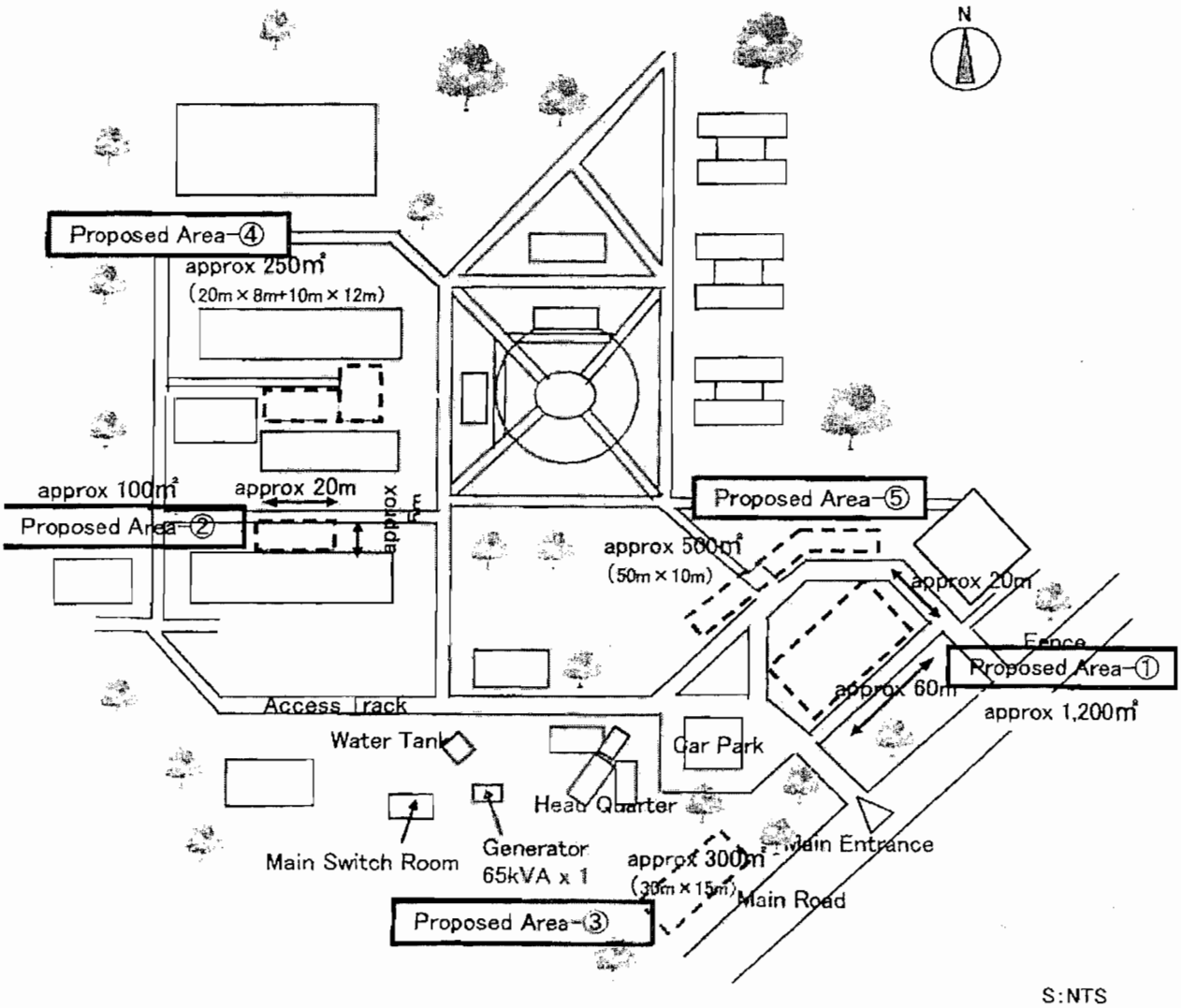



UNTL DILI :
HEAD OFFICE
FACALTY OF AGRICULTURE
FACALTY OF LAW
Proposed solar panel installation area
Main road
Main entrance
N
Main building
Existing Generator 65KVA
Head Office
Car Parking
Gymnasium
Appx.350m2
(35m × 10m)
Appx320m2
(8m × 40m)
Library
New Generator 200KVA
Cars entrance
S:NTS


UNTL DILI :
FACULTY OF ECONOMY
FACULTY OF EDUCATION
FACULTY OF HEALTH SCIENCE
N
Park
Proposed NO3:Appx400m2
(40m × 10m)
Courtyard
Proposed
NO2:Appx350m2
(25m × 14m)
Basketball court
Proposed NO1:Appx.600m2
(20m × 30m)
Tennis court
Volleyball court
Main road
Main entrance
S:NTS

UNTL Hera :
FACAULTY OF ENGINEERING

Proposed solar panel installation



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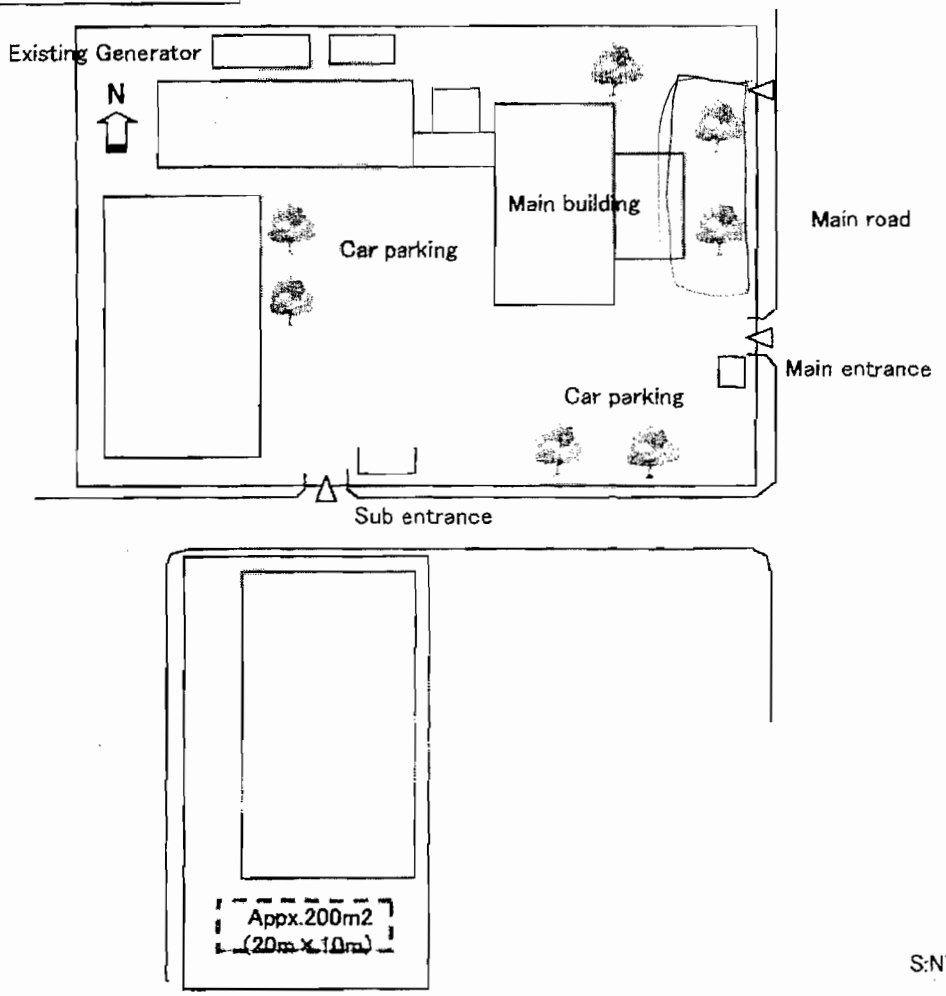
MINISTRY OF EDUCATION



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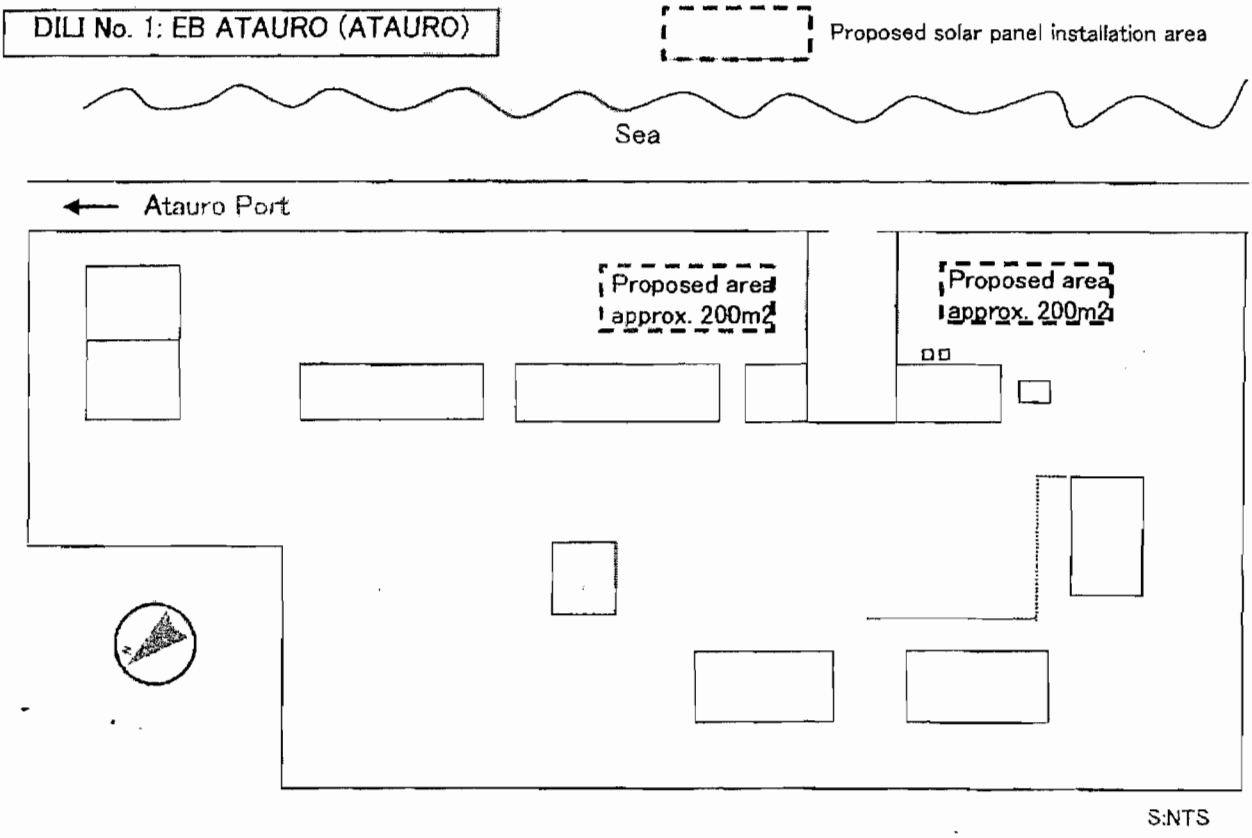
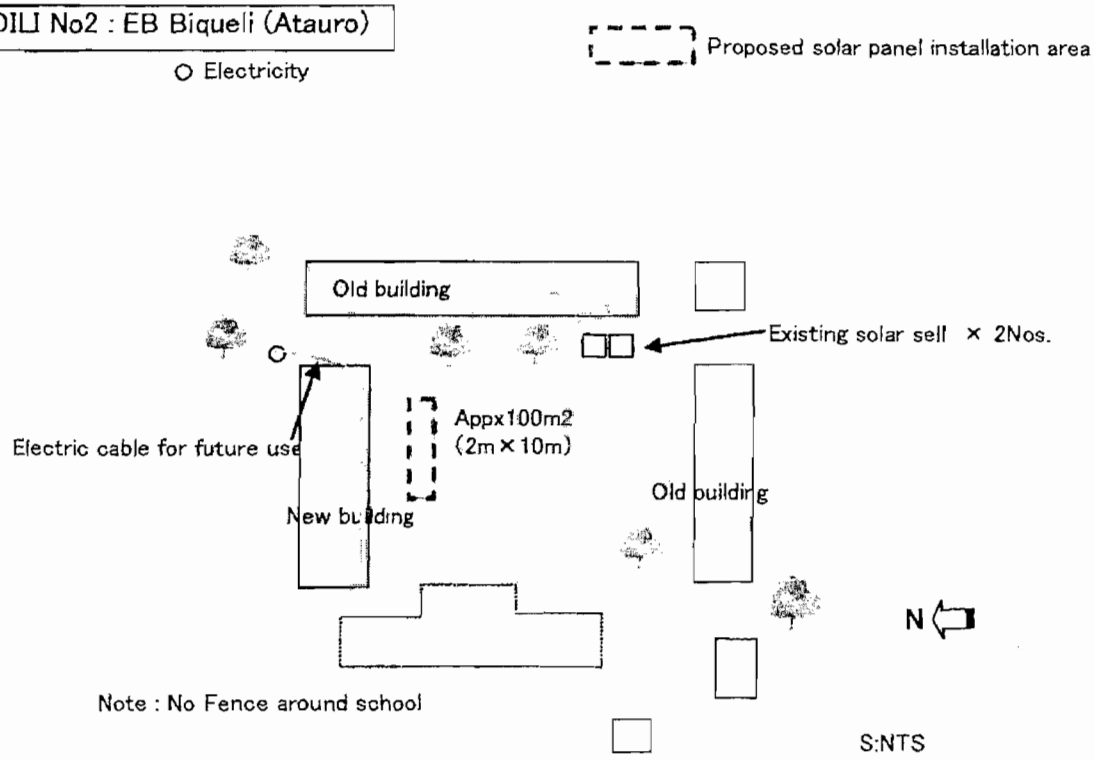
Appx. 500m2
(20 X25m)

DILI No. 1: EB ATAURO (ATAURO)

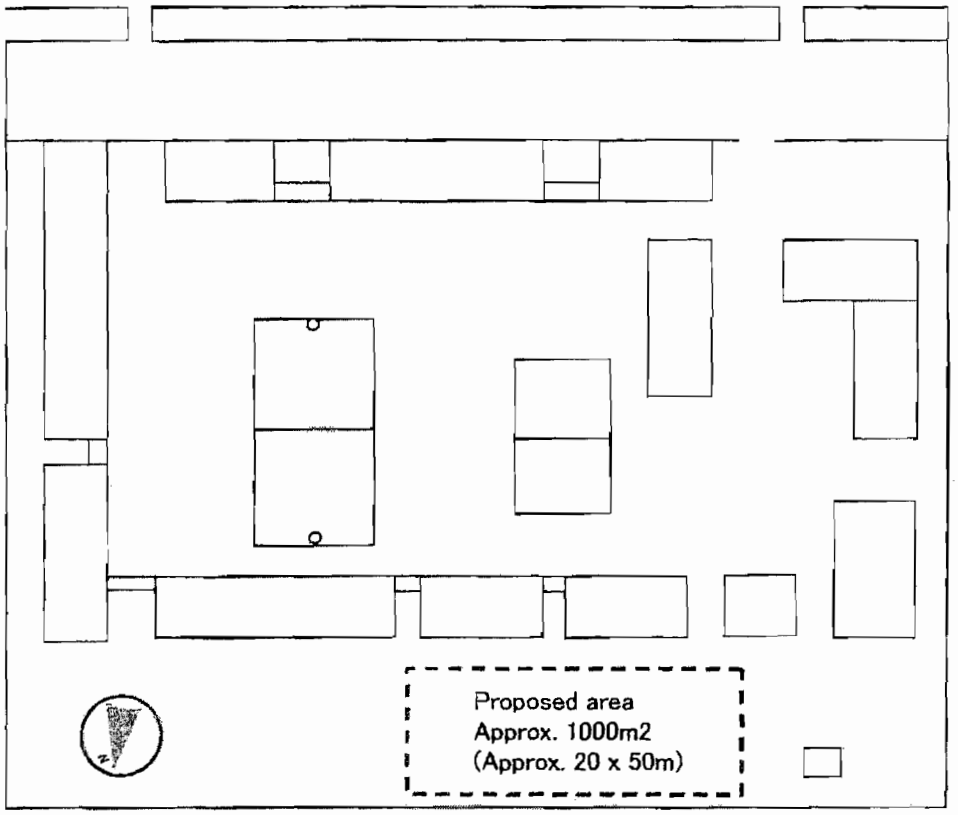


DILI No2 : EB Biqueli (Atauro)



DILI No.3:EB 30 de Agosto

Proposed solar panel installation area



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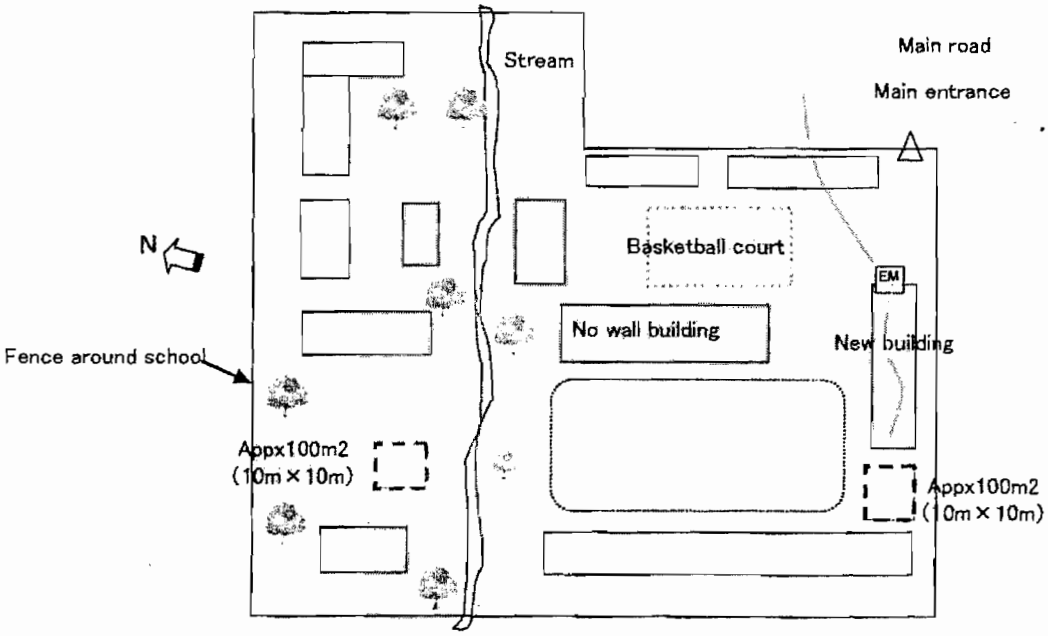
DILI No4 : EB Fatumeta

O Electricity

Proposed solar panel installation area



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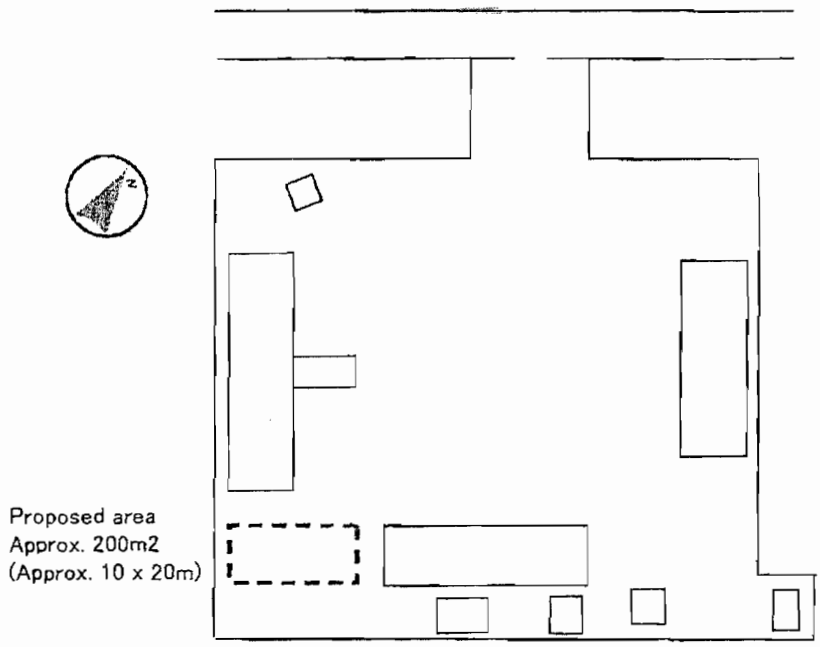
DILI No. 5 : EB Manleunana

Proposed solar panel installation area



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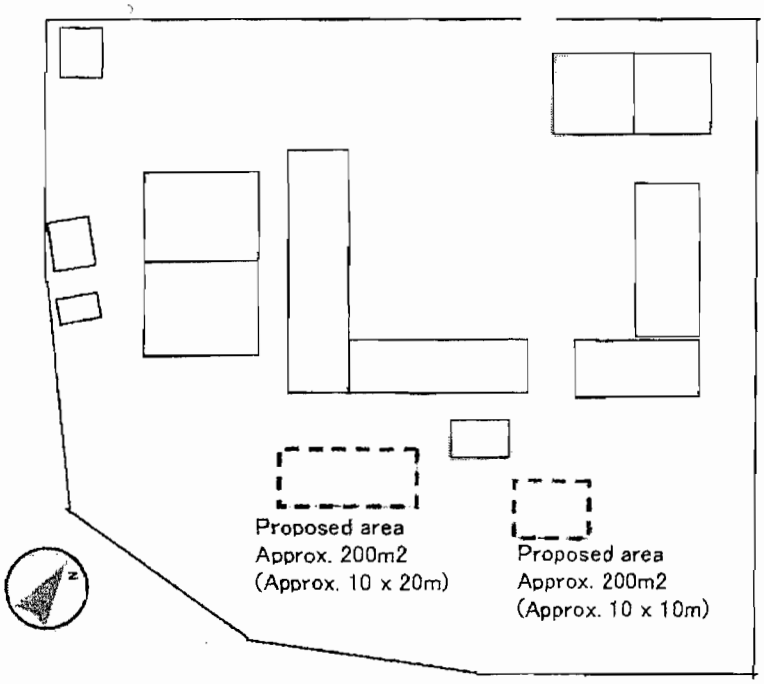
DILI No.6 : EB Farol

Proposed solar panel installation area



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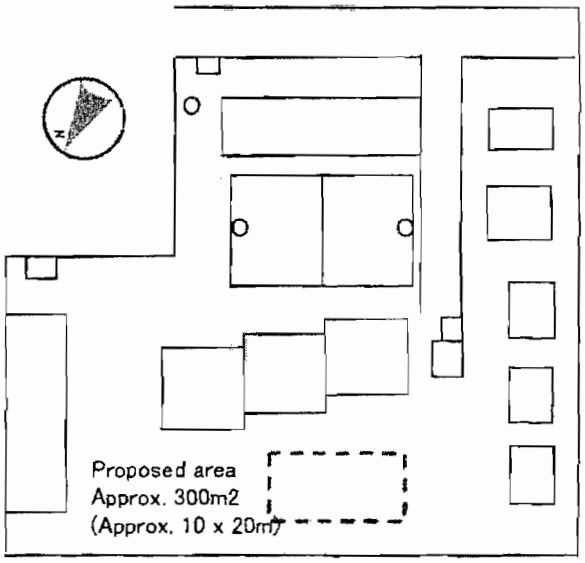
DILI No.7 : EB Bidau Acadiruhum

Proposed solar panel installation area



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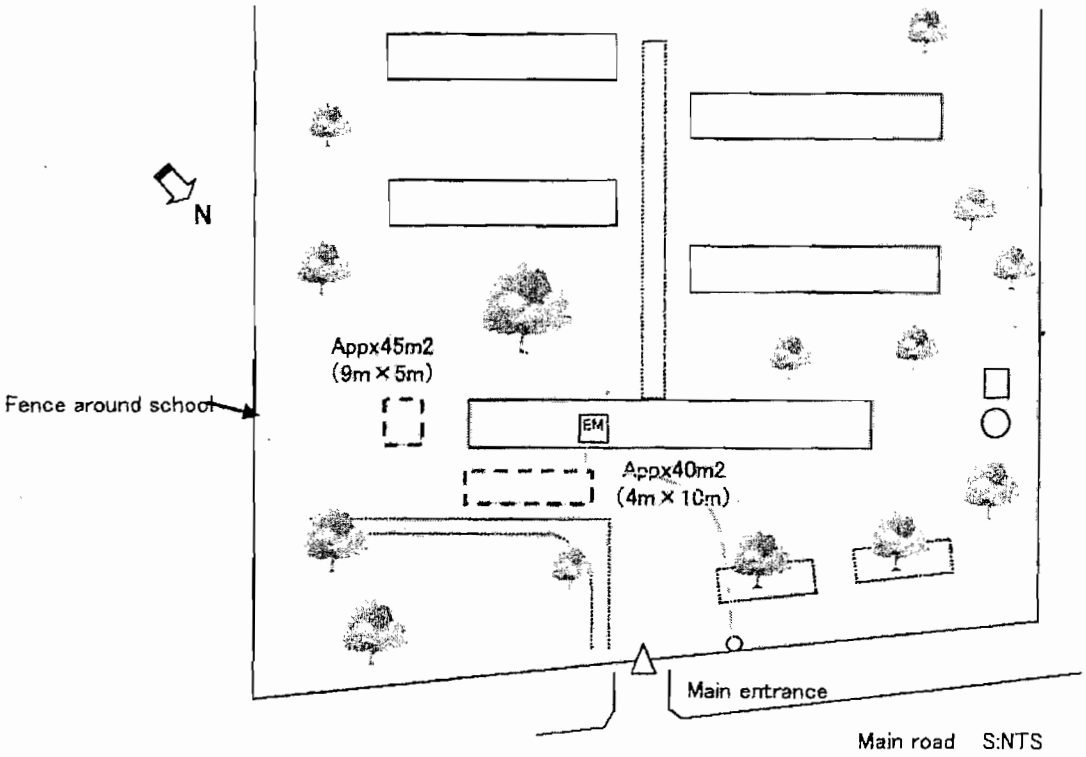
DILI No 8 : EB Hera

Proposed solar panel installation area

O Electricity



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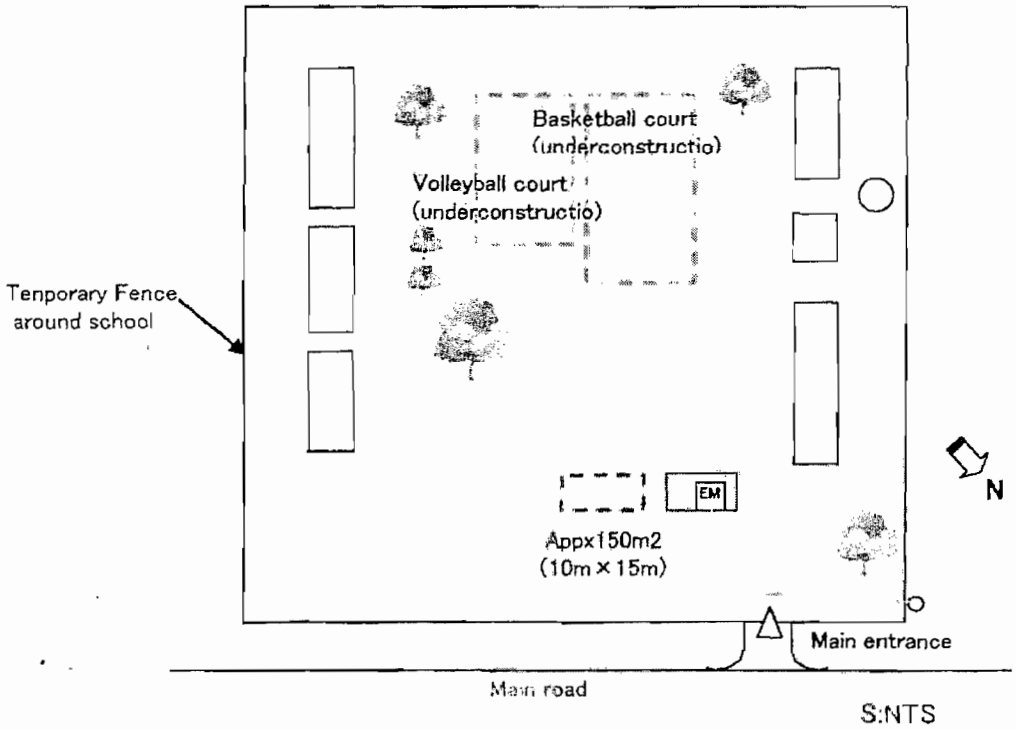
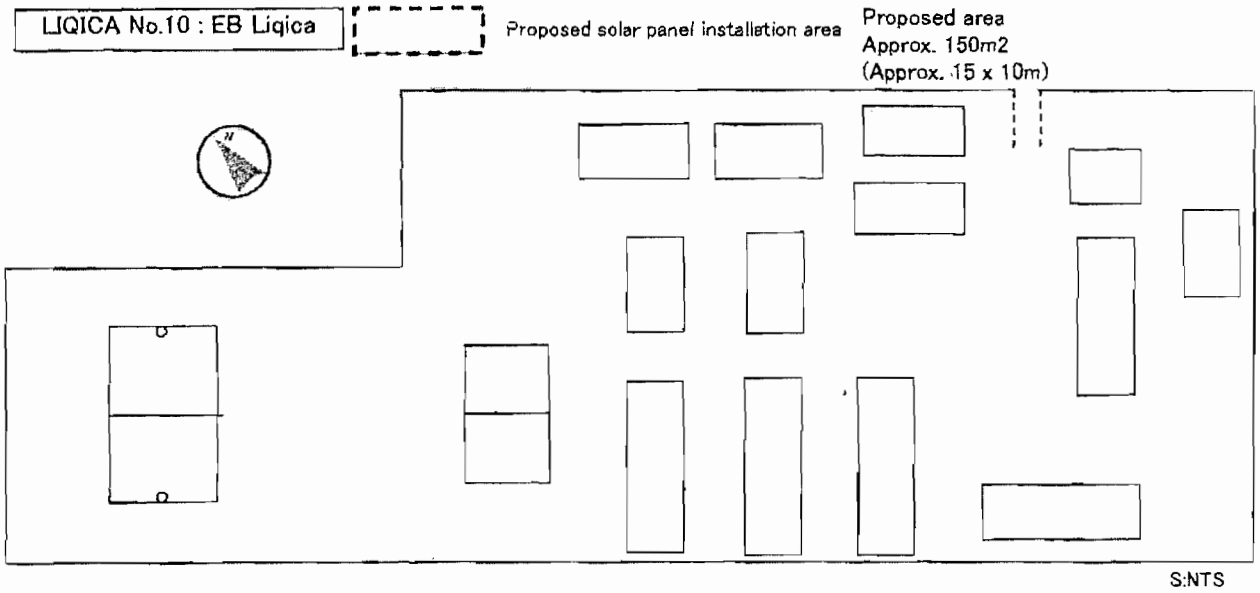
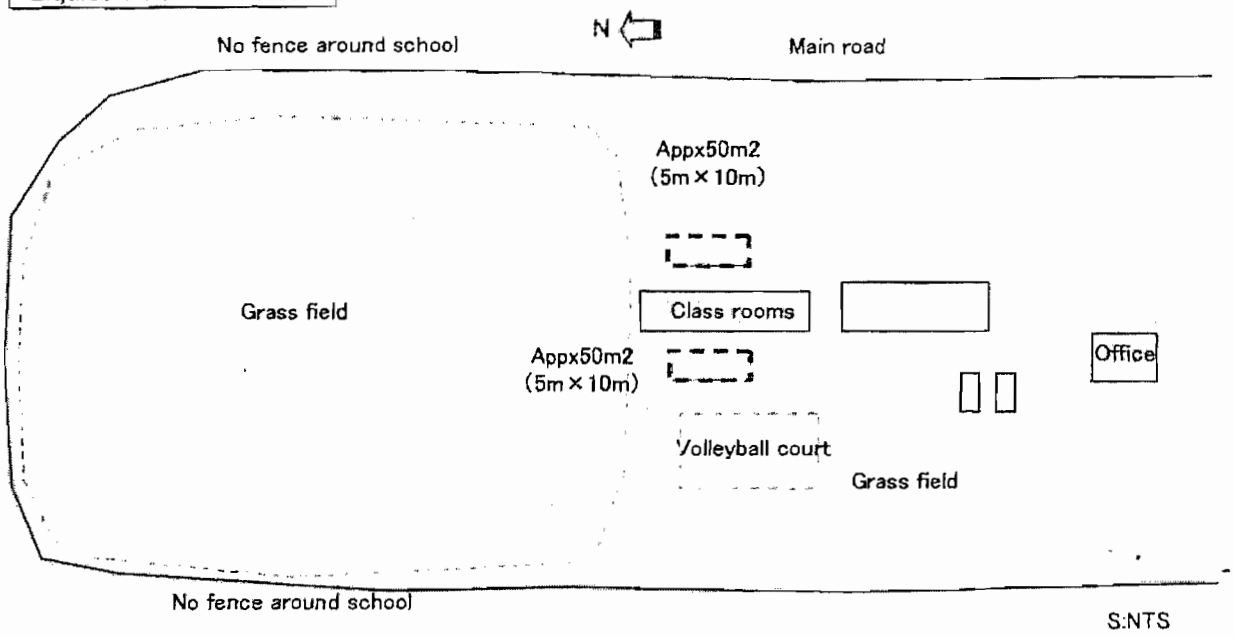
DILI NO9 : EB Metinaro



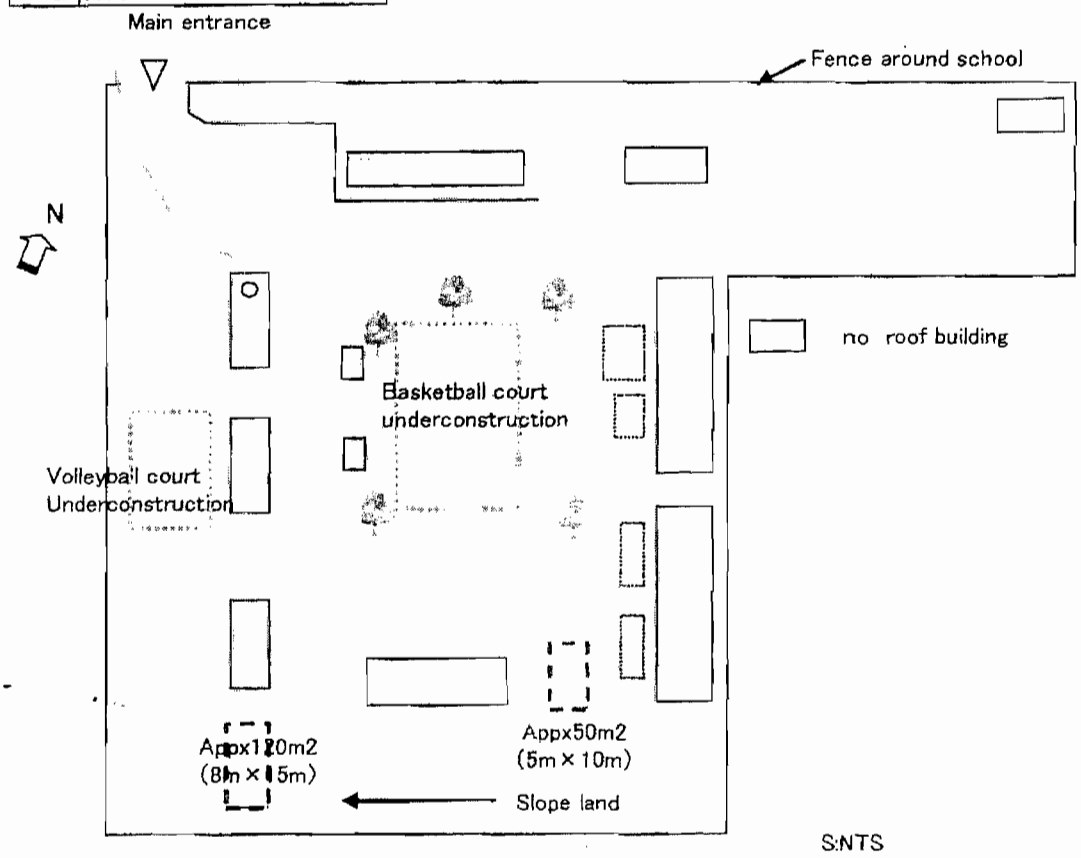
LIQICA No.10 : EB Liqica



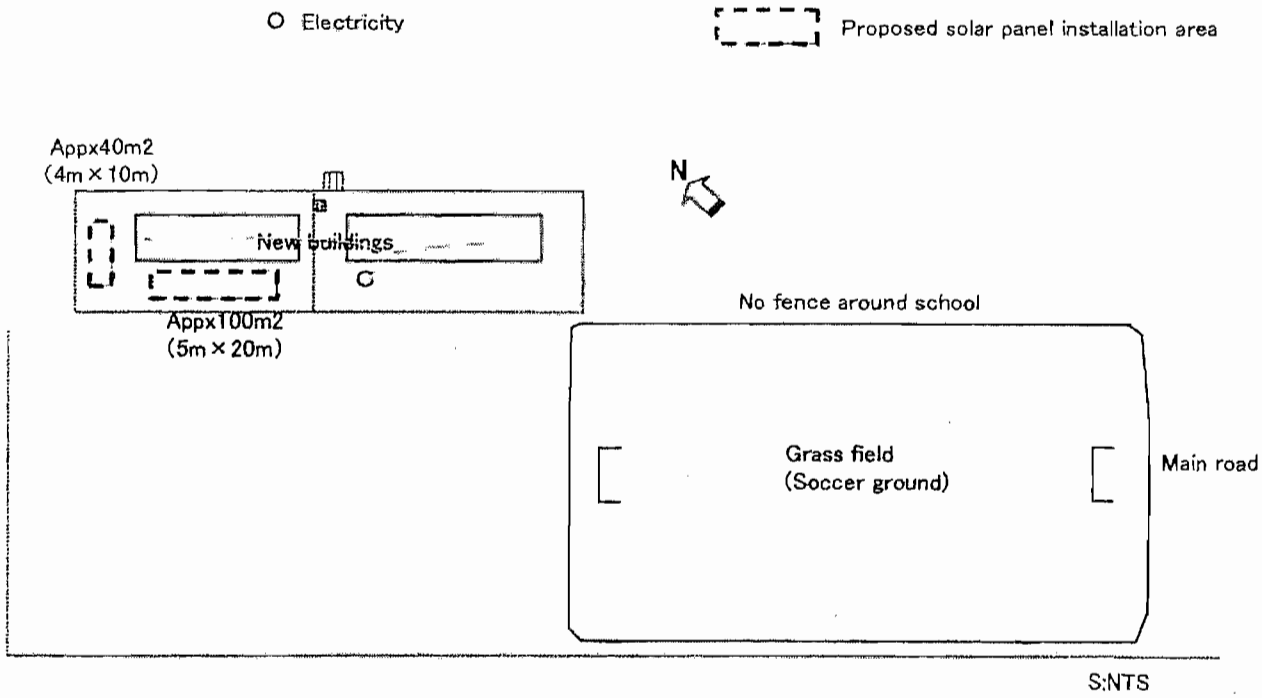
Liquica No11 : Darulete



Liquica No12 : Bazartete



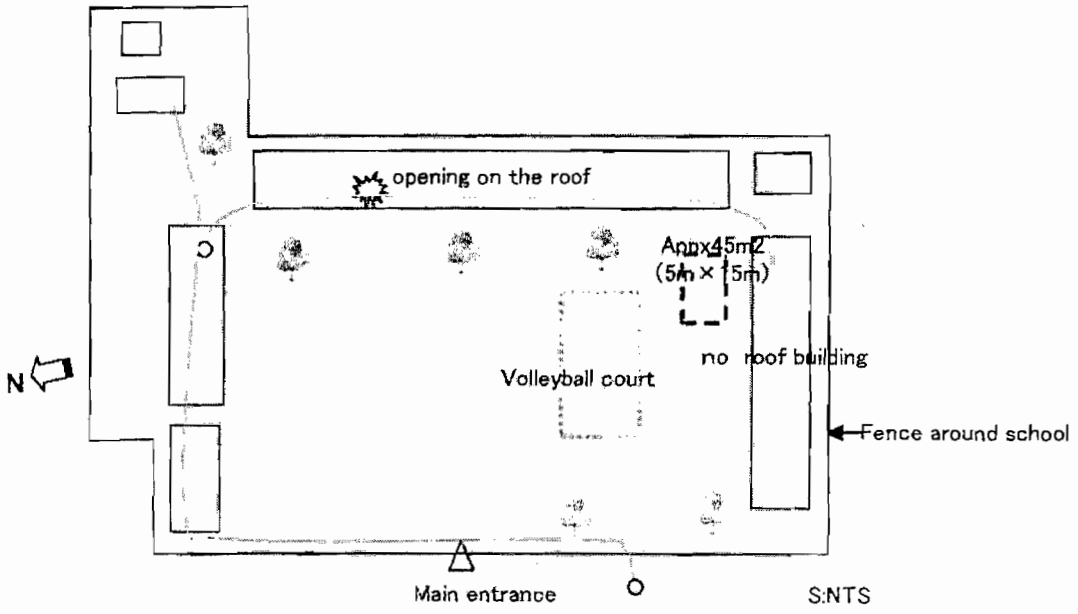
Liquica No13 : Leorema



Liquica No14 : Casait

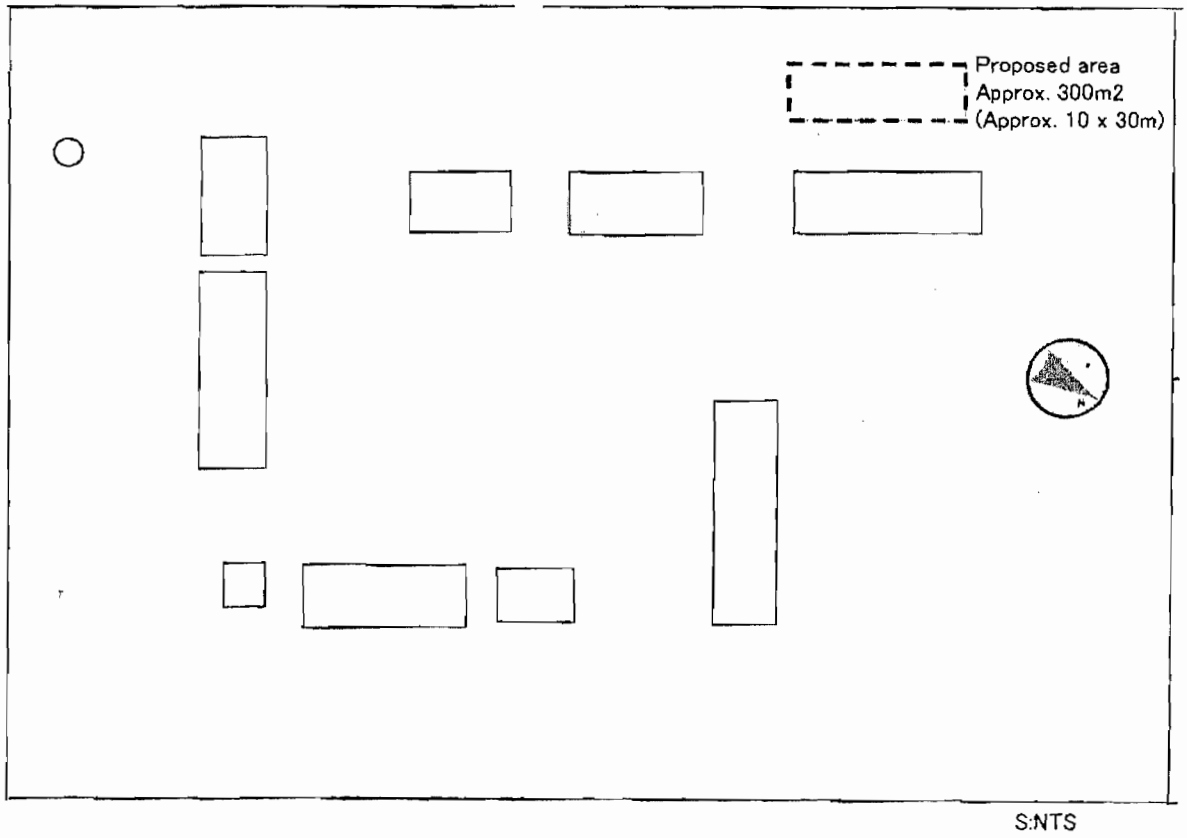
O Electricity

Proposed solar panel installation area

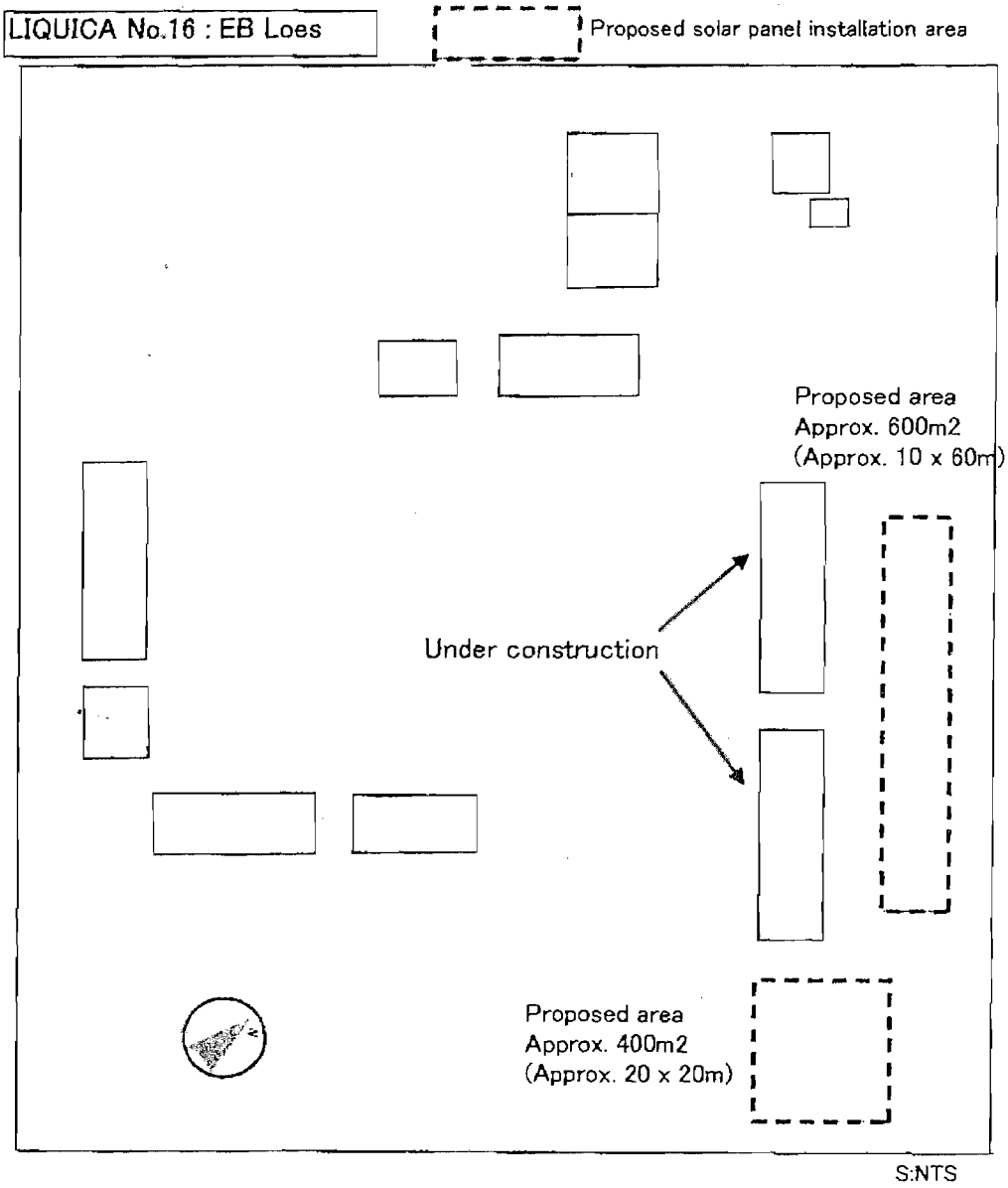


LIQUICA No.15 : EB Maubara

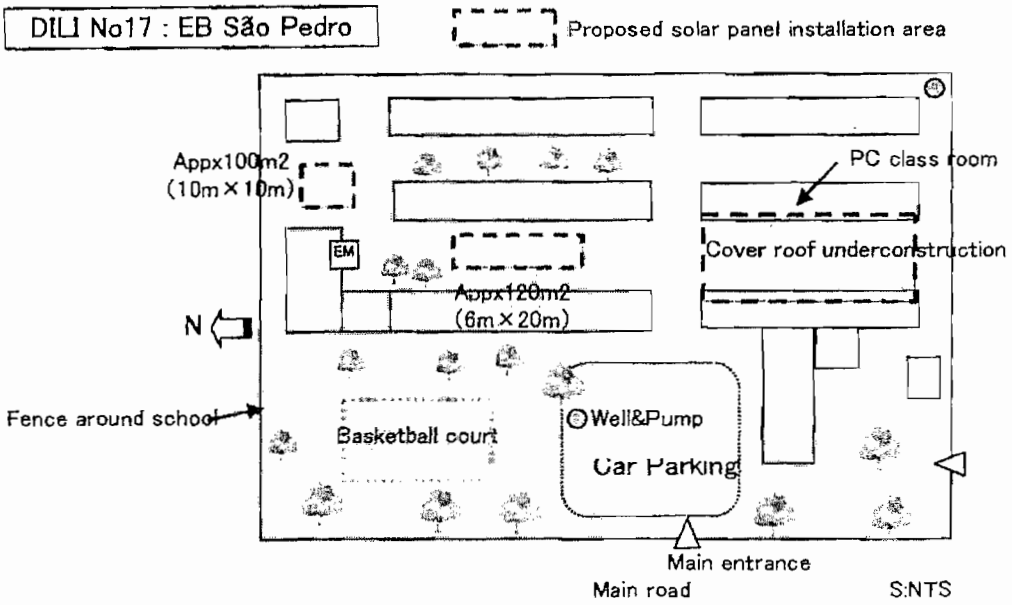
Proposed solar panel installation area



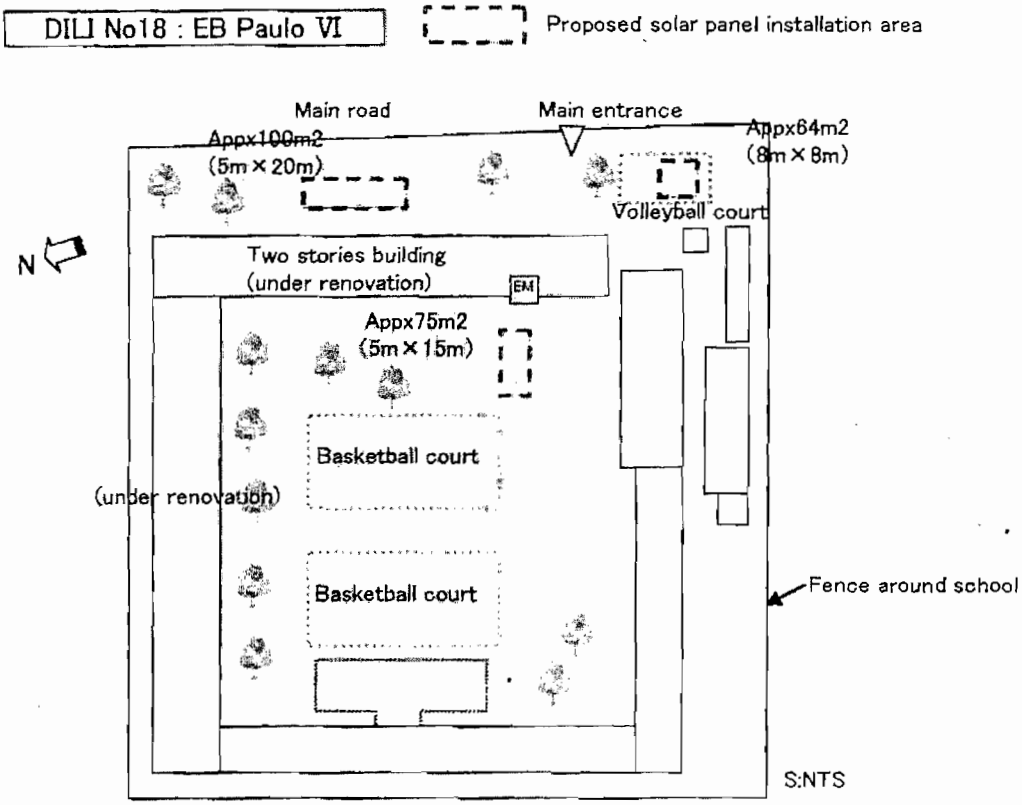
LIQUICA No.16 : EB Loes



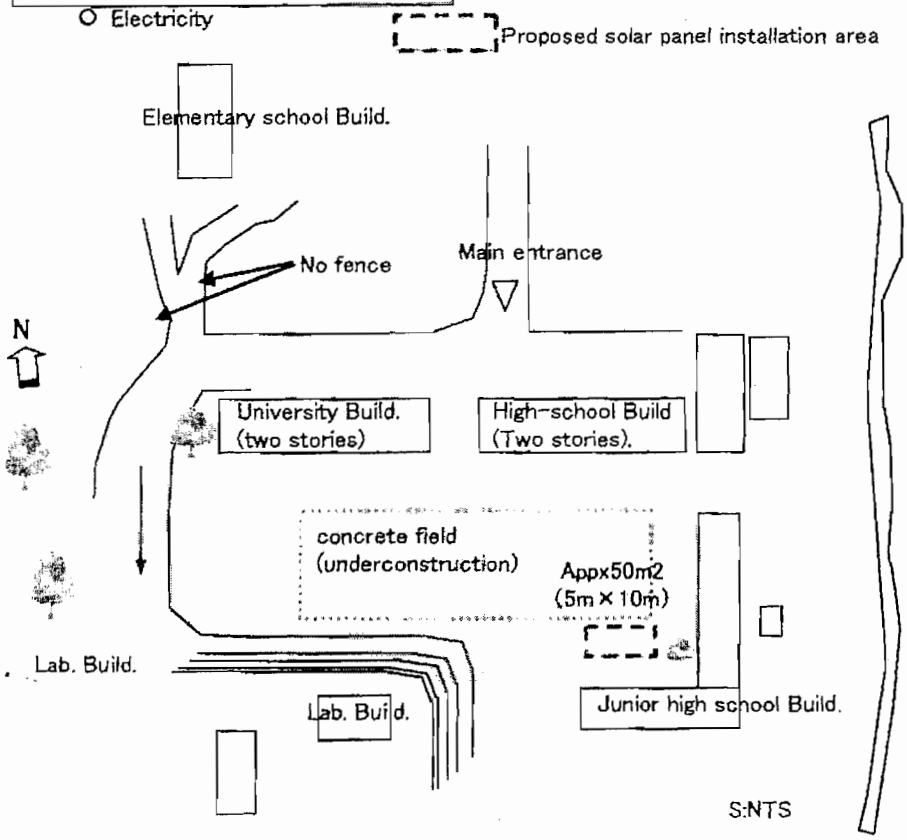
DILI No17 : EB São Pedro



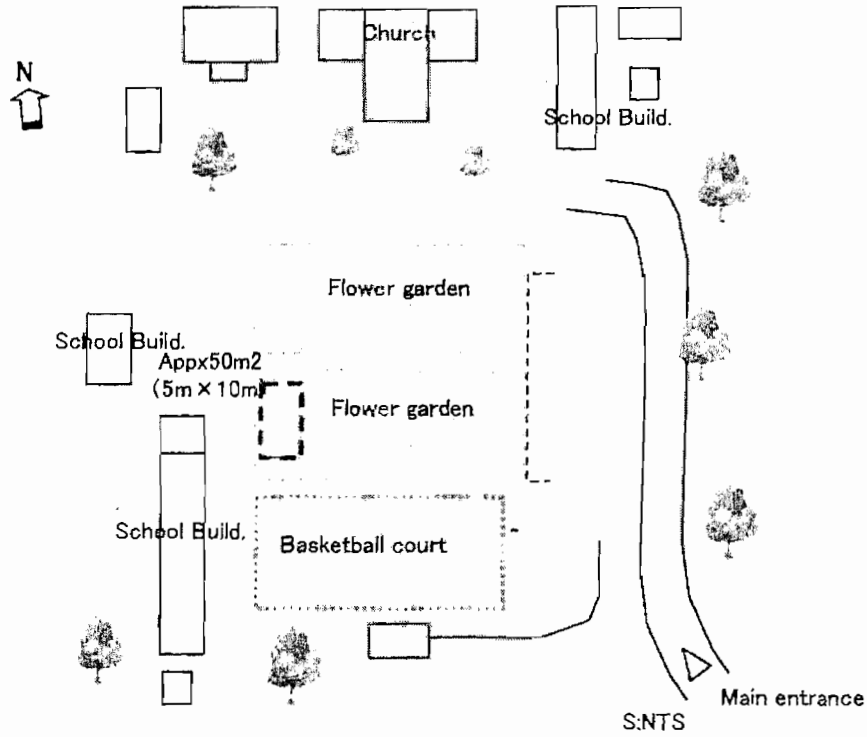
DILI No18 : EB Paulo VI



DILI No.19 : EB Cristal



DILI No.20 : EB Sao Francisco Xavier Dare



Annex-10

Major undertakings to be taken by each Government

No.	Items	To be covered by Grant Aid	To be covered by Recipient Side
1	To secure land		●
2	To clear, level and reclaim the site when needed urgently		●
3	To construct gates and fences in and around the site		●
4	To install the equipment	●	
5	To bear the bank commissions applied by the bank in Japan for banking services based upon the Bank Arrangement (B/A).		●
6	To ensure prompt unloading and customs clearance at the port of disembarkation in the recipient country		
	1) Marine or air transportation of the products from Japan or third countries to the recipient	●	
	2) To exempt or bear tax and customs clearance of the products at the port of disembarkation		●
7	To accord Japanese nationals and / or nationals of third countries, including persons employed by the agent whose services may be required in connection with the Components such facilities as may be necessary for their entry into recipient country and stay therein for the performance of their work.		●
8	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the purchase of the Components and to the employment of the Agent will be exempted by the Government of recipient country		●
9	To maintain and use properly and effectively the facilities that are constructed and the equipment that is provided under the Grant.		●
10	To bear all the expenses, other than those covered by the Grant and its accrued interest, necessary for the purchase of the Components as well as for the agent's fees.		●
11	To ensure environmental and social consideration for the Programme.		●

Appendix-5 Technical Memorandum (Third Site Survey)

THE PROJECT FOR INTRODUCTION OF CLEAN ENERGY BY
SOLAR ELECTRICITY GENERATION SYSTEM
IN THE TIMOR-LESTE

TECHNICAL MEMORANDUM
BETWEEN MINISTRY OF EDUCATION AND INTERNATIONAL TOTAL ENGINEERING CORPORATION

30 April, 2010, Dili

Concerning the equipment for "the Project for Introduction of Clean Energy by Solar Electricity Generation System in the Timor-Leste", Ministry of Education, Secretary State for Energy Policy and International Total Engineering Corporation (ITEC) as a consultant for the Project authorized by Japan International Cooperation Agency (JICA) have confirmed followings;

All the contents of attached sheet were discussed and agreed between Ministry of Education, Secretary State for Energy Policy and International Total Engineering Corporation on 30 April 2010.

Mr. Shigehito AKAGI
Project Manager
Preparatory Survey Team
International Total Engineering Corporation (ITEC)
Japan

Mr. Apolinario Magno
Director General
Ministry of Educaton
Democratic Republic of Timor-Leste

Mr. Marcos dos Santos
Director General
Secretary of State for Energy Policy
Democratic Republic of Timor-Leste

The Project for
Introduction of Clean Energy by Solar Electricity Generation System

1. Objective of the Project

The objective of the Project is to reduce GHGs (Greenhouse Gas) emitted from the power plants in Timor-Leste, by introducing photovoltaic power system.

2. Policy of the Design

In principle, Grid-connected photovoltaic system without battery shall be planned under the project in consideration of reduction of maintenance cost. However, Stand-alone with battery system shall be planned in area without power supply. This stand-alone with battery system is necessary to prevent power fluctuations from photovoltaic system, which may damage equipment such as audio-visual equipment.

3. Project Site & Planned kW

Project sites, planned system, and tentative kW are as shown in Table 3-1 below, and Site Plan for each Site are as shown in annex-1.

Table 3-1Project Site & Planned kW (Tentative)

	Project Site	City Power	Approx. kW	System
1. National University of Timor-Leste				
1)	Head Office, Faculty of Agriculture and Law in Dili	○	10～30kW	Grid-connected
2)	Faculty of Economics, Education and Health Science in Dili	○	10～30kW	Grid-connected
3)	Faculty of Engineering in Hera	○	30～70kW	Grid-connected
		-	2～6kW	Stand-alone with Battery
2. Ministry of Education				
1)	Main Building	○	50kW	Grid-connected
3. Basic School				
1)	Atauro	×	2kW	Stand-alone with Battery
2)	Biqueli	×	2kW	Stand-alone with Battery
3)	30 de Agosto	○	2kW	Grid-connected
4)	Fatumeta	○	2kW	Grid-connected
5)	Manleuana	○	2kW	Grid-connected
6)	Farol	○	2kW	Grid-connected
7)	Bidau Acadiruhun	○	2kW	Grid-connected
8)	Hera	○	2kW	Grid-connected
9)	Metinaro	○	2kW	Grid-connected
10)	Liquica	○	2kW	Grid-connected
11)	Darulete	×	2kW	Stand-alone with Battery
12)	Bazartete	○	2kW	Grid-connected
13)	Leorema	×	2kW	Stand-alone with Battery
14)	Casait	○	2kW	Grid-connected
15)	Maubara	○	2kW	Grid-connected
16)	Loes	○	2kW	Grid-connected
4. Private Basic School				
17)	São Pedro	○	2kW	Grid-connected
18)	Paulo VI	○	2kW	Grid-connected
19)	Cristal	○	2kW	Grid-connected
20)	Sao Francisco Xavier	○	2kW	Grid-connected

* City Power : ○ Facilities received electricity from Power Supply Company.
× Facilities received no electricity from Power Supply Company.

As for Hera and Dili campus of University of East Timor, planned kW shall be adjusted and finalized in order to keep the total project cost within the budget.

4. Composition of Photovoltaic System

Photovoltaic system under the project consists of 2 type of systems; Grid-connected system and Stand-alone system with battery.

Regarding Hera campus of University of East Timor, both grid-connected system and stand-alone system with battery shall be planned for education and also for research purpose of photovoltaic system.

Note: kW of each system are total nominal maximum output figure (=output x number of photovoltaic module). Actual kW that can be used will be influenced by solar insolation and other environmental conditions.

Compositions and general concept of each photovoltaic system are as follows;

(1) Grid-connected system

1) 2kW system (for basic school)

System configuration and equipment list are as shown in annex-2.

When the power fails, power supply from photovoltaic system will also stop for the following reasons;

(a) Control power for power conditioner is sourced from electricity supply from Power Supply Company.

(b) For safety measures. Prevention of electrical shock due to reverse power flow both at school and at the power station.

2) 10～70kW system (for 3 campus of University of East Timor and Ministry of Education)

System configuration and equipment list are as shown in annex-2.

When the power fails, power supply from photovoltaic system will also stop. The photovoltaic system will re-start its supply of power when the existing generator system of the facility starts running. However, if power demand is small compared to total output capacity of this generator and photovoltaic system, it would cause reverse power flow from photovoltaic system to generator and both the generator and the photovoltaic system maybe damaged. Therefore, in such case, power supply from photovoltaic system will stop to prevent such damages.

(2) Stand-alone system

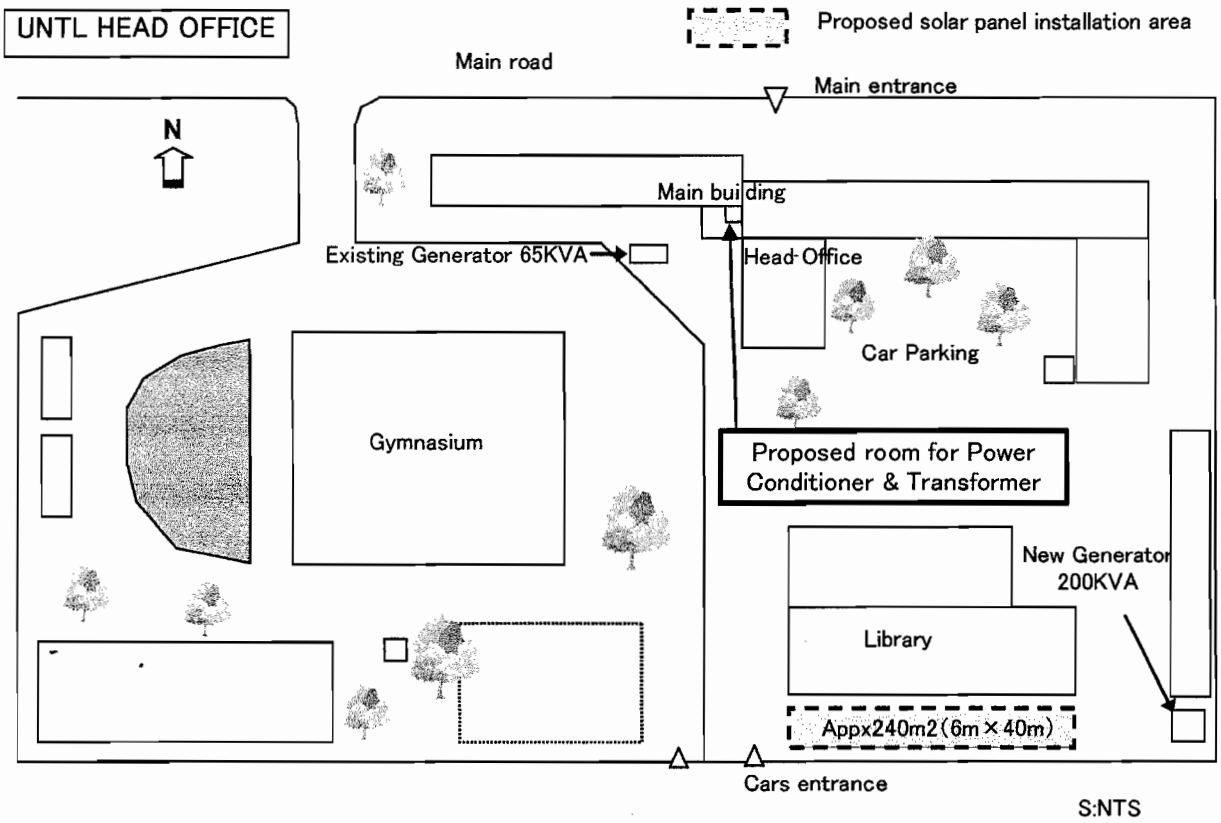
1) 2kW system (for schools without electricity power supply and Hera Campus of University of East Timor)

System configuration and equipment list are as shown in annex-2.

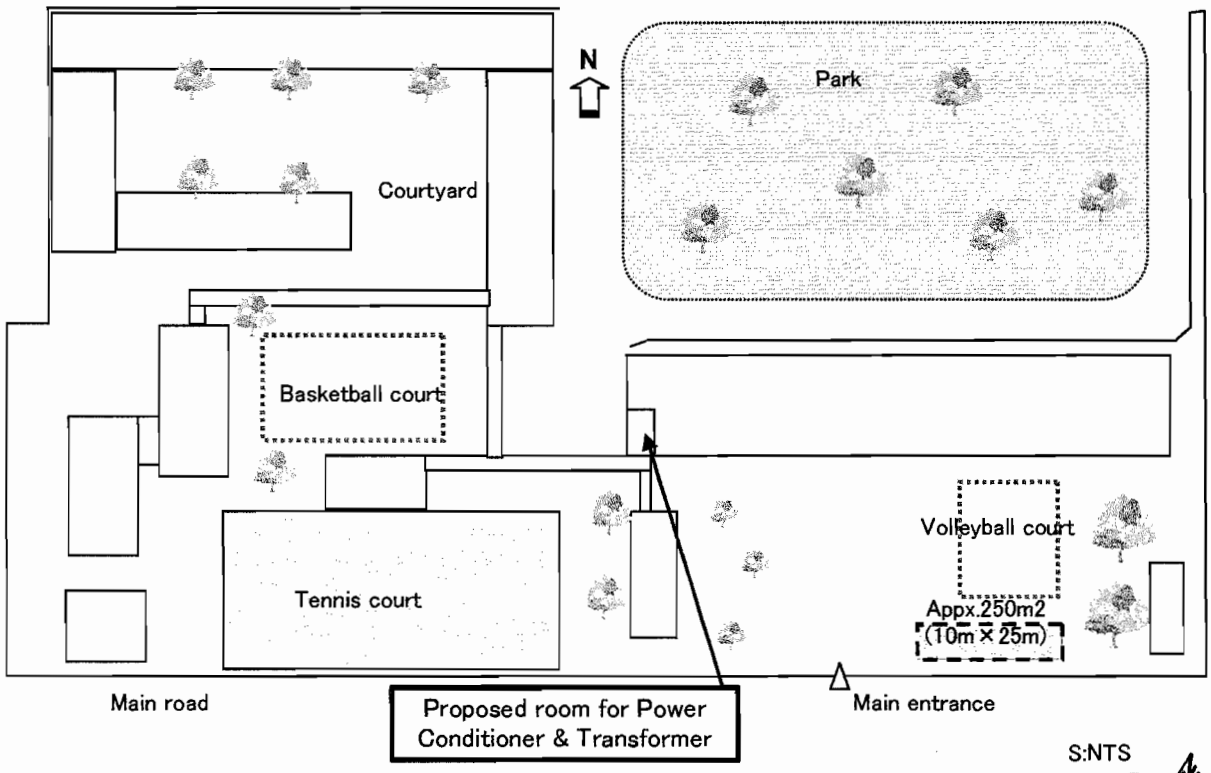
The use of system at nighttime is not considered about the capacity of the battery.

Battery is always charged through photovoltaic system, but in case battery runs down after over discharge, it takes about 3 days to be fully charged.

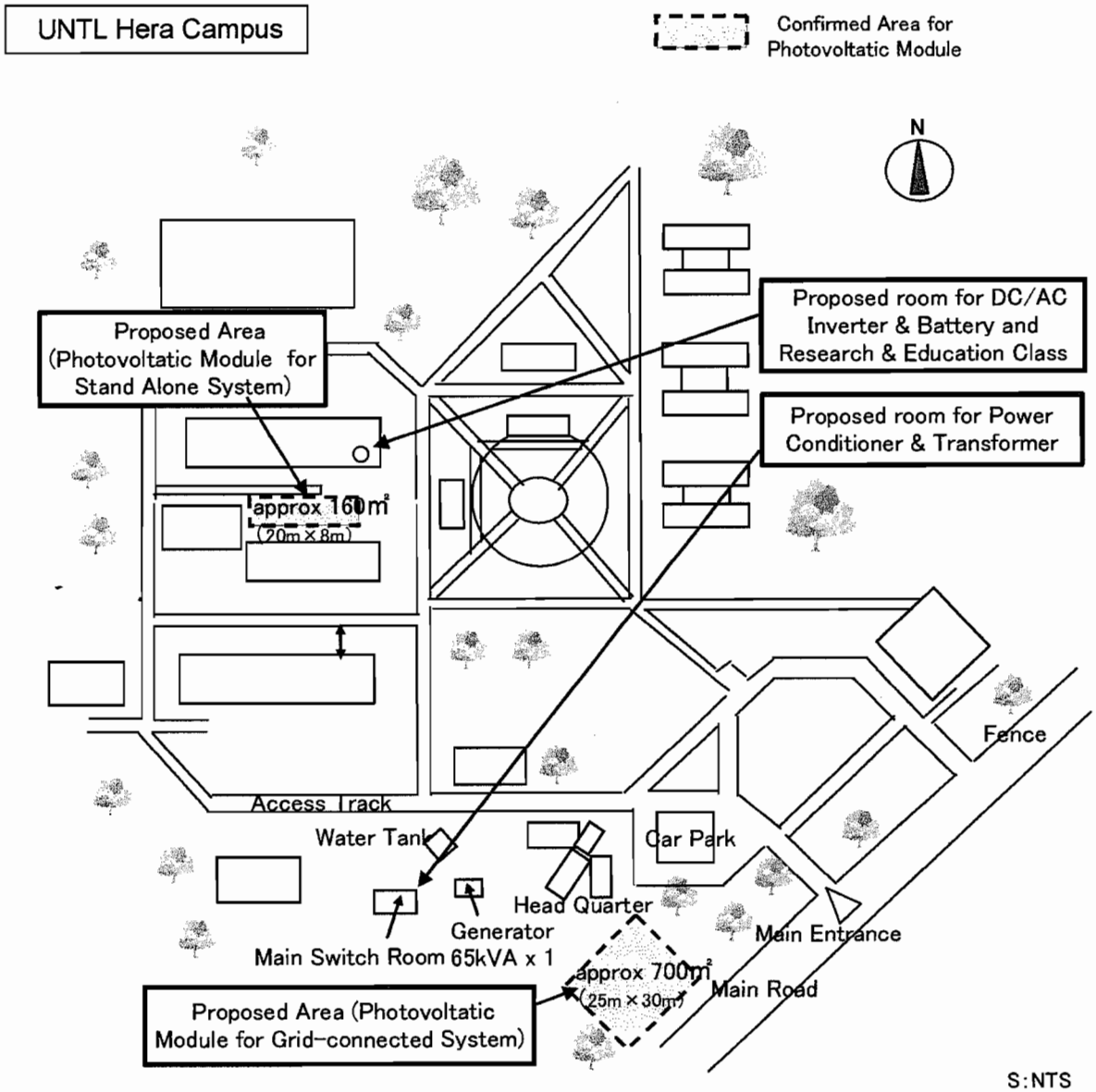
UNTL HEAD OFFICE



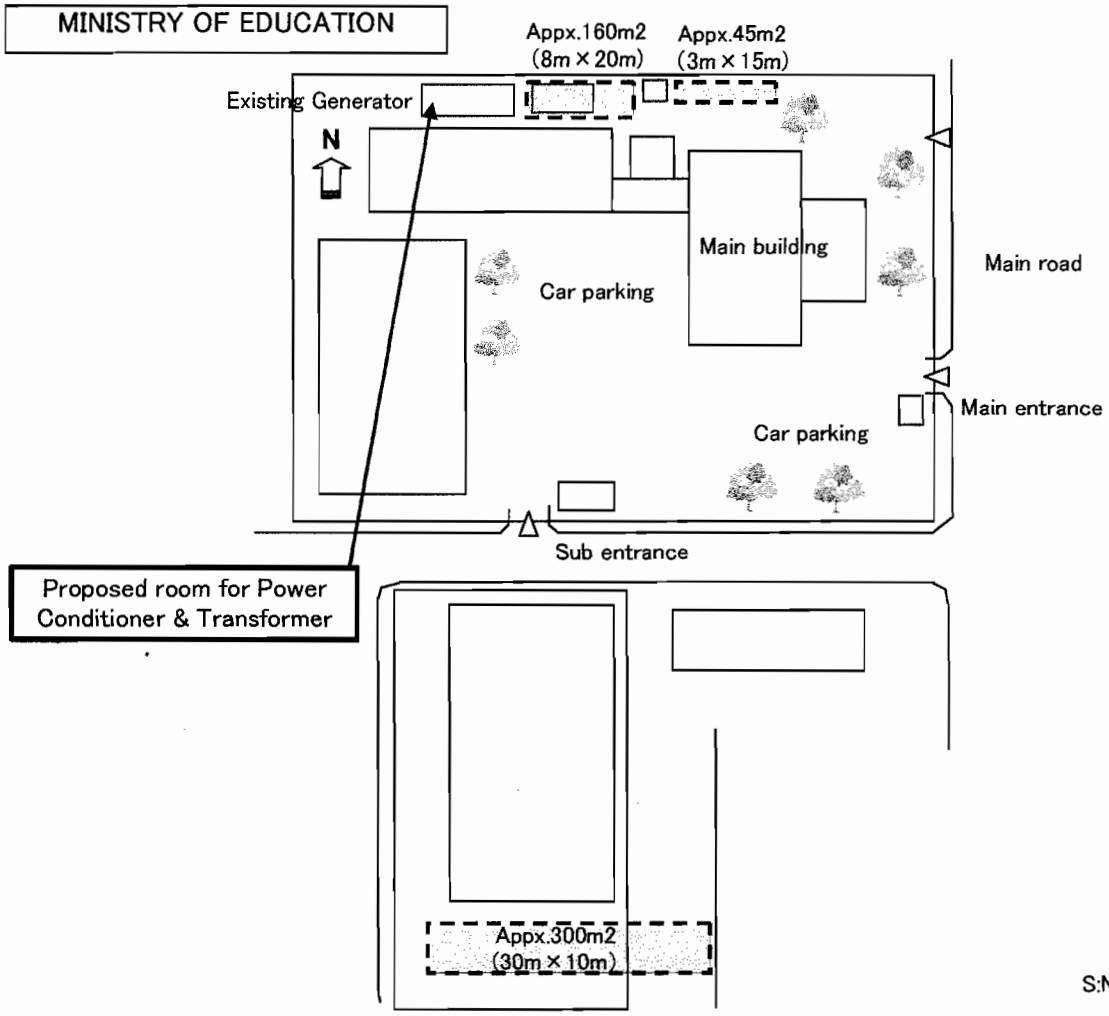
UNTL : FACULTY OF ECONOMY



(1/13)

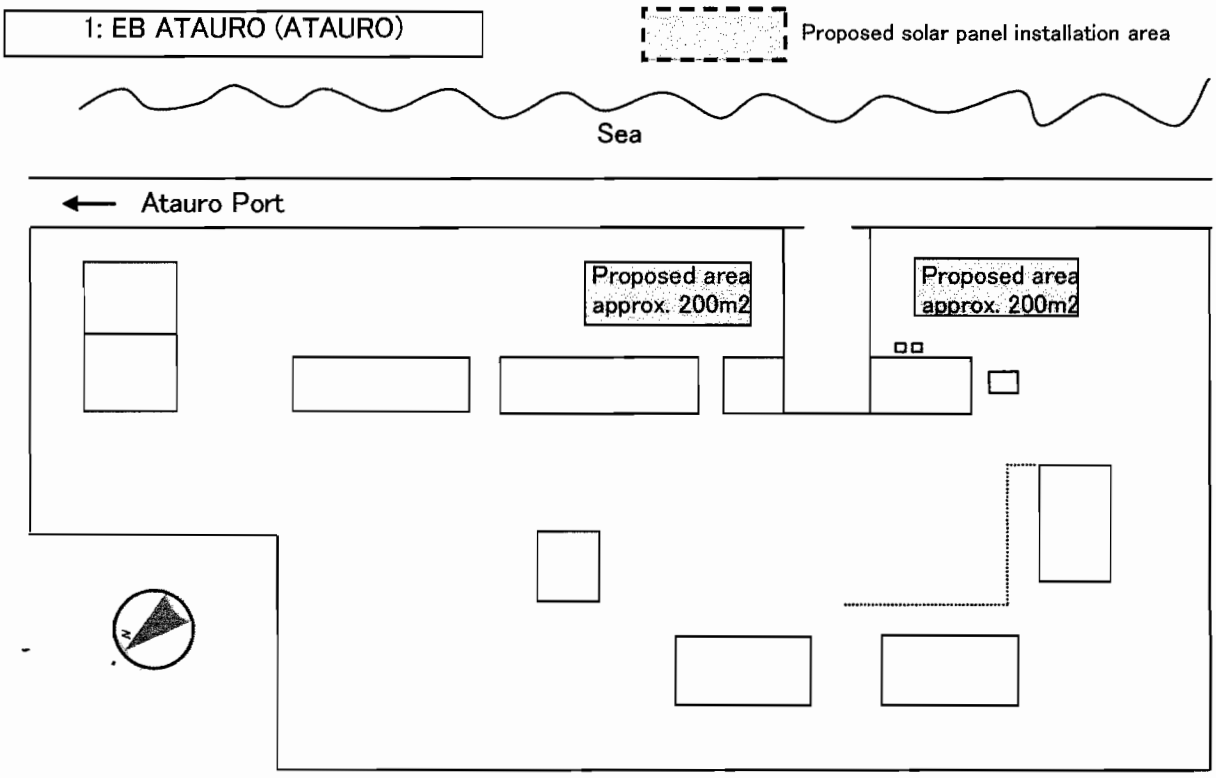

UNTL Hera Campus
Confirmed Area for Photovoltatic Module
N
Proposed Area (Photovoltatic Module for Stand Alone System)
Proposed room for DC/AC Inverter & Battery and Research & Education Class
Proposed room for Power Conditioner & Transformer
approx 160m²
(20m × 8m)
Fence
Access Track
Water Tank
Car Park
Head Quarter
Generator
Main Entrance
Main Switch Room 65kVA x 1
approx 700m²
(25m × 30m)
Main Road
Proposed Area (Photovoltatic Module for Grid-connected System)

S:NTS


MINISTRY OF EDUCATION
Appx.160m2
(8m × 20m)
Appx.45m2
(3m × 15m)
Existing Generator
N
Main building
Car parking
Main road
Main entrance
Car parking
Sub entrance
Proposed room for Power Conditioner & Transformer
Appx.300m2
(30m × 10m)

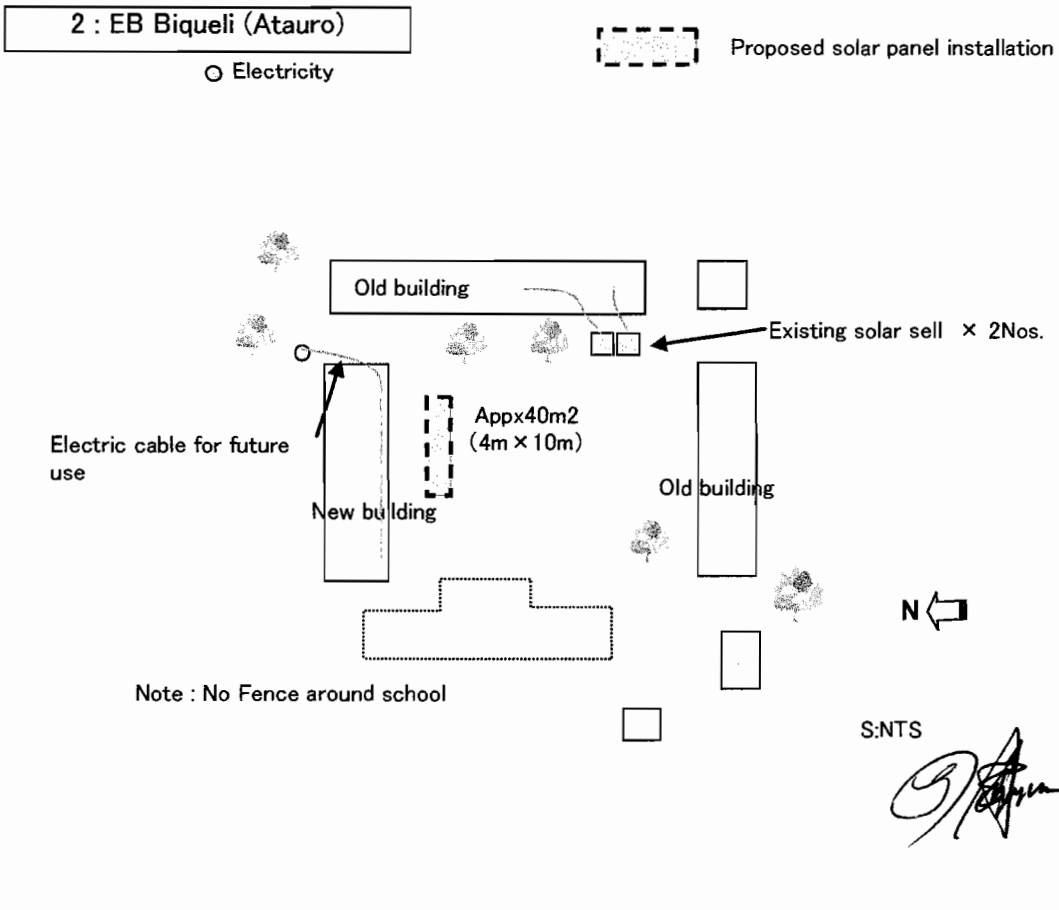
S:NTS

1: EB ATAURO (ATAURO)

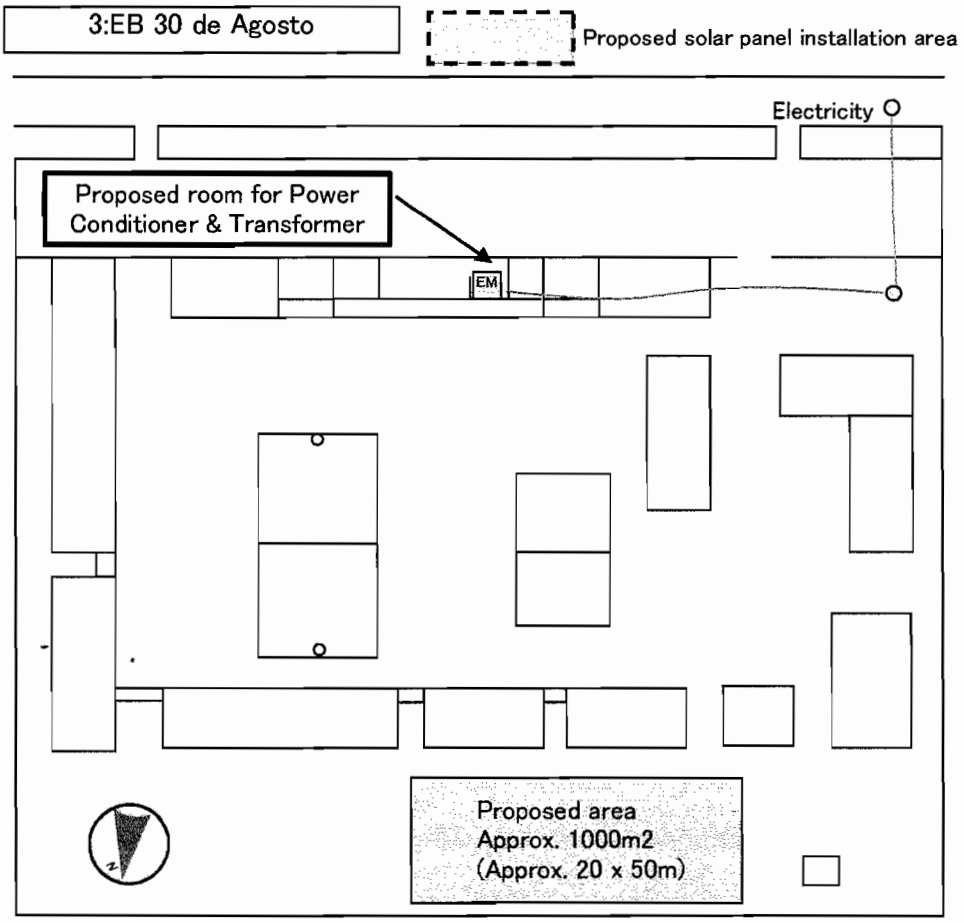


S:NTS

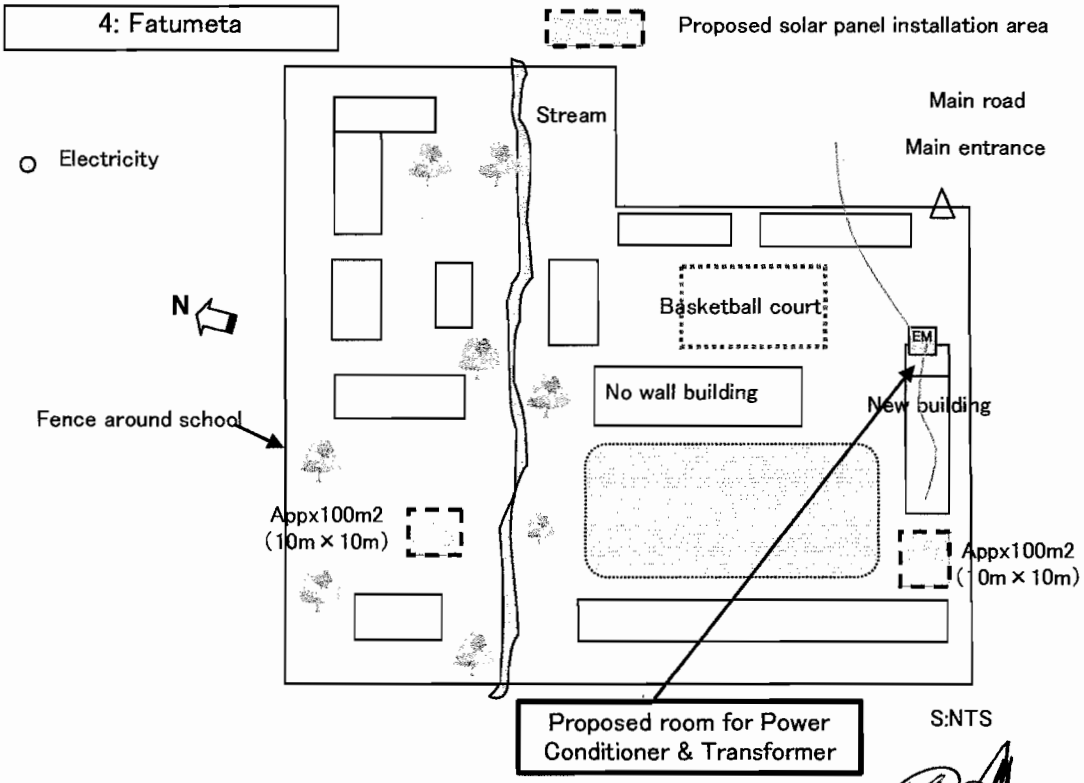
2 : EB Biqueli (Atauro)



S:NTS


3:EB 30 de Agosto
Proposed solar panel installation area
Electricity
Proposed room for Power Conditioner & Transformer
EM
Proposed area
Approx. 1000m2
(Approx. 20 x 50m)

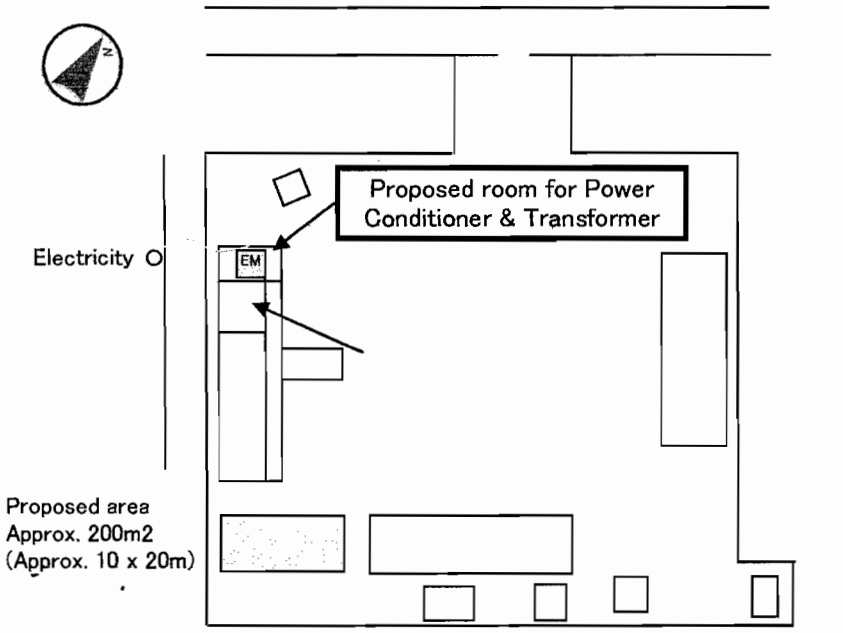
S:NTS


4: Fatumeta
Proposed solar panel installation area
Stream
Main road
Main entrance
Electricity
N
Basketball court
EM
No wall building
New building
Fence around school
Appx100m2
(10m × 10m)
Appx100m2
(10m × 10m)
Proposed room for Power Conditioner & Transformer

S:NTS

5:EB Manleunana

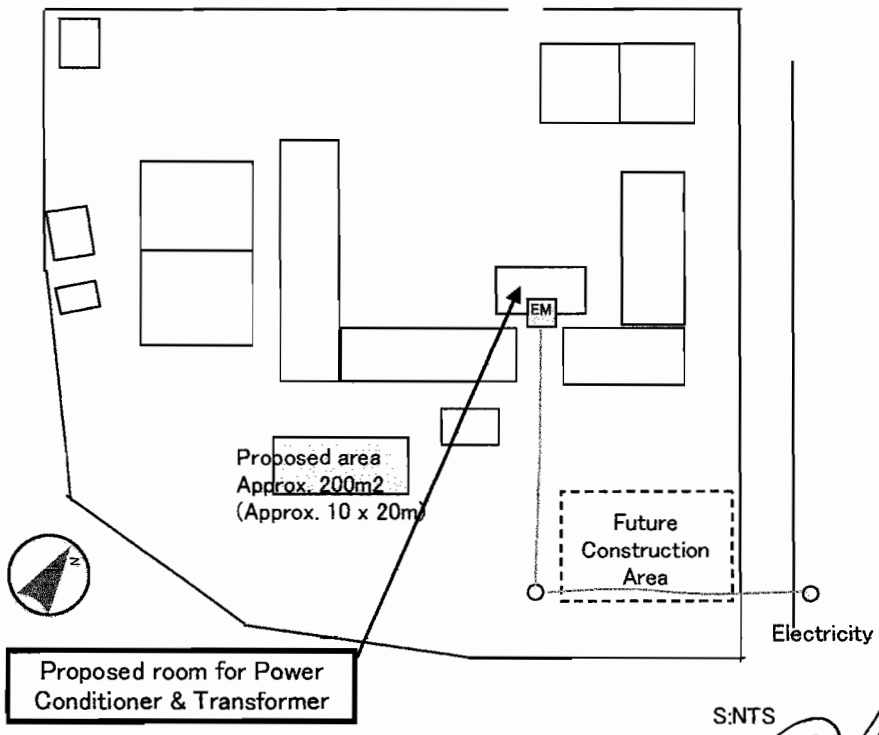
Proposed solar panel installation area



S:NTS

6:EB Farol

Proposed solar panel installation area



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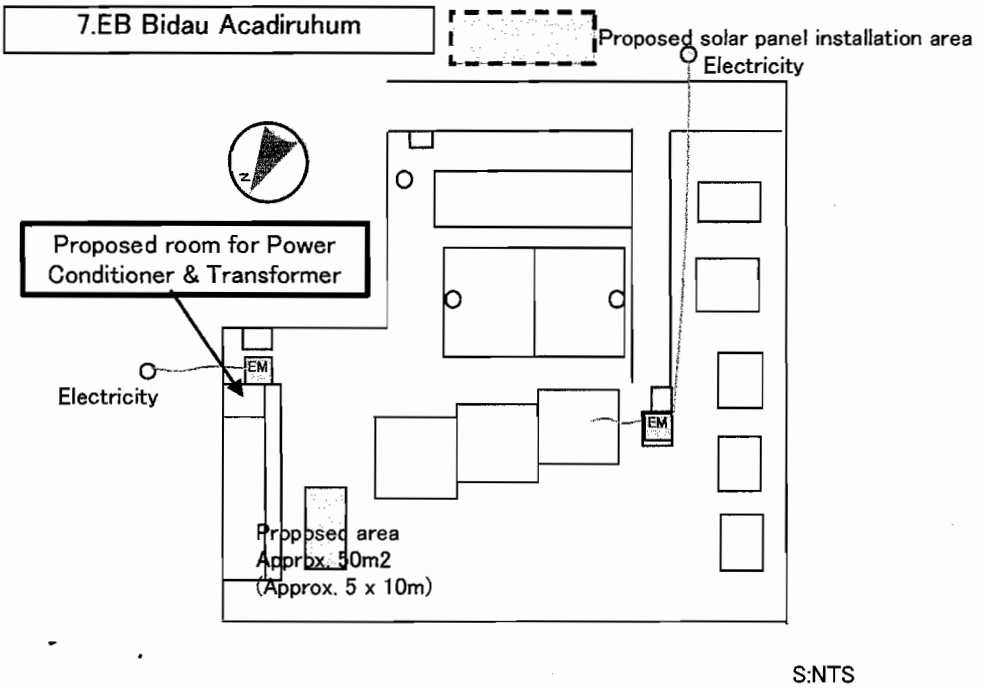
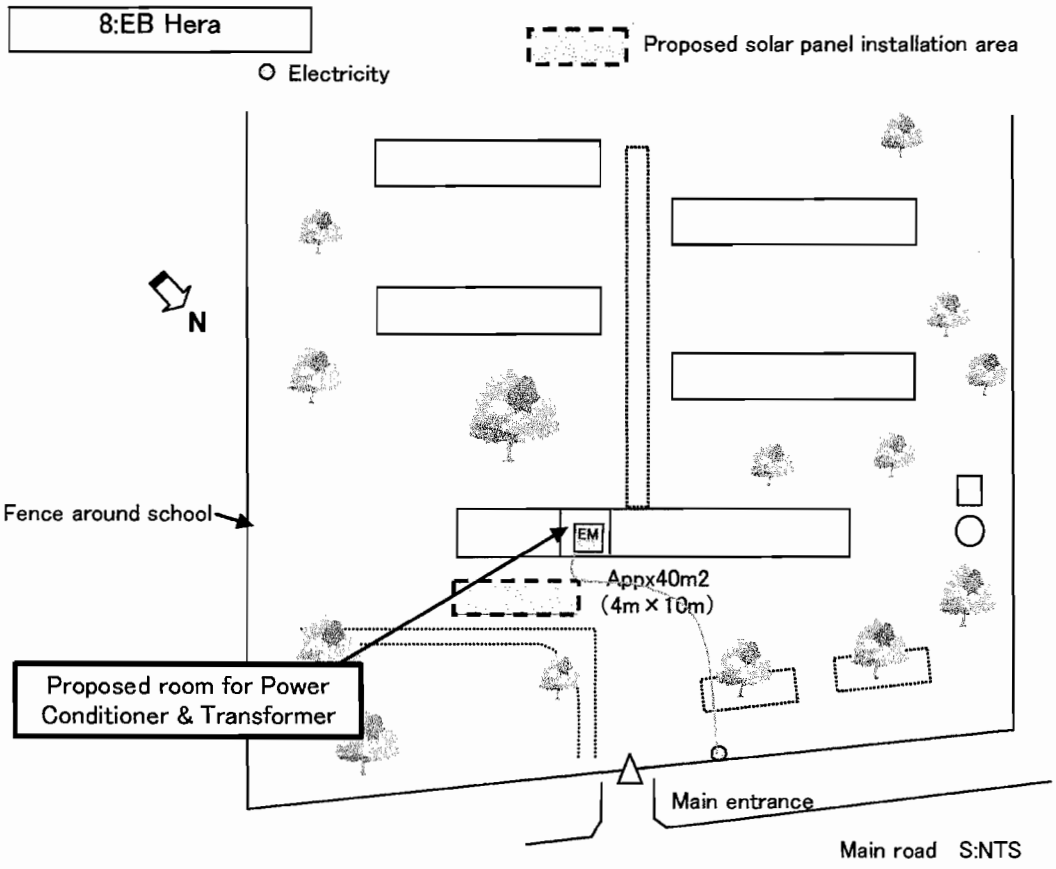
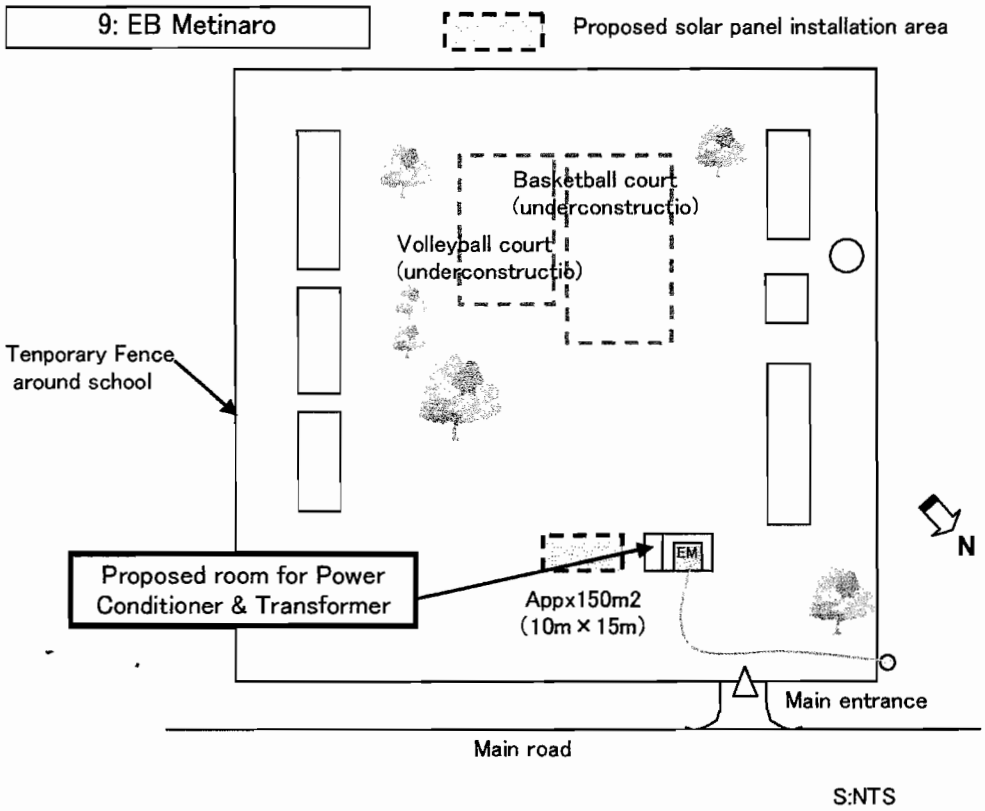
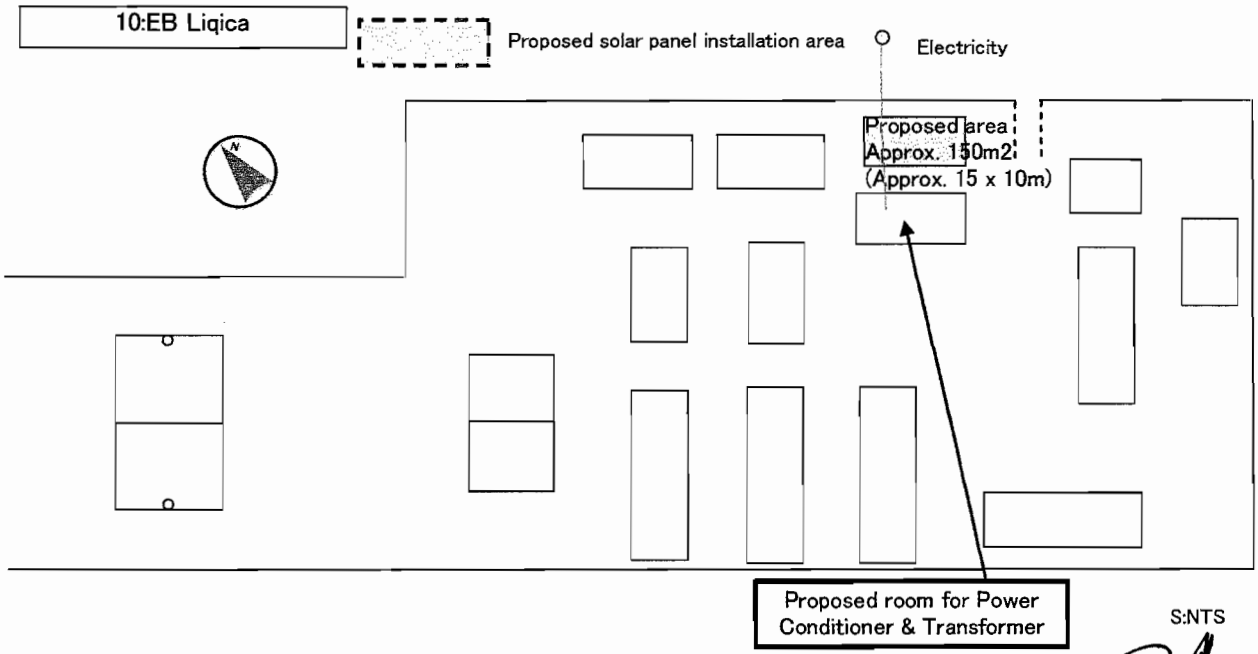

7.EB Bidau Acadiruhum
Proposed solar panel installation area
Electricity
Proposed room for Power Conditioner & Transformer
Electricity
EM
EM
Proposed area
Approx. 50m2
(Approx. 5 x 10m)
S:NTS

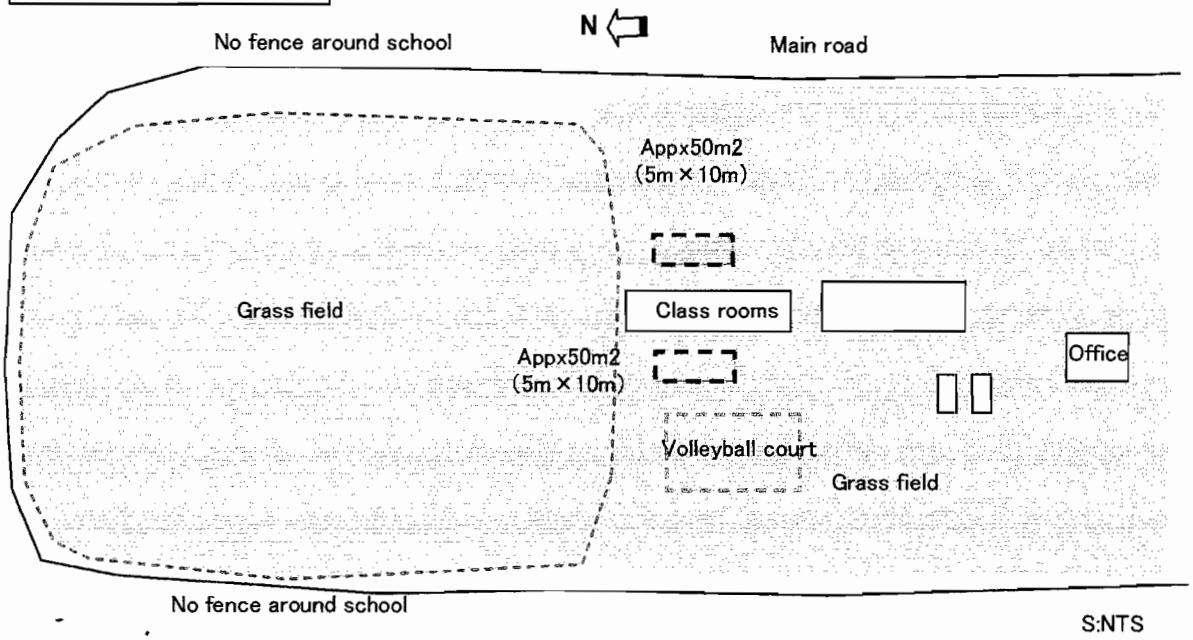

8:EB Hera
Proposed solar panel installation area
Electricity
N
Fence around school
EM
Appx40m2
(4m × 10m)
Proposed room for Power Conditioner & Transformer
Main entrance
Main road
S:NTS


9: EB Metinaro
Proposed solar panel installation area
Basketball court
(underconstructio)
Volleyball court
(underconstructio)
Tenporary Fence
around school
Proposed room for Power
Conditioner & Transformer
EM
Appx150m2
(10m × 15m)
N
Main entrance
Main road
S:NTS


10:EB Liqica
Proposed solar panel installation area
Electricity
Proposed area
Approx. 150m2
(Approx. 15 x 10m)
Proposed room for Power
Conditioner & Transformer

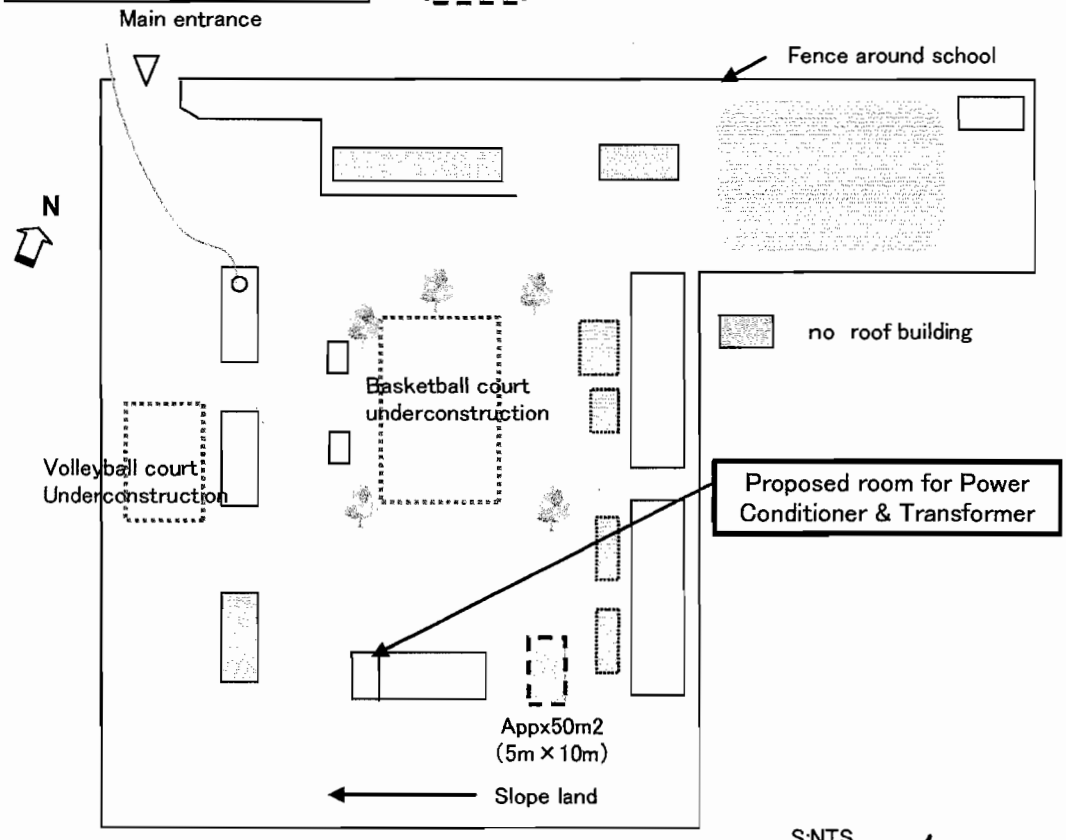
S:NTS

11 : Darulete



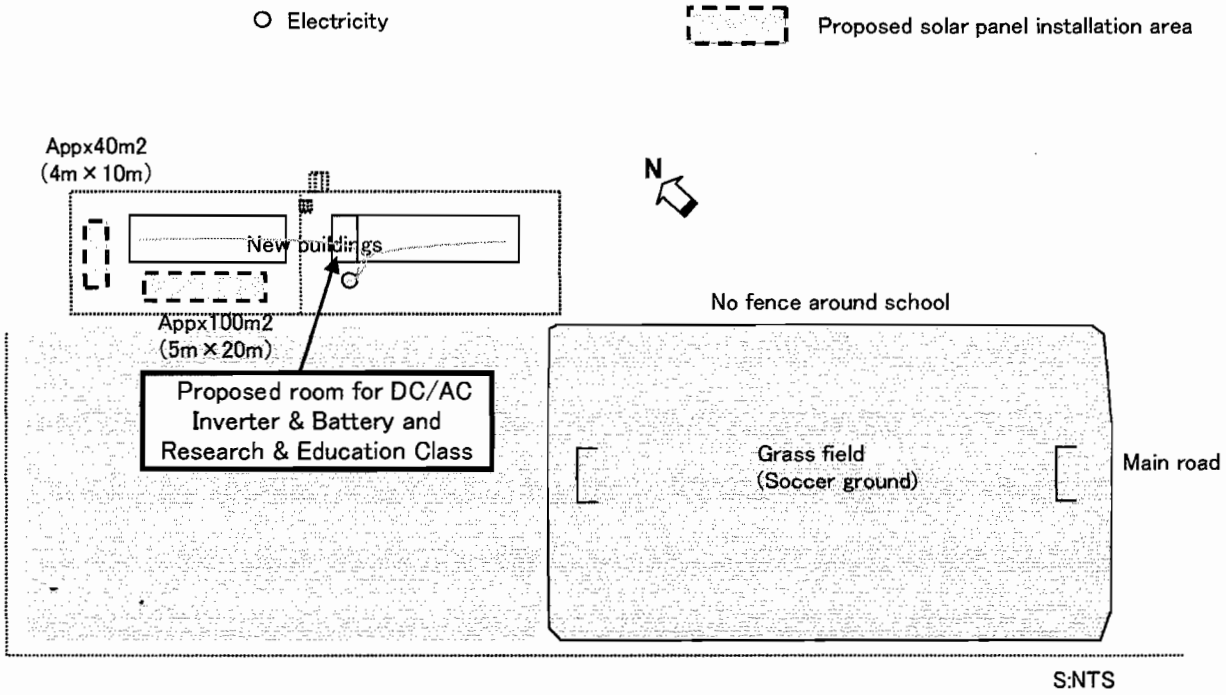
12 : Bazartete

Proposed solar panel installation area

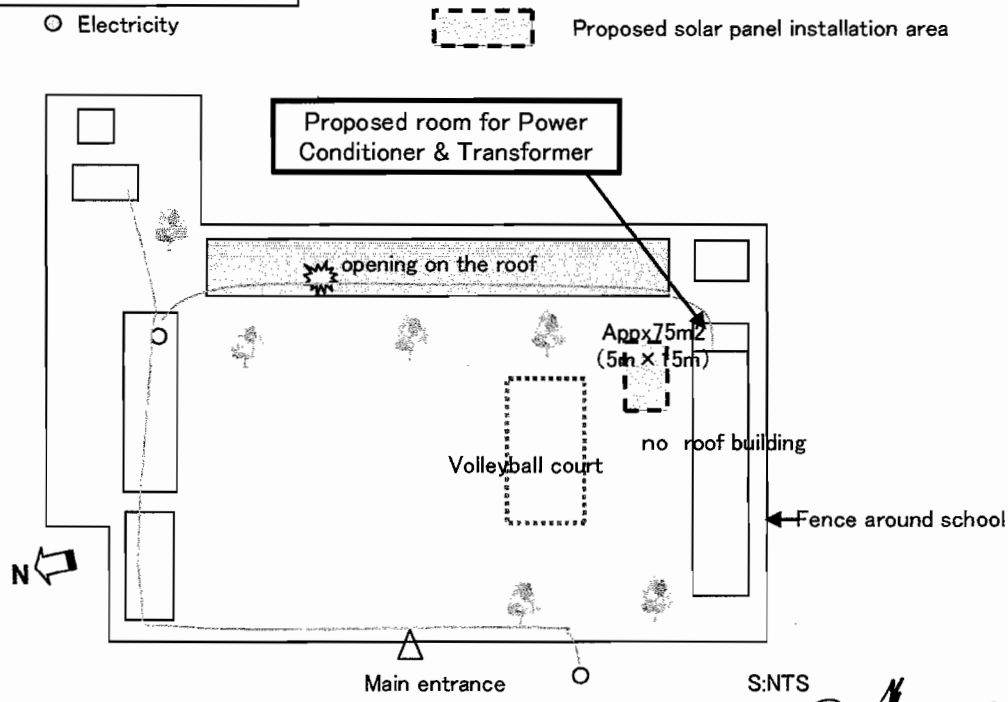


S:NTS

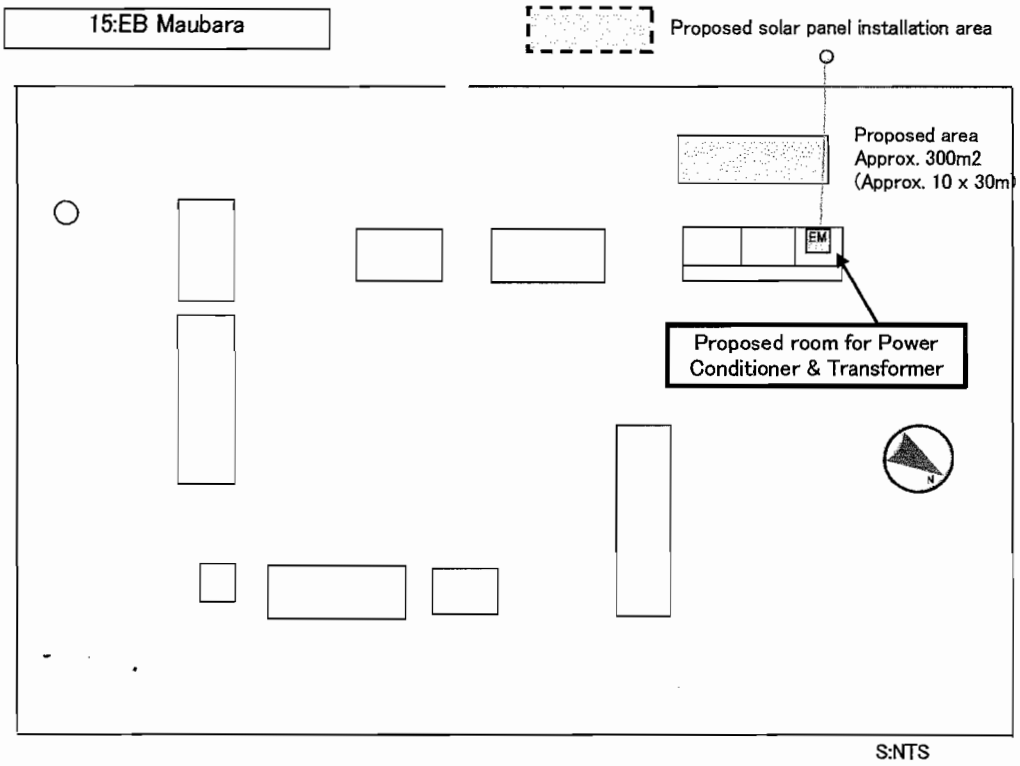
13: EB Leorema



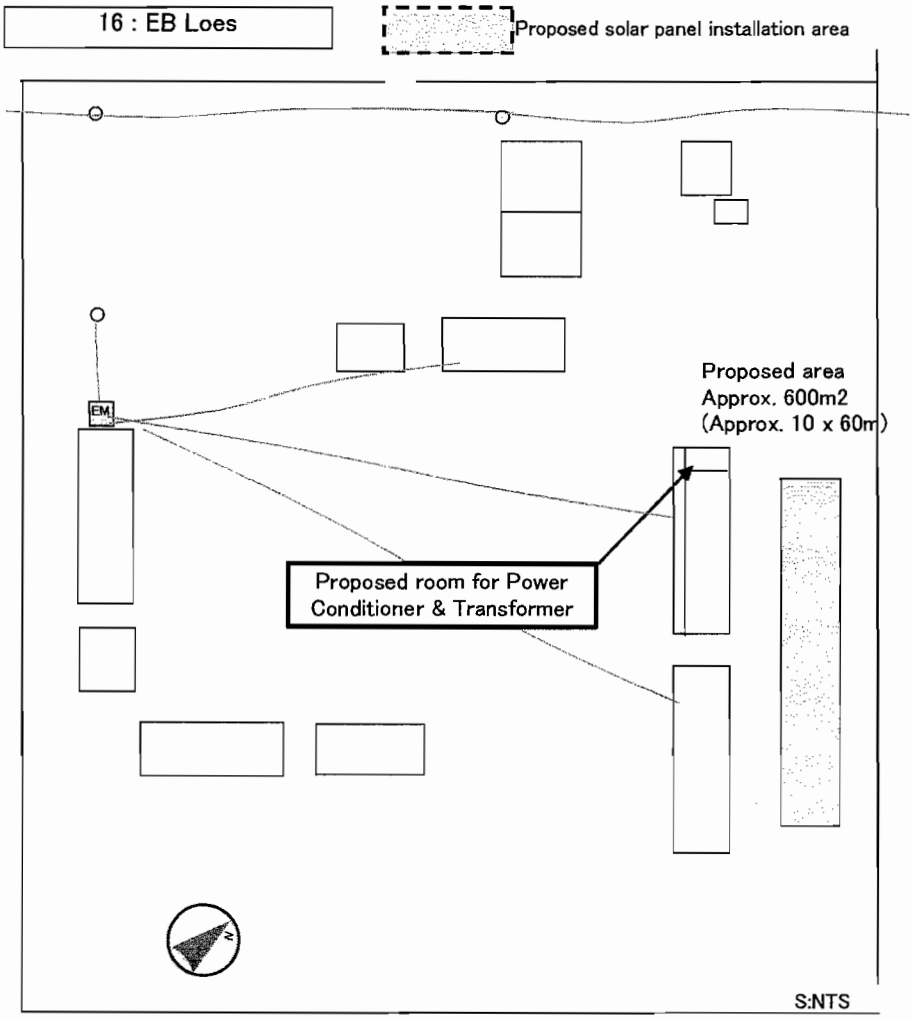
14 : Casait



15:EB Maubara

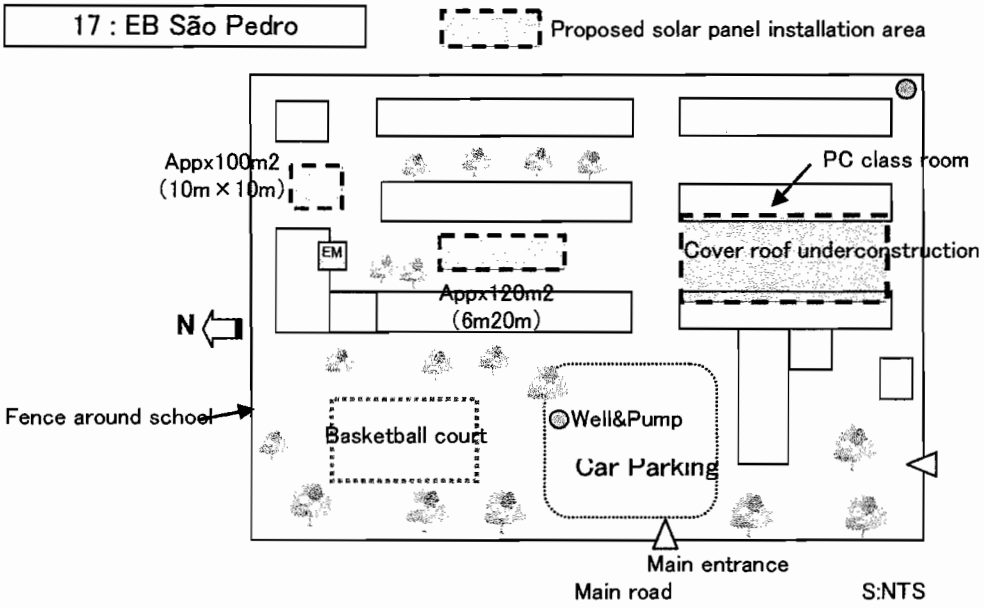


16 : EB Loes

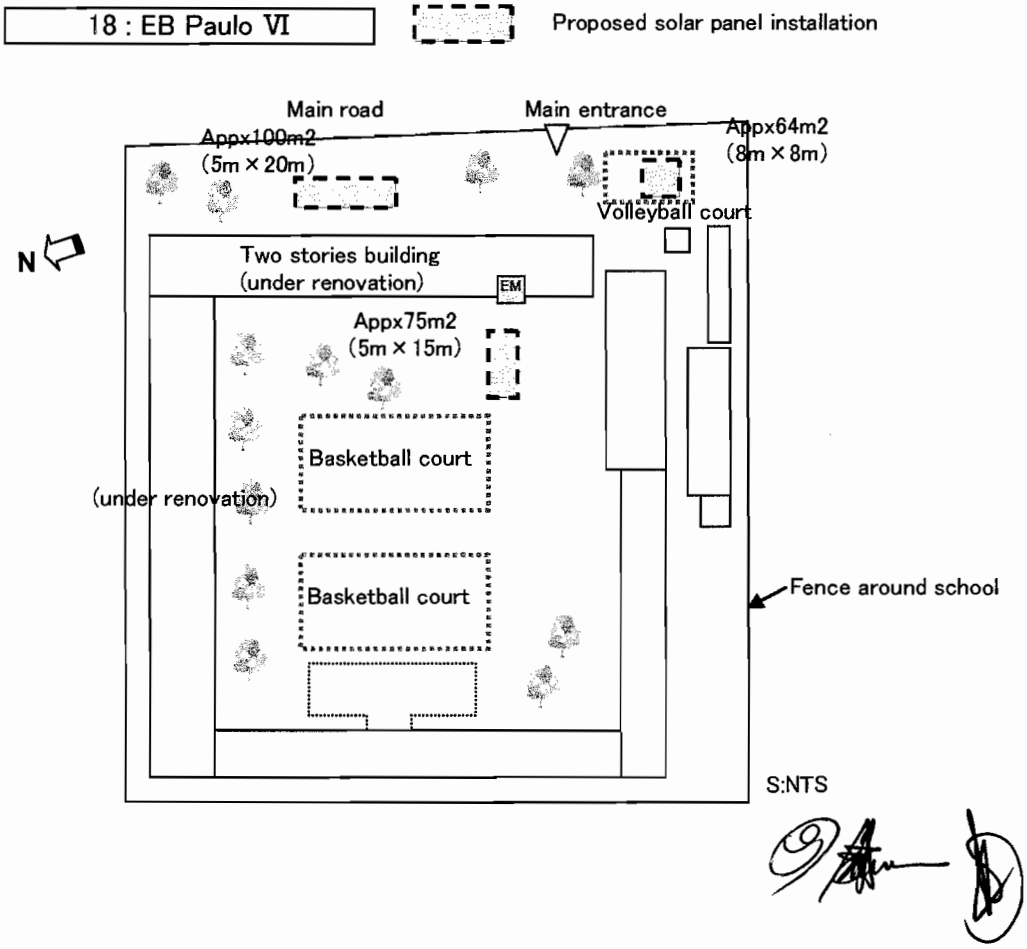


(11/13)

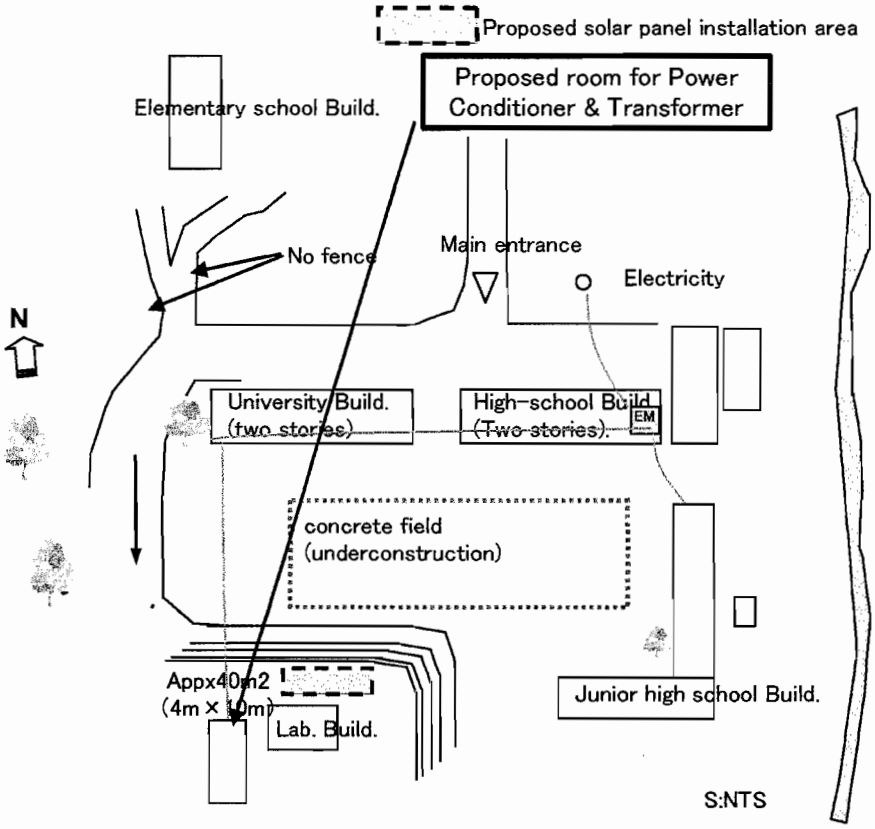
17 : EB São Pedro



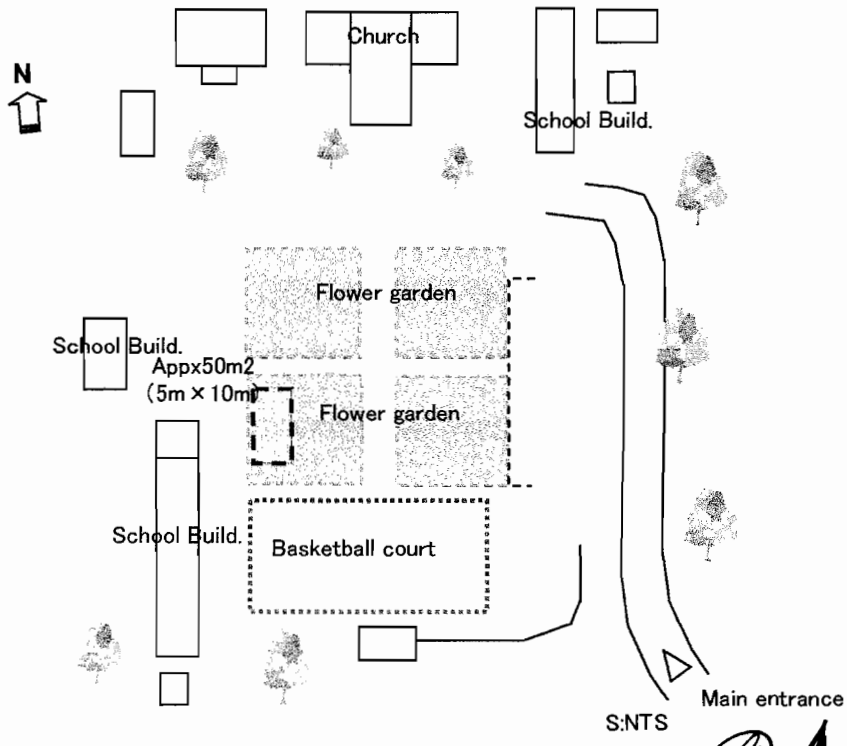
18 : EB Paulo VI



19 : EB Cristal



20 : EB Sao Reancisco Xaier Dare



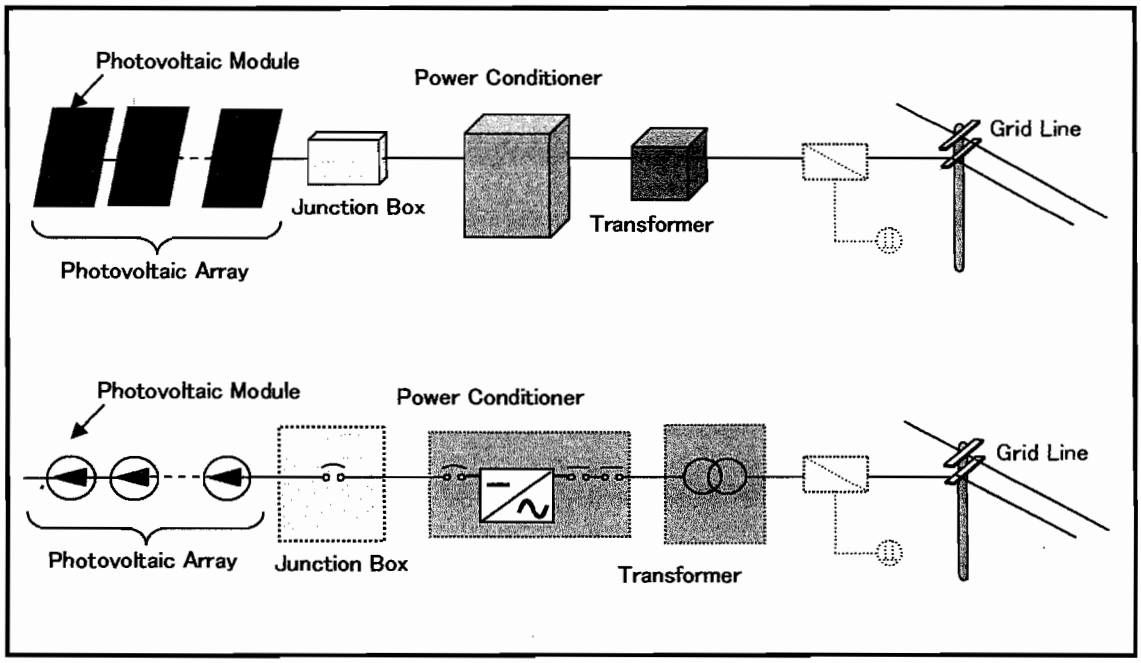
(13/13)

System configuration

(1) Grid-connected Photovoltaic System

1-1) 2kW system

1-1-1) System Configuration

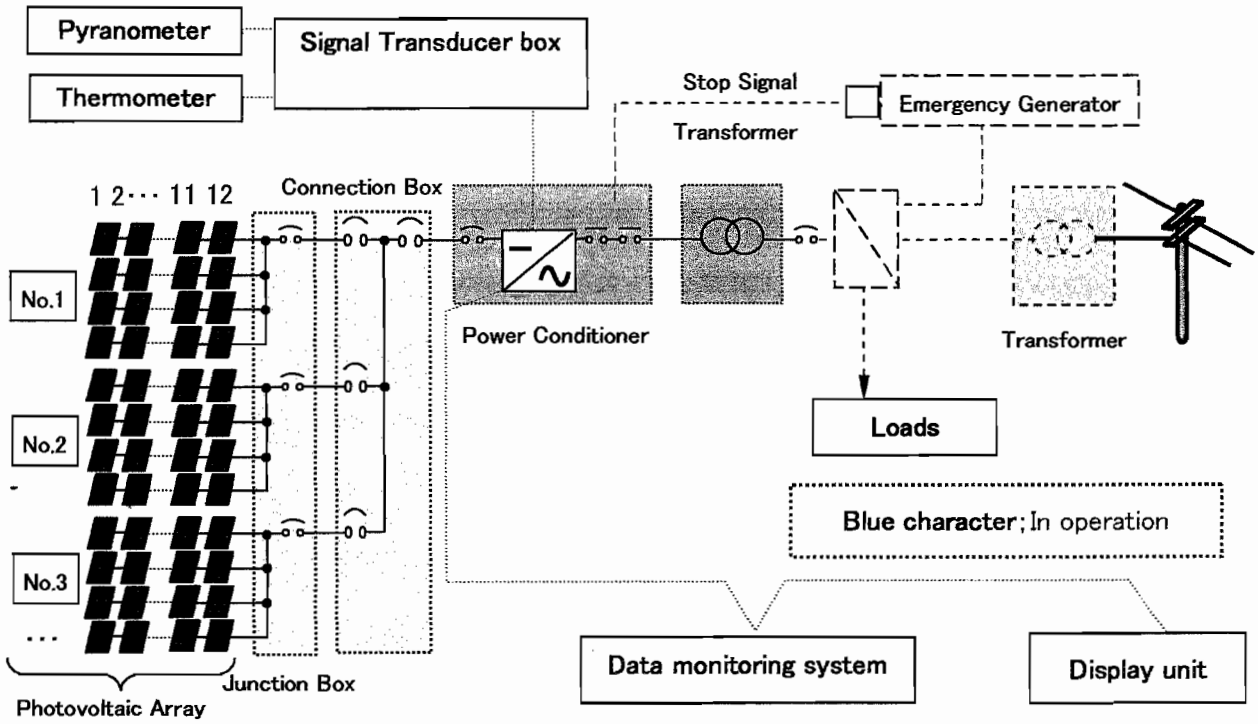


1-1-2) Equipment List

No.	Equipment
1	Photovoltaic Module
2	Mounting Structure for Photovoltaic Module
3	Junction Box
4	Power Conditioner
5	Transformer
6	Cable and others

1-2) Grid-connected Photovoltaic System (10~70kW)

1-2-1) System Configuration

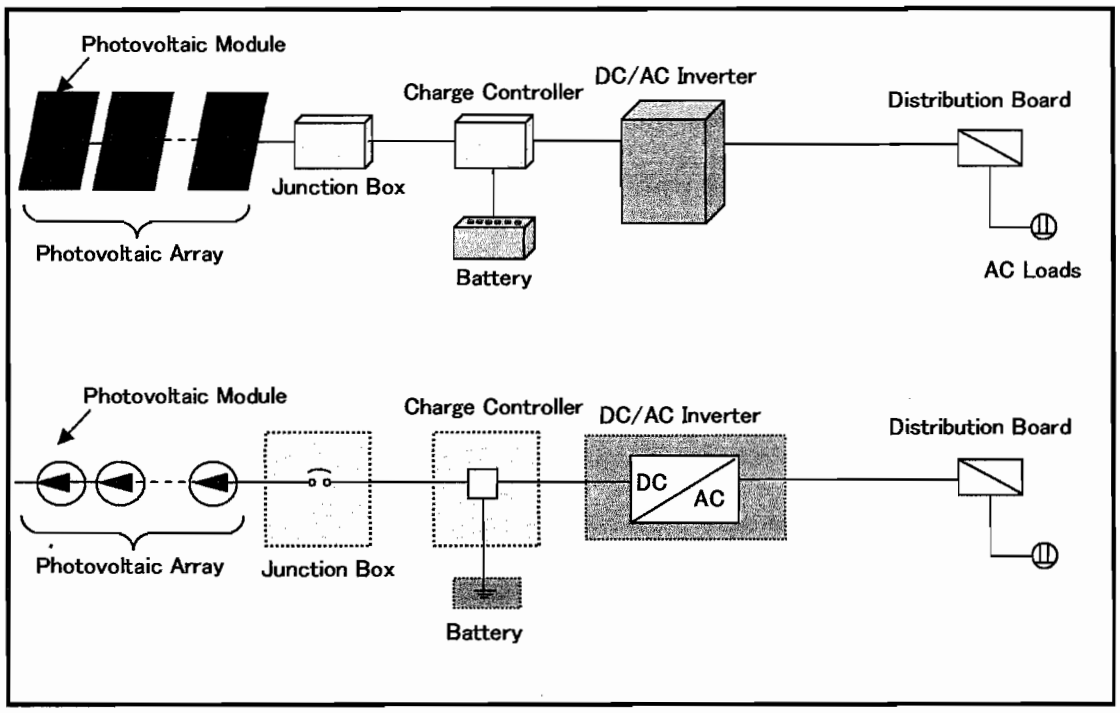


1-2-2) Equipment List

No.	Equipment
1	Photovoltaic Module
2	Mounting Structure for Photovoltaic Module
3	Extension cable for Photovoltaic Module
4	Junction Box
5	Connection Box
6	Power Conditioner
7	Transformer
8	Display and Data monitoring system
9	Cable and others

(2) Stand-alone Photovoltaic System with Battery (2kW)

2-1) System Configuration



2-2) Equipment List

No.	Equipment
1	Photovoltaic Module
2	Mounting Structure for Photovoltaic Module
4	Junction Box
5	DC/AC Inverter
6	Charge Controller
7	Battery
8	Battery Panel Outdoor
9	Distribution Board
10	Cable and others

Appendix-6 Equipment List

Equipment List

Item No.	Name of Equipment	Q'ty
1	Solar power generation system, grid-connected type, 50kW	2
2	Solar power generation system, grid-connected type, 10kW	2
3	Solar power generation system, grid-connected type, 2kW	16
4	Solar power generation system, stand-alone with battery type, 2kW	4
5	Solar power generation system, stand-alone with battery type, 6kW	1

Appendix-7 Outline of Major Equipment

Outline of Major Equipment

Item No.	Equipment Name	Country of Orgin	Procured from	Main Specifications or components	Grade	Q'ty	Puropose
1	Solar Power Generation System, Grid-connected type, 50kW	Japan	Japan	Photovoltatic Module (Approx. 210W) 240 pcs. Mounting Structure for Photovoltatic Module 80 pcs. Base Channel 40 pcs. Junction Box 5 pcs. Collecting box 1 pc. Power Conditioner 5 pcs. Transformer 1 pc. Display board 1 pc. Data management and monitoring system (Pyranometer, Thermometer, Signal Transducer 1 pc. UPR unit 1 pc. Cable, Conduit and accessories 20 pcs. Mounting Concrete Base (Prefabricated Reinforce) 120 pcs.	Middle	2	Install solar power generation system, grid-connected type at TNTL Hera campus (Engineering department) and headquarter building of MOE.
2	Solar Power Generation System, Grid-connected type, 10kW	Japan	Japan	Photovoltatic Module (Equivalent to 210W) 48 pcs. Mounting Structure for Photovoltatic Module 16 pcs. Base Channel 8 pcs. Junction Box 1 pc. Power Conditioner 1 pc. Transformer 1 pc. Data management and monitoring system (Pyranometer, Thermometer, Signal Transducer 1 pc. UPR unit 1 pc. Cable, Conduit and accessories 4 pcs. Mounting Concrete Base (Prefabricated Reinforce) 24 pcs.	Middle	2	Install solar power generation system, grid-connected type at TNTL Dila campus.
3	Solar Power Generation System, Grid-connected type, 2kW	Japan	Japan	Photovoltatic Module (Equivalent to 210W) 12 pcs. Mounting Structure for Photovoltatic Module 4 pcs. Base Channel 2 pcs. Junction Box 1 pc. Power Conditioner 1 pc. Transformer 1 pc. Data management and monitoring system (Pyranometer, Thermometer, Signal Transducer 1 pc. Cable, Conduit and accessories 1 pc. Mounting Concrete Base (Prefabricated Reinforce) 6 pcs.	Middle	16	Install ssolar power generation system, grid-connected type at base school receiving electricity supply.
4	Solar Power Generation System, Stand-Alone type, 2kW	Japan	Japan	Photovoltatic Module (Approx. 135W) 16 pcs. Mounting Structure for Photovoltatic Module 4 pcs. Base Channel 2 pcs. Junction Box 2 pcs. Charge Controller 1 pc. DC/AC Inverter 1 pc. Battery (Equivalent to 48V330Ah) 4 pcs. Distribution Board 1 pc. Battery Cubicle 1 pc. Data management and monitoring system (Pyranometer, Thermometer, Signal Transducer 1 pc. Cable, Conduit and accessories 1 個 Mounting Concrete Base (Prefabricated Reinforce) 6 pcs.	Middle	4	Install solar power generation system, stand-alone type with battery at base school not receiving electricity supply.
5	Solar Power Generation System, Stand-Alone type, 6kW	Japan	Japan	Photovoltatic Module (Approx. 135W) 48 pcs. Mounting Structure for Photovoltatic Module 12 pcs. Base Channel 6 pcs. Junction Box 6 pcs. Charge Controller 3 pcs. DC/AC Inverter 3 pcs. Battery (Equivalent to 48V330Ah) 12 pcs. Distribution Board 3 pcs. Battery Cubicle 3 pcs. Data management and monitoring system (Pyranometer, Thermometer, Signal Transducer 3 pcs. Cable, Conduit and accessories 3 pcs. Mounting Concrete Base (Prefabricated Reinforce) 18 pcs.	Middle	1	Install independent solar power generation system, stand-alone type with battery with battery at TNTL Hera campus for research.

Appendix-8 Operation and Maintenance Cost for the Equipment

Operation and maintenance Cost for the Equipment

Item No.	Equipment Name	pcs/ pack	Conditions of Q'ty	Q'ty	Unit/ year	Unit price (US$)	Sub-total (US$)	Panned Q'ty	Total price (US$)	Cat.
4	Solar power generation system, stand-alone with battery type 2kW							4		New
	・Battery	1	4pcs./set/10years 4pcs÷10years＝0.4pcs./year	0.4	pcs.	2,655.62	2,655.62	4	10,622.48	
5	Solar power generation system, stand-alone with battery type 6kW							1		New
	・Battery	1	12pcs./set/10years 12pcs÷10years＝1.2pcs./year	1.2	pcs.	7,966.86	7,966.86	1	7,966.86	
						Total			18,589.34	

*The battery shall be replaced one set in ten years and this table shows a bduget replaced near year.

Appendix-9 References

References

Project title: The Project for Introduction of Clean Energy by Solar Electricity Generation System in the Democratic Republic of Timor-Leste

No.	Title	Form Book/Video Map/Photo etc.	Original or Copy	Source	Date of Issue
1	Overview of Development Partners in Timor-Leste	Power Point	Copy	National directorate of Aid Effectiveness	2009
2	Activity Report, Timor-Leste, May 2002 to August 2008	Book	Copy	JICA Timor-Leste Office	2009
3	Goodbye Conflict and Welcome Deveopment	Book	Copy	Ministry of Finance	2009
4	General Budget of the State and State Plan for 2009 Vol. 1	Book	Copy	Ministry of Finance	2009
5	General Budget of the State and State Plan for 2009 Vol. 2	Book	Copy	Ministry of Finance	2009
6	State of Nation Report	Book	Copy	Government	2008
7	Doing Business in Timor-Leste	Book	Copy	World Bank	2009
8	National Development Plan	Book	Copy	Planning Commission	2002
9	Health Profile	Book	Copy	MoH	2002
10	National Health System Profile	Book	Copy	MoH	2005
11	Census of population and housing 2004	Book	Copy	Statistics Dep.	2004
12	2006 Pradet Timor Lorosae	Book	Copy	Statistics Dep.	2007

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