資料-1　調査団員・氏名

１．調査団員・氏名

（1）　第一次現地調査

氏　名	担当業務	現　職
武下　悌冶	総　括	独立行政法人　国際協力機構 青年海外協力隊事務局 審議役
村山　博司	計画管理	独立行政法人　国際協力機構 資金協力支援部　実施監理第一課 調査役
辻本　令	調達監理計画	クラウン　エイジェンツ 首席代表
小川　忠之	業務主任 / 太陽光発電システム / 環境社会配慮 1	八千代エンジニヤリング株式会社
土居　史和	系統連系太陽光発電システム 3 関連制度・基準 3	四国電力株式会社
藤澤　慶哲	系統連系太陽光発電システム 1 関連制度・基準 1	四国電力株式会社
山口　昌彦	機材／設備計画 1	八千代エンジニヤリング株式会社
阿部　真	調達計画／積算 1	八千代エンジニヤリング株式会社
車田　輝雄	建築設計 1	八千代エンジニヤリング株式会社
鶴岡　葉介	建築設計 2 / 業務調整	八千代エンジニヤリング株式会社

（2） 第二次現地調査

氏　名	担当業務	現　職
浜田　眞一	総　括	独立行政法人　国際協力機構 ミクロネシア支所長
安元　孝史	計画管理	独立行政法人　国際協力機構 資金協力支援部　実施監理第三課 調査役
小川　忠之	業務主任／太陽光発電システム 1 ／環境社会配慮 1	八千代エンジニヤリング株式会社
元木　要	副業務主任／太陽光発電システム 2／環境社会配慮 2	ICONS 国際協力株式会社
土居　史和	系統連系太陽光発電システム 3 関連制度・基準 3	四国電力株式会社
藤澤　慶哲	系統連系太陽光発電システム 1 関連制度・基準 1	四国電力株式会社
阿部　真	調達計画／積算 1	八千代エンジニヤリング株式会社

(3) 第三次現地調査

氏　名	担当業務	現　職
小林　広幸	総　括	独立行政法人　国際協力機構 産業開発部　資源・エネルギーグループ　資源・省エネルギー課 課長
小川　忠之	業務主任／太陽光発電システム 1 ／環境社会配慮 1	八千代エンジニヤリング株式会社
阿部　真	調達計画／積算 1	八千代エンジニヤリング株式会社

資料-2　調査行程

２．調査行程

（１）第一次現地調査

No.	月日	曜日	官団員	コンサルタント団員	宿泊地
1	7月12日	日		• 報告書作成、収集資料整理 • 市場調査 • 移動 [東京 (10:30) → グアム (15:00) CO962] 移動 [グアム (18:50) → コロール (19:50) CO953] (土居団員)	機中泊
2	7月13日	月		• 移動 [コロール (01:45) → グアム (04:40) CO954] • 移動 [グアム (08:20) → ポンペイ (12:58) CO956] • 在ミクロネシア日本国大使館表敬	ポンペイ
3	7月14日	火		• 資源・開発省（R&D）、ポンペイ公共公社(PUC)等表敬訪問、本調査行程・内容の説明 • 連邦政府複合施設、ミクロネシア短期大学のサイト調査	ポンペイ
4	7月15日	水		• PUCとの技術協議 • プロジェクトサイト調査	ポンペイ
5	7月16日	木		• PUC発電所並びに配電線の運用状況調査 • R&D、PUCとの技術協議	ポンペイ
6	7月17日	金		• プロジェクトサイト調査 • R&D、PUCとの技術協議 • ミクロネシア短期大学関係者、環境保護局（EPA）との面談・協議	ポンペイ
7	7月18日	土		• 報告書作成、収集資料整理 • 市場調査	ポンペイ
8	7月19日	日	ポンペイ着	• 報告書作成、収集資料整理 • 市場調査	ポンペイ
9	7月20日	月	• 外務省表敬訪問、本調査行程・内容の説明 • R&D、PUC表敬訪問、本調査行程・内容の説明	• 官団員と同じ (業務主任) • 現地測量調査、機材配置計画、ケーブルルート計画、市場調査 (他団員)	ポンペイ
10	7月21日	火	• 在ミクロネシア日本国大使館表敬 • PUCとの面談・協議 • プロジェクトサイト視察	• 官団員と同じ (業務主任) • 現地測量調査、機材配置計画、ケーブルルート計画、市場調査 (他団員)	ポンペイ
11	7月22日	水	• M/D案の説明・協議	• 同上	ポンペイ
12	7月23日	木	• M/D案の説明・協議	• 移動 [ポンペイ (15:00) → グアム (17:20) CO957] • 移動 [グアム (11:50) → 東京 (14:45) CO961] (鶴岡団員)	ポンペイ
13	7月24日	金	• M/D署名 • 在ミクロネシア日本国大使館へ調査結果内容の報告	• フィールドレポート署名 • 在ミクロネシア日本国大使館へ調査結果内容の報告	ポンペイ
14	7月25日	土	日本へ帰国	• 移動 [ポンペイ (15:00) → グアム (17:20) CO957]	グアム
15	7月26日	日		• 移動 [グアム (11:50) → 東京 (14:45) CO961]	

（2）第二次現地調査

No.	月日	曜日	官団員	コンサルタント団員	宿泊地
1	12月5日	土		• 移動 [マジュロ (10:55) → ポンペイ (14:20) CO957]	ポンペイ
2	12月6日	日	• 移動 [東京 (11:05) → グアム (15:35) CO962] • 移動 [グアム (19:40) → ポンペイ (00:35) CO958]	• 報告書作成、収集資料整理 • 市場調査	ポンペイ
3	12月7日	月	• 外務省表敬 • JICAミクロネシア支所表敬、調査計画等説明・報告 • 在ミクロネシア日本国大使館表敬 • 資源・開発省（R&D）表敬訪問、本調査行程・内容の説明		ポンペイ
4	12月8日	火	• 資源・開発省（R&D）にてミニッツ協議 • ポンペイ州公共公社(PUC)にて本調査行程・内容の説明		ポンペイ
5	12月9日	水	• R&D、PUCにてミニッツ協議 • PUCとの技術協議		ポンペイ
6	12月10日	木	• R&D、PUCにてミニッツ協議、報告書説明 • サイト最新状況調査		ポンペイ
7	12月11日	金	• ミニッツ署名 • R&D、PUCとの技術協議、報告書説明 • プロジェクトサイト調査 • 在ミクロネシア日本国大使館、JICA支所報告		ポンペイ
8	12月12日	土	• 移動 [ポンペイ (15:00) → グアム (17:20) CO957]	• 移動 [ポンペイ (15:00) → グアム (17:20) CO957] • 移動 [グアム (19:55) → コロール (22:25) CO953]	ポンペイ
9	12月13日	日	• 移動 [グアム (07:20) → 東京 (09:55) CO961]		

(3) 第三次現地調査

No.	月 日	曜日	官団員	コンサルタント団員	宿泊地
1	2月9日	火		• 移動 [東京 (11:05) → グアム (15:35) CO962]	グアム
2	2月10日	水		• 移動 [グアム (08:20) → ポンペイ (12:58) CO956] • JICAミクロネシア支所表敬 • 在ミクロネシア日本国大使館表敬	ポンペイ
3	2月11日	木		• プロジェクトサイ最新状況調査 • 報告書作成、収集資料整理 • 市場調査	ポンペイ
4	2月12日	金		• プロジェクトサイト最新状況調査 • 報告書作成、収集資料整理 • 市場調査	ポンペイ
5	2月13日	土		• 報告書作成、収集資料整理	ポンペイ
6	2月14日	日	• 移動 [グアム→ ポンペイ(+1)]	• 報告書作成、収集資料整理	ポンペイ
7	2月15日	月	• 外務省表敬 • 資源・開発省（R&D）表敬訪問、本調査行程・内容の説明 • ポンペイ州公共公社(PUC)にて本調査行程・内容の説明		ポンペイ
8	2月16日	火	• 資源・開発省（R&D）にてミニッツ協議 • プロジェクトサイト最新情報調査		ポンペイ
9	2月17日	水	• R&D、PUCとの技術協議、ミニッツ協議		ポンペイ
10	2月18日	木	• ミニッツ署名 • 在ミクロネシア日本国大使館、JICA支所報告 • 移動 [ポンペイ (15:00) → グアム (17:20) CO957]		グアム
11	2月19日	金	• 移動 [グアム (07:20) → 東京 (09:55) CO961]		

資料-3　関係者（面会者）リスト

関係者（面会者）リスト

所属及び氏名	職位
資源・開発省 **Department of Resources and Development**	
Mr. Marion Henry	Acting Secretary
Mr. Hubert K.Yamada	Assistant Secretary
Mr. Peter JM Konings	Renewable Energy Advisor
Mr. Shinji Koga	JICA Senior Volunteer
外務省 **Department of Foreign Affairs**	
Mr. Lorin S. Robert	Secretary
Ms. Jane Chigiyal	Deputy Secretary
Mr. Kandhi A. Elieisar	Assistant Secretary
Mr. Brendy H. Carl	Deputy Assistant Secretary
財務省 **Department of Finance**	
Mr. Joan Nuss	Assistant Secretary
Ms. Maggi Samo	Customs and Tax Administration Officer
運輸・通信・インフラストラクチャー省 **Department of Transport, Communication and Infrastructure**	
Mr. Phillip Joseph	Assistant Secretary
Mr. Henry Tionqco	Engineer
Mr. Benster Sepastian	Electric Engineer
Mr. Wilmer Kilmete	Architect
Mr. Daniel Rebehem	
環境・危機管理室 **Office of Environment and Emergency Management (OEEM)**	
Mr. Antholino Neth	FSM Public Assistant
Mr. Joe Konno	
ポンペイ州環境保護局 **Pohnpei Environmental Protection Agency**	
Mr. Donna Scheuring	Environmental Consultant
Mr. Charles Lohn	Environmental Educator
Mr. Nelson Henry, Jr.	Pollution Control Supervisor
Mr. Henry Susaia	Environmental Specialist

ミクロネシア短期大学
College of Micronesia National Campus (COM-FSM)

Mr. Spensin James	President
Mr. Joseph Habuchmai	Vice President
Mr. Francisco W. Mendiola	Director of Facilities and Security
Mr. Alfred Olter	Project Manager

ポンペイ州公共公社
Pohnpei Utilities Corporation (PUC)

Mr. Feliciano M. Perman	GM/CEO
Mr. Esmond Moses	Strategy Planning
Ms. Carleen Solomon	Assistant GM
Mr. Nixon Anson	Special Assistant GM
Mr. John T,Martin	Acting Assistant GM
Mr. Dackson Solomon	Assistant GM

在ミクロネシア日本大使館

佐藤　昭治 氏	特命全権大使
寺澤　元一 氏	カウンセラー
原田　真理子 氏	二等書記官
武田　貴子 氏	専門調査員

JICA ミクロネシア支所

浜田　眞一　氏	支所長
福島　庸介　氏	企画調査員

資料-4　討議議事録（M/D）

Minutes of Discussions
on the Preparatory Survey
on the Project for Clean Energy Promotion Using Solar Photovoltaic System
in the Federated States of Micronesia

The Government of Japan (hereinafter referred to as "GoJ") has established Cool Earth Partnership as a new financial mechanism. Through this, GoJ is cooperating actively with developing countries' efforts to reduce greenhouse gasses emissions, such as efforts to promote clean energy. A new scheme of grant aid, "Program Grant Aid for Environment and Climate Change ", was also created by GoJ as a component of this financial mechanism. According to the initiative of Cool Earth Partnership, 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 Clean Energy Promotion Using Solar Photovoltaic System in the Federated States of Micronesia (hereinafter referred to as "the Project").

JICA sent to Federated States of Micronesia (hereinafter referred to as "FSM") the Preparatory Survey Team (hereinafter referred to as "the Team"), headed by Mr. Teiji Takeshita, JICA Headquarters, and is scheduled to stay in the country from 13th to 25th July as the Preparatory Survey.

The Team held discussions with the concerned officials of the Government of the FSM and conducted a field survey.

In the course of discussions and field survey, both sides confirmed the main items described in the attached sheets.

Pohnpei, 24 July, 2009

Mr. Teiji Takeshita
Leader
Preparatory Survey Team
Japan International Cooperation Agency

Mr. Hubert K. Yamada
Assistant Secretary, Energy Division
Department of Resources and Development
Federated States of Micronesia

Mr. Feliciano M. Perman
General Manager
Pohnpei Utilities Corporation

witnessed by;

Mr. Lorin S. Robert
Secretary
Department of Foreign Affairs
Federated States of Micronesia

ATTACHMENT

1. Objective of the Preparatory Survey

Based on the result of the previous project formulation study conducted by JICA and the official request from the Government of FSM following items are covered under the Preparatory Survey.

(1) To identify the components of the requested Project

(2) To appraise and evaluate the technical and viability of the Project

(3) To prepare the outline design of the Project and reference document for further consideration.

2. Objective of the Project

The objective of the Project is to promote clean energy utilization and achieve emissions reductions by installing the photovoltaic system to be connected to the Pohnpei State grid.

3. Responsible Organization and Implementing Agency

The responsible organization is the Department of Resources and Development (R&D). The organization chart of the responsible department is shown in Annex-1.

FSM side agrees to coordinate the parties concerned and assign the appropriate implementing agency not later than the end August, 2009 and inform the result to the JICA Micronesia Office. The team replied that until the consent above is not concluded, JICA regards the sustainability of the Project is insufficient and cannot recommend implementation of the Project to GoJ.

4. Project Component

4-1. As a result of the discussions, requested major component was confirmed as below.

(1) Photovoltaic (PV) Module (Panel) (total capacity is about 180kW)

(2) Junction Box

(3) Power Conditioner

(4) Data collecting and display device

(5) Other relevant component to complete PV installation

(6) Training for operation and maintenance of PV system

4-2. Project sites are both (1) Federal Government complex in Pohnpei and (2) the College of Micronesia National Campus in Pohnpei as shown in Annex-2. The capacity of PV module is approximately 90kW for each site.

4-3. The FSM side explained that there is no duplication between the contents of the Project and any other plans or projects of other donors or the FSM side in the same project site.

4-4. JICA will assess the appropriateness of the request and will report the findings to the Government of Japan.

5. Japan's Program Grant Aid for Environment and Climate Change

The FSM side understood the Japan's Program Grant Aid for Environment and Climate Change scheme explained by the Team as described in Annex-3, 4 and 5.

6. Schedule of the Study

(1) JICA will prepare the draft report and reference document in English and dispatch a mission to FSM in order to explain their contents at the end of November, 2009.

(2) When the contents of the report are accepted in principle by the Government of FSM, JICA will complete the final report and reference document, and submit them to the Government of FSM and to the Procurement Agent by the end of January, 2010.

7. Other Relevant Issues

7-1 Major Undertakings to be taken by Each Government

The FSM side acknowledges the major undertakings as shown in Annex-6(1) and agrees to provide at its own expense. In detail, the FSM side should be responsible for following issues as described in Annex-6(2);

(1) Environmental and Social Considerations

The Team explained the outline of JICA Environmental and Social Considerations Guideline (hereinafter referred to as "the JICA Guideline") to the FSM side. The FSM side took the JICA Guideline into consideration, and all environmental permissions would be obtained no later than December 2009.

(2) The tariff structure for power generated by PV system shall be determined by the FSM side by the end of December 2009.

(3) Authorization based on the Related Laws and Regulations

The FSM side, if necessary, shall be responsible for obtaining necessary authorization based on related laws and regulations for the operation of the Grid-Connected PV system.

(4) Customs and Tax exemption

The FSM side agreed that the FSM side shall be responsible for the exemption of all customs, tax, levies and duties incurred in FSM for implementation of the Project.

(5) Permission of Land Acquisition / Usage

The Government of FSM owns the land mentioned below. Therefore, land acquisition from the private sector is not necessary for implementation of the Project.

Also, R&D agreed to obtain permission of the usage of necessary land or facilities from the related organizations for installation of the equipment.

(a) Securing necessary land

- for PV Modules
- for underground cables between PV Modules and Power Conditioners
- for Power Conditioners

(b) Temporary Stockyard during installation of the equipment and materials

- Approximately 20m^2 areas within each site.

(6) The FSM side shall ensure the security of all concerned Japanese nationals working for the Project, if deemed necessary.

(7) Operation and Maintenance

The FSM side agrees to secure the necessary budget and personnel for the Operation and Maintenance of Grid-Connected PV system procured and installed under the Project.

7-2 Proper use of Equipment and Materials

Any parties involved in operation and the maintenance of the system shall properly use the equipment and materials provided under the Project during and after implementation of the Project.

7-3 Procurement of Equipment and Materials

The Team explained that, in accordance with the policy of GoJ, products of Japan shall be procured for major equipment in the Project. The FSM side agreed with the policy of GoJ.

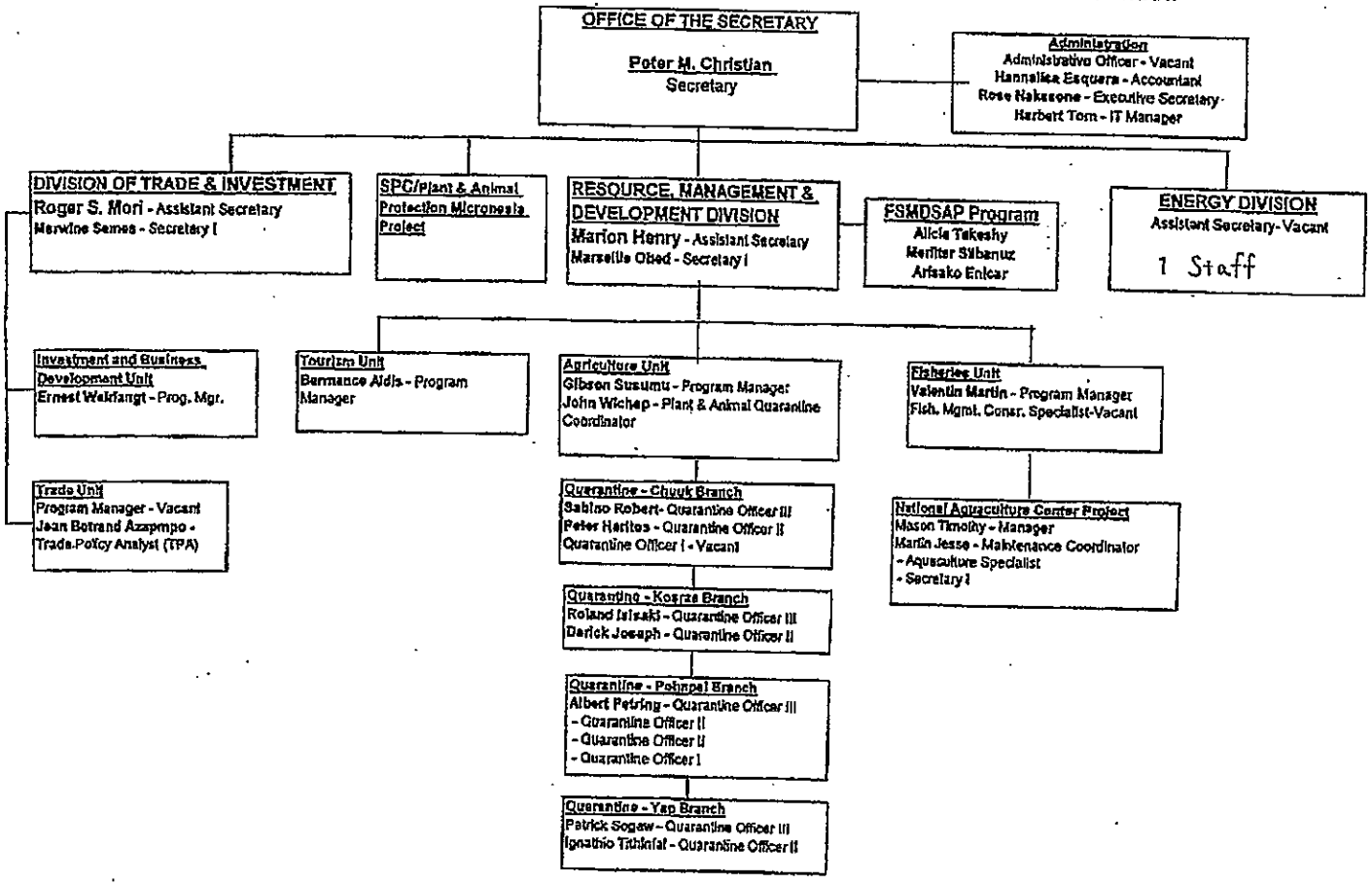
7-4 The FSM side shall provide necessary counterpart personnel to the Team during the period of their studies in the FSM.

<List of Annex>

Annex-1 Organization Chart of Department of Resources and Development
Annex-2 Project site / Candidate site of the Project
Annex-3 Japan's Environment Program Grant Aid Scheme
Annex-4 Flow of Funds for Project Implementation
Annex-5 Project Implementation System
Annex-6(1) Major Undertakings to be taken by Each Government
Annex-6(2) Demarcation of major undertakings
Annex-7 Terms of Reference of the Consultative Committee (Provisional)

As of July 2009

PROPOSED DEPARTMENT OF RESOURCES AND DEVELOPMENT ORGANIZATIONAL CHART



Annex-1

Project Site / Candidate Site of the Porject in Federated States of Micronesia

Program Grant Aid for Environment and Climate Change of the Government of Japan
(Provisional)

The Grant Aid provides a recipient country (hereafter 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 relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials as such.

Based on "Cool Earth Partnership" initiative of the Government of Japan, the Program Grant Aid for Environment and Climate Change (hereafter referred to as "GAEC") aims to mitigate effects of global warming by reducing GHGs emission (mitigation; e.g. improvement of energy efficiency) and to take adaptive measures (adaptation; e.g. measures against disasters related to climate change, including disaster prevention such as enhancing disaster risk management).

1. Procedures for GAEC

GAEC is executed through the following procedures.

Preparatory Survey 1	Preparatory Survey for project identification conducted by Japan International Cooperation Agency (JICA)
Application	Request made by a recipient country
Appraisal & Approval	Appraisal by the Government of Japan and Approval by the Cabinet
Determination of Implementation	The Notes exchanged between the Government of Japan and the Recipient Country
Grant Agreement (hereinafter referred to as the "G/A")	Agreement concluded between JICA and the Recipient
Preparatory Survey 2	Preparatory Survey for design conducted by JICA
Implementation	Procurement through the Procurement Agency by the Recipient

Firstly, if the candidate project for a GAEC is identified by the Recipient and the Government of Japan, the Government of Japan (the Ministry of Foreign Affairs) examines it whether it is eligible for GAEC. When the request is deemed appropriate, JICA, in consultation with the Government of Japan, conducts the Preparatory Survey (hereafter referred to as "the Survey") on the candidate project as Phase 1 of the Survey with Japanese consulting firms.

Secondly, the Recipient submits the official request to the Government of Japan, while the appropriateness, necessity and the basic components of the project are examined in the course of Phase 1 of the Survey,

Thirdly, the Government of Japan appraises the project to see whether it is suitable for Japan's GAEC, based on the Survey report prepared by JICA, and the results are then submitted to the Cabinet for approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes (E/N) signed by the Governments of Japan and the Recipient.

Fifthly, JICA engages Grant Agreement (G/A) with the Recipient and executes the Grant by making payments of the amount agreed in the E/N and strictly monitors that the funds of the Grant are properly and effectively used.

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

2 Preparatory Survey

1) Contents of the Survey

The purpose of the Preparatory Survey (hereafter referred to as "the Survey"), conducted by JICA on a requested project (hereafter referred to as "the Project"), is to provide the basic document necessary for the appraisal of the Project by the Government of Japan. The contents of the Survey are as follows:

- Confirmation of background, objectives, and benefits of the Project and institutional capacity of agencies and communities concerned of the Recipient necessary for project implementation.
- Evaluation of relevance of the Project to be implemented under the Grant Aid Scheme for Environment and Climate Change from a technical, social, and economic point of view.
- Confirmation of items agreed upon by both parties concerning the basic concept of the Project.
- Preparation of the detailed design of the Project and reference document for tender.
- Estimation of cost for the Project.

The contents of the original request will be modified, as found necessary, in the design of the Project according to the guidelines of Japan's Grant Aid scheme.

The Government of Japan requests the Government of the Recipient to take whatever measures necessary to ensure its responsibility in implementing the Project. Such measures must be guaranteed even if they may fall outside the jurisdiction of the implementing organization of the Recipient. This has been confirmed by all relevant organizations of the Recipient through the Minutes of Discussions.

2) Selection of consulting firms

For the smooth implementation of the Survey, JICA will conduct the Survey with registered consulting firms. JICA selects the firms based on proposals submitted by firms with interest in implementing the Survey. The firms selected will carry out the Preparatory Survey and prepare a report, based on the terms of reference set by JICA.

3. Implementation of GAEC after the E/N

1) Exchange of Notes (E/N)

The content of GAEC will be determined in accordance with the Notes exchanged by the two Governments concerned, in which items including, objectives of the project, period of execution, conditions and amount of the Grant Aid are confirmed.

2) Details of Procedures

Details of procedures on procurement and services under GAEC will be agreed between the authorities of the two governments concerned at the time of the signing of the G/A.

Essential points to be agreed are outlined as follows:

a) JICA will supervise the implementation of the Project.
b) Products and services will be procured and provided in accordance with JICA's "Procurement Guidelines for the Program Grant Aid for Environment and Climate Change."
c) The Recipient will conclude a contract with the Agent.
d) The Agent is the representative acting in the name of the Recipient concerning all transfers of funds to the Agent.

3) Focal points of "Procurement Guidelines for the Program Grant Aid for Environment and Climate Change"

a) The Agent

The Agent is the organization, which provides procurement 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 the Government of Japan and agreed between the two Governments in the A/M.

b) Agent Agreement

The Recipient will conclude the Agent Agreement, in principle, within two months after the signing of the G/A, in accordance with the A/M. The scope of the Agent's services will be clearly specified in the Agent Agreement.

c) Approval of the Agent Agreement

The Agent Agreement is prepared as two identical documents and the copy of the Agent Agreement will be submitted to JICA by the Recipient through the Agent. JICA confirms whether the Agent Agreement is concluded in conformity with the E/N, A/M, and G/A and the Procurement Guidelines for the Program Grant Aid for Environment and Climate Change then approves the Agent Agreement.

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

d) Payment Methods

The Agent Agreement will stipulate that "Regarding all transfers of the fund to the Agent, the Recipient will 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 (hereinafter referred to as "the Advances") to the Procurement Account from the Recipient Account.

The Agent Agreement will clearly state that the payment to the Agent will be made in Japanese yen from the Advances and that the final payment to the Agent will be made when the total remaining amount become less than three percent (3%) of the Grant and its accrued interests excluding the Agent's fees.

e) Products and Services Eligible for Procurement

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

f) Selection of firms

In principle, firms of any nationality could be contracted as long as the firms satisfy the conditions specified in the tender documents.

The same applies for any individual consultants who will be involved in the Project and provide services necessary for the training and guidance related to the Project.

The consultants that will be employed to do detail design and supervise the work for the Project, however will be in principle, Japanese nationals recommended by JICA for the purpose of maintaining technical consistency with the Study.

g) Method of Procurement
When conducting the procurement, sufficient attention will be paid to transparency in selecting the firms and for this purpose, competitive tendering will be employed in principle.

h) 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 firms supplying products and services should be stipulated in the tender documents to be prepared by the Agent. Aside from this, the tender documents will be prepared in consultation with the Recipient.

i) 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 the prospective tenderers have the capability of concluding the contracts.

For this, the following points should be taken into consideration:
(1) Experience and past performance in contracts of similar kind
(2) Financial credibility (including assets such as real estate)
(3) Existence of offices and other items to be specified in the tender documents.
(4) Their potentialities to use necessary personnel and facilities.

j) Tender Evaluation
The tender evaluation should be implemented on the basis of the conditions specified in the tender documents.

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

The Agent will submit a detailed evaluation report of tenders to JICA for its information, while the notification of the results to the tenderers will not be premised on the confirmation by JICA.

k) Additional procurement
If there is any remaining balance after the competitive and/or selective tendering and/or direct negotiation for a contract, and if the Recipient would like to procure additional items, the Agent is allowed to conduct this additional procurement, following the points mentioned below:
(1) Procurement of 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 not efficient, additional procurement can be conducted by a negotiated 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 conducted through competitive tendering. In this case, the products and services for additional procurement will be selected from among those in accordance with the G/A.

l) Conclusion of the Contracts
In order to procure products and services in accordance with the guideline, the Agent will conclude contracts with firms selected by tendering or other methods.

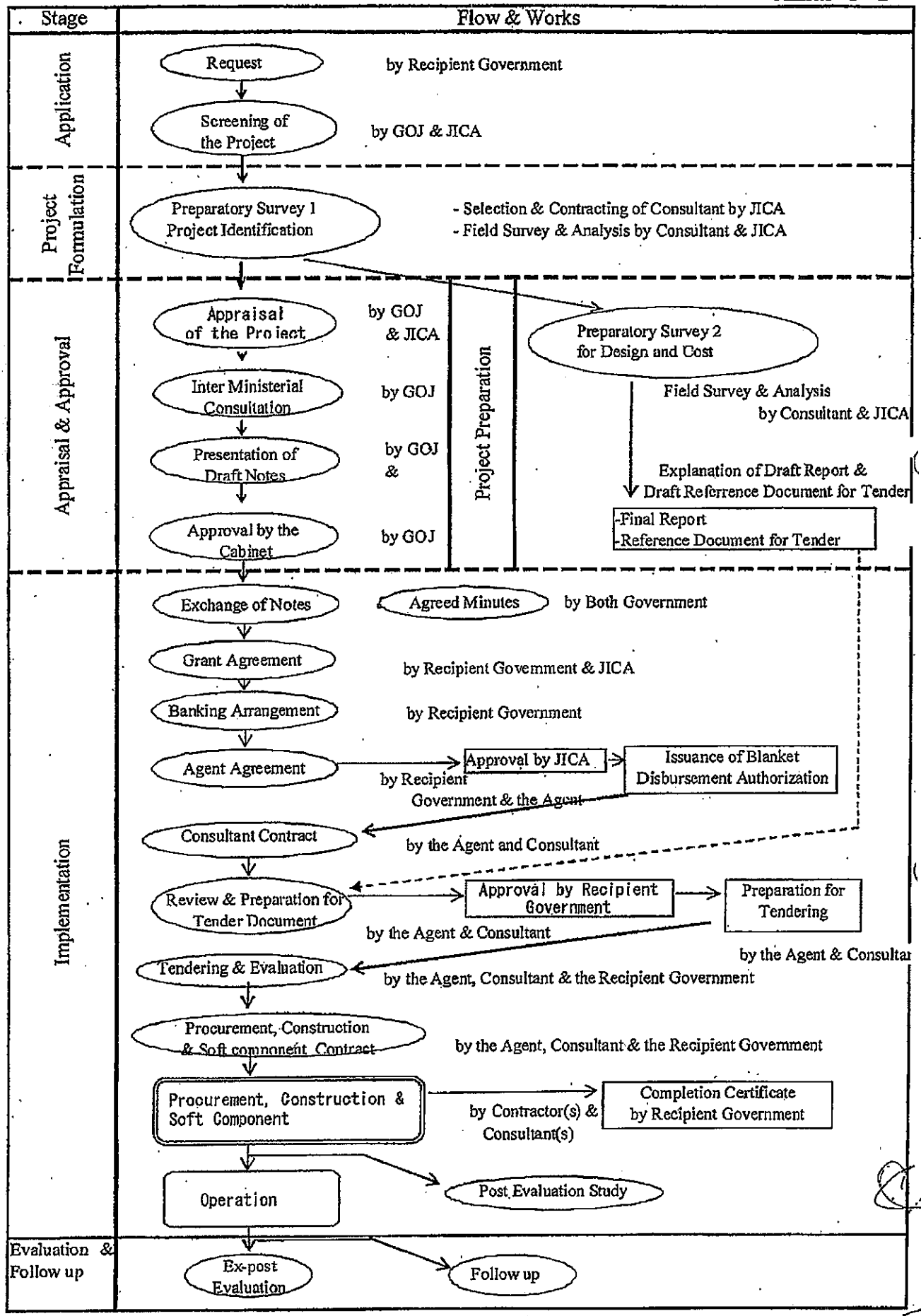
m) Terms of Payment
The contract will clearly state the terms of payment. The Agent will make payment from the "advances," against the submission of the necessary documents from the firm on the basis of the conditions specified in the contract. When the services are the object of procurement, the Agent 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 by the Government of the Recipient Country
In the implementation of the Grant Aid Project, the Recipient is required to undertake necessary measures as the following:

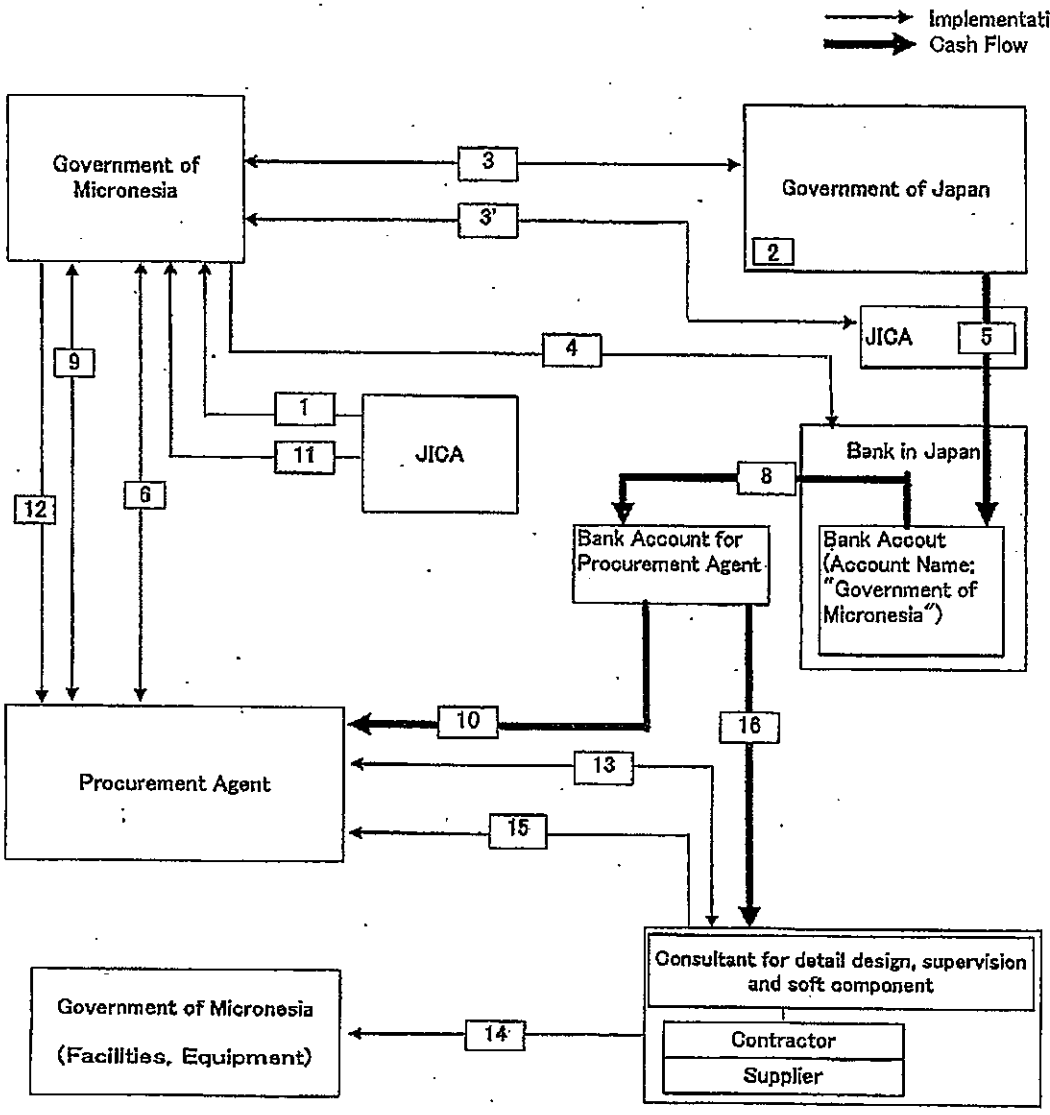
a) To secure land necessary for the sites of the Project and to clear, level and reclaim the land prior to commencement of the Project.
b) To provide facilities for distributing electricity, water supply and drainage and other incidental facilities in and around the sites.
c) To ensure all the expense and prompt execution for unloading, customs clearing at the port of disembarkation and domestic transportation of products purchased under the Grant Aid,
d) To ensure that customs duty, internal taxes and other fiscal levies that may be imposed in the Recipient with respect to the purchase of the Components and the Agent's services will be exempted by the Government of the Recipient.
e) 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 and stay therein for the performance of their work.

5) "Proper use of funds"
The Recipient is required to operate and maintain the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign personnel necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.

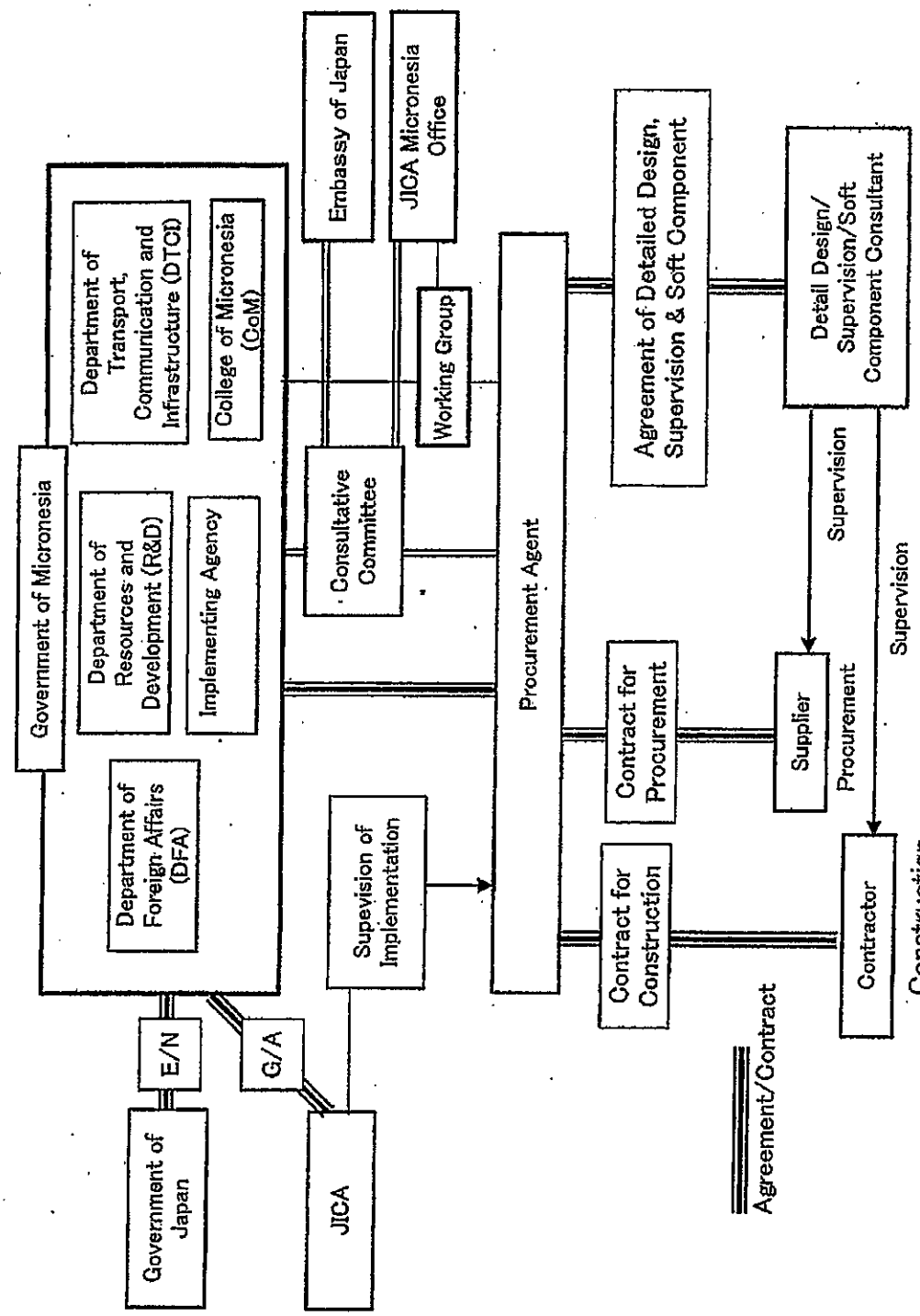
6) "Export and Re-export" of products
The products purchased under the Grant and its accrued interest will not be exported or re-exported from the Recipient.


Stage
Flow & Works
Application
Request
by Recipient Government
Screening of the Project
by GOJ & JICA
Project Formulation
Preparatory Survey 1 Project Identification
- Selection & Contracting of Consultant by JICA
- Field Survey & Analysis by Consultant & JICA
Appraisal & Approval
Appraisal of the Project
by GOJ & JICA
Inter Ministerial Consultation
by GOJ
Presentation of Draft Notes
by GOJ &
Approval by the Cabinet
by GOJ
Project Preparation
Preparatory Survey 2 for Design and Cost
Field Survey & Analysis by Consultant & JICA
Explanation of Draft Report & Draft Referrence Document for Tender
-Final Report
-Reference Document for Tender
Implementation
Exchange of Notes
Agreed Minutes
by Both Government
Grant Agreement
by Recipient Government & JICA
Banking Arrangement
by Recipient Government
Agent Agreement
by Recipient Government & the Agent
Approval by JICA
Issuance of Blanket Disbursement Authorization
Consultant Contract
by the Agent and Consultant
Review & Preparation for Tender Document
by the Agent & Consultant
Approval by Recipient Government
Preparation for Tendering
by the Agent & Consultant
Tendering & Evaluation
by the Agent, Consultant & the Recipient Government
Procurement, Construction & Soft component Contract
by the Agent, Consultant & the Recipient Government
Procurement, Construction & Soft Component
by Contractor(s) & Consultant(s)
Completion Certificate by Recipient Government
Operation
Post Evaluation Study
Evaluation & Follow up
Ex-post Evaluation
Follow up

Flow of Funds for Project Implementation



Project Implementation System



Annex-6(1)

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 construct a parking lot if necessary		●
5	To construct roads		
	1) Within the site	●	
	2) Outside the site and Access road		●
6	To construct the facility and install the equipment	●	
7	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities if necessary:		
	1) Electricity		
	a. The power distribution line to the site		●
	b. The drop wiring and internal wiring within the site	●	
	c. The main circuit breaker and transformer for the site	●	
	2) Water Supply		
	a. The city water distribution main to the site		●
	b. The supply system within the site (receiving and elevated tanks)	●	
	3) Drainage		
	a. The city drainage main (for conveying storm water, sewage, etc. from the site)		●
	b. The drainage system within the site (for sewage, ordinary waste, storm water, etc.)	●	
	4) Gas Supply		
	a. The city gas main to the site		●
	b. The gas supply system within the site	●	
	5) Telephone System		
	a. The telephone trunk line to the main distribution frame/panel (MDF) of the building		●
	b. The MDF and the extension after the frame/panel	●	
	6) Furniture and Equipment		
	a. General furniture		●
	b. Project equipment	●	
8	To bear the following commissions applied by the bank in Japan for banking services based upon the Bank Arrangement (B/A):		
	1) Payment of bank commission		●
9	To ensure prompt unloading and customs clearance at ports 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		●
	3) Internal transportation from the port of disembarkation to the project site	●	
10	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.		●
11	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		●
12	To maintain and use properly and effectively the facilities that are constructed and the equipment that is provided under the Grant.		●
13	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.		●
14	To ensure environmental and social consideration for the Program.		●

Demarcation of major undertakings

Stage/	Item	DFA	R&D	Implementing agency	DTCI & COM	Deadline (Tentative)
Agreements						
1	Exchange of Notes	○				Oct.2009
2	Grant Agreement	○				Oct.2009
3	Agent Agreement	○				Nov.2009
4	Banking Arrangement (including payment for Bank Commission)					by Dept of Finance, Nov.2009
Official Approval / License						
5	Environmental Certificates		○	○		Dec. 2009
6	Determination of the tariff structure for power generated by PV system			○		Consult with DTCI and COM, Dec. 2009
7	Authorization based on the Related Laws and Regulations for the operation of the Grid-Connected PV system.			○		Dec. 2009, if necessary
Procurement Stage						
8	Customs and Tax exemption		○			Before shipment
Installation Stage						
9	Permission to use necessary land		○			Nov.2009
10	Approval to secure temporary stockyard during installation of the equipment and materials		○			Nov.2009
11	Ensure the security of all concerned Japanese nationals working for the Project	○	○			-
Operation Stage						
12	Daily patrol and sweeping at each project site to protect equipment from vandalism and keep the site clean.			○	○	
13	Daily monitoring to check the operation condition of PV system (generated power, voltage, current and alarms) through remote monitoring system at PUC Headquarters			○		
14	Monthly patrol to clean the surface of PV modules and check corrosion & rusting of Power Conditioner, Junction box and other			○		
15	Trouble shooting, and coordinate with manufactures in case of fault			○		

Notes; DFA (Department of Foreign Affairs, FSM)
R&D (Department of Resources and Development, FSM)
DTCI (Department of Transportation, Communication and Infrastructure, FSM)
COM (Collage of Micronesia)

Annex- 7

Terms of Reference of the Consultative Committee (Provisional)

1. To promote smooth and sustainable implementation of the Project through coordination among parties concerned to the Project.

2. To confirm an implementation schedule of the Project for the speedy and effective utilization of the Grant and its accrued interest.

3. To discuss the modifications of the Project, including modification of the design of the facility.

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.

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

Minutes of Discussions
on
the Preparatory Survey (Outline Design Study)
on
The Project for Introduction of Clean Energy by Solar Electricity Generation System in the Federated States of Micronesia

(Explanation on Draft Final Report)

In December 2009, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Preparatory Survey Team on the Project for Clean Energy Promoting Using Solar Photovoltaic System (hereinafter referred to as "the Project") in the Federated States of Micronesia (hereinafter referred to as "FSM"), and through discussions, field survey and technical examination of the results of the survey in Japan, JICA prepared a Draft Final Report of the Preparatory Survey (Outline Design Study).

In order to explain and to consult with the concerned officials of the Government of FSM on the component of the Draft Final Report, JICA sent FSM the Draft Final Report Explanation Team (hereinafter referred to as "the Team"), which is headed by Mr. Shinichi HAMADA, Representative of Office of FSM, JICA, from 5th December 2009 to 12th December 2009.

As a result of discussion, both sides confirmed the main items described on the attached sheets.

Pohnpei, 11th December, 2009

Mr. Shinichi HAMADA
Leader
Preparatory Survey Team
Japan International Cooperation Agency
JAPAN

Mr. Hubert K. Yamada
Assistant Secretary, Energy Division
Department of Resources and Development
Federated States of Micronesia

Mr. Feliciano M. Perman
General Manager
Pohnpei Utilities Corporation

witnessed by:

Mr. Lorin S. Robert
Secretary
Department of Foreign Affairs
Federated States of Micronesia

ATTACHMENT

1. Components of the Draft Final Report

The Department of Resources and Development (hereinafter referred to as "R&D"), the Department of Foreign Affairs and Pohnpei Utilities Corporation (hereinafter referred to as "PUC") agreed and accepted in principle the components of the Draft Final Report explained by the Team.

2. Program Grant Aid for Environment and Climate Change of the Government of Japan

The FSM side understood components of the Minutes of Discussion signed by both sides on 24th July, 2009 (hereinafter referred to as "the previous M/D"), and would take the necessary measures confirmed on the previous M/D for smooth implementation of the Project following procedures of the Program Grant Aid for Environment and Climate Change of the Government of Japan as shown in **Annex-1**.

3. Confirmation of progress made for the previous M/D

3-1. Project sites and minimum capacity of PV module

The team explained that the capacity of PV module has to be reduced by 30kW at COM due to the budgetary constraint. The team also explained that as a result of detailed cost estimation after the 1st field survey, actual price estimation was higher than that was expected.

The team proposed that project sites and the minimum capacity of PV module are as follows and requested FSM side to consider this reallocation by 18th of December, 2009.

The result of the consideration shall be informed to JICA Micronesia Office in writing.

Project Site	total capacity of PV module
Federal Government complex in Pohnpei	90kW
The College of Micronesia National Campus in Pohnpei	60kW

3-2. Implementing Agency

The FSM side agreed that the PUC shall be the Implementing Agency of the Project.

4. Items of Equipment to be procured

The Team explained that the items of equipment to be procured as shown in **Annex-2** based on the result of the Preparatory Survey conducted in June and July, 2009.

5. Procurement Process of the Project

Both sides reconfirmed that procurement process would be supervised by the Procurement Management Agent (hereinafter referred to as "the Agent") with necessary consultation by the Consultative Committee (hereinafter referred to as "the Committee"). And both sides also reconfirmed roles of the Agent as follows;

(1) The Agent renders the services stipulated in the provisions of the G/A as well as the E/N for the Project;

(2) The Agent will undertake the procurement procedure necessary for the Project according to the provisions of the G/A and E/N and any other concerned guidelines; and

(3) The Agent will commence the procurement according to the contents of the Final Report of

the Outline Design.

The Team explained that if tender price exceeds the amount agreed on G/A and E/N, quantity or/and items of the equipment would be reduced until the Project cost comes down to the amount agreed on G/A and E/N.

The FSM side also understood that decision on addition or reduction of the equipment to be procured will be made through necessary consultation among members of the Committee.

6. Project Cost

The FSM side agreed that the Project cost should not exceed the upper limit of amount agreed on the E/N. Both sides also confirmed that the Project cost contains procurement cost of equipment, the cost for transportation up to the Project Site, installation cost, the Agent fee, and the cost for soft component for the technical support of operation and maintenance of equipment. The team explained that the breakdown of the Project cost estimation shall not be described in view of confidentiality.

7. Confidentiality of the Project

7.1. Detailed specifications of the Facilities

Both sides confirmed that all the information related to the Project including detailed drawings and specifications of the facilities and equipment and other technical information shall not be released to any outside parties before conclusion of the contract(s) for the Project.

7.2. Confidentiality of the Cost Estimation

The Team explained the cost estimation of the Project as described in **Annex-3**. Both sides agreed that the Project Cost Estimation should never be duplicated or released to any outside parties before conclusion of all the contract(s) for the Project. The FSM side understood that the Project Cost Estimation attached as **Annex-3** is not final and is subject to change by the result of examination through revision of the Outline Design Study.

8. The Consultative Committee

The FSM side understood that the R&D will chair the Committee in order to facilitate consultation and procurement process. The Terms of Reference of the Committee was settled in Annex-8 of the previous M/D.

The members of the Committee are as follows:

(1) Representative of Department of Resources and Development (Chair)
(2) Representative of Department of Foreign Affairs
(3) Representative of Department of Transport, Communication and Infrastructure
(4) Representative of College of Micronesia-FSM
(5) Representative of Pohnpei Utilities Corporation
(6) Representative of JICA Micronesia Office

The first meeting of the Committee shall be held immediately after the JICA's approval of the Agent Agreement which shall be concluded between Department of Foreign Affairs and the Procurement Agent. The employment of the Agent shall be agreed between the two Governments. Further meetings shall be held upon request of either the FSM side or the Japanese side. The Procurement Agent may advise both sides on the necessity to call a meeting of the Committee.

9. Other Relevant Issues

9-1. Undertakings required by the Recipient Country

The Team requested the FSM side to abide by the following undertakings by the FSM side in addition to major undertakings described in the previous M/D. The FSM side agreed to do so.

(1) Land usage for PV system

The FSM side agreed to complete all necessary procedures for official land usage for the following equipment and materials for PV system by the 15th of January, 2010.

1) for PV Modules
2) for underground cables
3) for Power Conditioners and other Equipment
4) for temporary Storage yard for PV Equipment and Materials to be used for the Project(up to the end of the installation work)

The FSM side shall send the photocopy of the following two letters of consent to JICA Micronesia Office.

1) The letter from Department of Transport, Communication and Infrastructure to R&D for the property of Federal Government complex.
2) The letter from COM to R&D for the property of COM.

(2) Generated Energy by PV system

The Japanese side shall assist the FSM side through soft component during the implementation of the Project. The necessary tariff structure for power generated by PV system shall be determined by the FSM side.

(3) Environmental and Social Considerations

The FSM side shall be responsible for obtaining necessary permission by Pohnpei Environmental Protection Agency (EPA) by the 15th of January, 2010. The FSM side shall report the result to JICA Micronesia Office. The Team shall provide necessary data and information for the application.

(4) Application of the Related Laws and Regulations

The FSM side agreed the structural design for the installation of PV system shall comply with the Architectural Regulation in Japan, but shall not conflict with the regulation in Pohnpei State and FSM.

Electrical design for Grid-connected PV system should be done in accordance with JIS/IEC-NEC. Should there be any conflicts, NEC code should be applied.

The FSM side agreed that the PUC shall be responsible for the application of related laws and regulations for the operation of the Grid-Connected PV system for interconnection with the distribution lines before commissioning of the Project. The Japanese side shall assist the FSM side to introduce necessary procedures through soft component during the implementation of the Project.

(5) Customs and Tax Exemption

The FSM side agreed that the R&D shall be responsible for the exemption and/or reimbursement of all customs, tax, levies and duties incurred in FSM for the implementation of the Project.

(6) Assignment of Counterpart Personnel

1) Overall project management

The FSM side agreed to assign necessary personnel for Overall project management.

- At least four staff from FSM side

2) Soft Component

The FSM side agreed to assign necessary personnel for O&M of the equipment in accordance with the soft component plan proposed by the Team.

- At least five staff from PUC

(7) Banking Arrangement

The FSM side, being convinced that the conclusion of the Banking Arrangement (B/A) and Blanket Disbursement Authorization (BDA) constitutes a very important factor to implement the Program smoothly and without delay, shall take the necessary measures. The flow of funds is shown in the Annex-I.

By signing the BDA, the FSM side designates the Procurement Agent as the representative authorized to act in the name of the FSM side concerning all transfers of the Grant plus any interest earned to the Procurement Account.

(8) The final connection work

The final connection work of medium and low voltage power cables with the existing distribution system shall be done by FSM side. Japanese side is responsible for the procurement of necessary terminal equipment for the same connection work.

(9) Arrangement for the remote monitoring system

All necessary work for the Internet connection(LAN) for the proposed new electrical room in Federal Government Complex , College of Micronesia and PUC's main office shall be arranged by the FSM side.

The necessary payment for the Internet connection shall be borne by the FSM side.

(10) PUC's concern

PUC pointed out that it supports the project. However, due to its current financial position it is very concerned about committing anything that may add any financial burden on its system. Because PUC understands the responsibilities that they have surrounding the implementation of the project, PUC wishes to stress particularly to the FSM National Government the need to ensure that this aspect of its responsibility is addressed accordingly by the FSM National Government.

The FSM National Government acknowledged the concern raised by PUC and will resolve jointly with PUC.

9.2 Ownership and Operation and Maintenance (O&M) Responsibilities of Equipment

The FSM side has reconfirmed that the PUC is an owner of equipment, and responsible for Operation and Maintenance (O&M) of equipment. The Team explained that the FSM side as a whole was requested to secure necessary budget and personnel for the O&M of Grid-connected PV system procured and installed under the Project.

9.3 Final Report

The FSM side agreed that the Final Report should never be duplicated in any form nor released to any other party(s), because the Final Report is confidential document as it contains information related to the tender.

<List of Annex>

Annex-1 Program Grant Aid for Environment and Climate Change of the Government of Japan

Annex-2 List of Equipments

Annex-3 Project Cost Estimation (Confidential)

Annex – 1

Program Grant Aid for Environment and Climate Change of the Government of Japan
(Provisional)

The Grant Aid provides a recipient country (hereafter 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 relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials as such.

Based on "Cool Earth Partnership" initiative of the Government of Japan, the Program Grant Aid for Environment and Climate Change (hereafter referred to as "GAEC") aims to mitigate effects of global warming by reducing GHGs emission (mitigation; e.g. improvement of energy efficiency) and to take adaptive measures (adaptation; e.g. measures against disasters related to climate change, including disaster prevention such as enhancing disaster risk management).GAEC may contain multiple components that can be combined to effectively meet these needs.

1. Procedures for GAEC

GAEC is executed through the following procedures.

Preparatory Survey 1	Preparatory Survey for project identification conducted by Japan International Cooperation Agency (JICA)
Application	Request made by a recipient country
Appraisal & Approval	Appraisal by the Government of Japan and Approval by the Cabinet
Determination of Implementation	The Notes exchanged between the Government of Japan and the Recipient Country
Grant Agreement (hereinafter referred to as the "G/A")	Agreement concluded between JICA and the Recipient
Preparatory Survey 2	Preparatory Survey for design conducted by JICA
Implementation	Procurement through the Procurement Agency by the Recipient

Firstly, if the candidate project for a GAEC is identified by the Recipient and the Government of Japan, the Government of Japan (the Ministry of Foreign Affairs) examines it whether it is eligible for GAEC. When the request is deemed appropriate, JICA, in consultation with the Government of Japan, conducts the Preparatory Survey (hereafter referred to as "the Survey") on the candidate project as Phase 1 of the Survey with Japanese consulting firms.

Secondly, the Recipient submits the official request to the Government of Japan, while the appropriateness, necessity and the basic components of the project are examined in the course of Phase 1 of the Survey,

Thirdly, the Government of Japan appraises the project to see whether it is suitable for Japan's GAEC, based on the Survey report prepared by JICA, and the results are then

submitted to the Cabinet for approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes (E/N) signed by the Governments of Japan and the Recipient.

Fifthly, JICA engages Grant Agreement (G/A) with the Recipient and executes the Grant by making payments of the amount agreed in the E/N and strictly monitors that the funds of the Grant are properly and effectively used.

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

2. Preparatory Survey

1) Contents of the Survey

The purpose of the Preparatory Survey (hereafter referred to as "the Survey"), conducted by JICA on a requested project (hereafter referred to as "the Project"), is to provide the basic document necessary for the appraisal of the Project by the Government of Japan. The contents of the Survey are as follows:

- Confirmation of background, objectives, and benefits of the Project and institutional capacity of agencies and communities concerned of the Recipient necessary for project implementation.
- Evaluation of relevance of the Project to be implemented under the Grant Aid Scheme for Environment and Climate Change from a technical, social, and economic point of view.
- Confirmation of items agreed upon by both parties concerning the basic concept of the Project.
- Preparation of the design of the Project and reference document for tender.
- Estimation of cost for the Project.

The contents of the original request will be modified, as found necessary, in the design of the Project according to the guidelines of Japan's Grant Aid scheme.

The Government of Japan requests the Government of the Recipient to take whatever measures necessary to ensure its responsibility in implementing the Project. Such measures must be guaranteed even if they may fall outside the jurisdiction of the implementing organization of the Recipient. This has been confirmed by all relevant organizations of the Recipient through the Minutes of Discussions.

2) Selection of consulting firms

For the smooth implementation of the Survey, JICA will conduct the Survey with registered consulting firms. JICA selects the firms based on proposals submitted by firms with interest in implementing the Survey. The firms selected will carry out the Preparatory Survey and prepare a report, based on the terms of reference set by JICA.

3. Implementation of GAEC after the E/N

1) Exchange of Notes (E/N)

The content of GAEC will be determined in accordance with the Notes exchanged by the two Governments concerned, in which items including, objectives of the project, period of execution, conditions and amount of the Grant Aid are confirmed.

2) Details of Procedures

Details of procedures on procurement and services under GAEC will be agreed between the authorities of the two governments concerned at the time of the signing of the G/A.

Essential points to be agreed are outlined as follows:

a) JICA will supervise the implementation of the Project.
b) Products and services will be procured and provided in accordance with JICA's "Procurement Guidelines for the Program Grant Aid for Environment and Climate Change."
c) The Recipient will conclude a contract with the Agent.
d) The Agent is the representative acting in the name of the Recipient concerning all transfers of funds to the Agent.

3) Focal points of "Procurement Guidelines for the Program Grant Aid for Environment and Climate Change"

a) The Agent

The Agent is the organization, which provides procurement 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 the Government of Japan and agreed between the two Governments in the A/M.

b) Agent Agreement

The Recipient will conclude the Agent Agreement, in principle, within two months after the signing of the G/A, in accordance with the A/M. The scope of the Agent's services will be clearly specified in the Agent Agreement.

c) Approval of the Agent Agreement

The Agent Agreement is prepared as two identical documents and the copy of the Agent Agreement will be submitted to JICA by the Recipient through the Agent. JICA confirms whether the Agent Agreement is concluded in conformity with the E/N, A/M, and G/A and the Procurement Guidelines for the Program Grant Aid for Environment and Climate Change then approves the Agent Agreement.

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

d) Payment Methods

The Agent Agreement will stipulate that "Regarding all transfers of the fund to the Agent, the Recipient will 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 (hereinafter referred to as "the Advances") to the Procurement Account from the Recipient Account.

The Agent Agreement will clearly state that the payment to the Agent will be made in Japanese yen from the Advances and that the final payment to the Agent will be made when the total remaining amount become less than three percent (3%) of the Grant and its

accrued interests excluding the Agent's fees.

e) Products and Services Eligible for Procurement
Products and services to be procured will be selected from those defined in the G/A.

f) Firm and Consultant
The firm and consultant who would contract with the Agent shall be Japanese Nationals.

The consultants that will be employed to do detail design and supervise the work for the Project, however will be in principle, Japanese nationals recommended by JICA for the purpose of maintaining technical consistency with the Study.

g) Method of Procurement
When conducting the procurement, sufficient attention will be paid to transparency in selecting the firms and for this purpose, competitive tendering will be employed in principle.

h) 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 firms supplying products and services should be stipulated in the tender documents to be prepared by the Agent. Aside from this, the tender documents will be prepared in consultation with the Recipient.

i) 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 the prospective tenderers have the capability of concluding the contracts.

For this, the following points should be taken into consideration:
(1) Experience and past performance in contracts of similar kind
(2) Financial credibility (including assets such as real estate)
(3) Existence of offices and other items to be specified in the tender documents.
(4) Their potentialities to use necessary personnel and facilities.

j) Tender Evaluation
The tender evaluation should be implemented on the basis of the conditions specified in the tender documents.

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

The Agent will submit a detailed evaluation report of tenders to JICA for its information, while the notification of the results to the tenderers will not be premised on the confirmation by JICA.

k) Additional procurement
If there is any remaining balance after the competitive and/or selective tendering and/or

direct negotiation for a contract, and if the Recipient would like to procure additional items, the Agent is allowed to conduct this additional procurement, following the points mentioned below:

(1) Procurement of 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 not efficient, additional procurement can be conducted by a negotiated 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 conducted through competitive tendering. In this case, the products and services for additional procurement will be selected from among those in accordance with the G/A.

l) Conclusion of the Contracts
In order to procure products and services in accordance with the guideline, the Agent will conclude contracts with firms selected by tendering or other methods.

m) Terms of Payment
The contract will clearly state the terms of payment. The Agent will 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. 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.

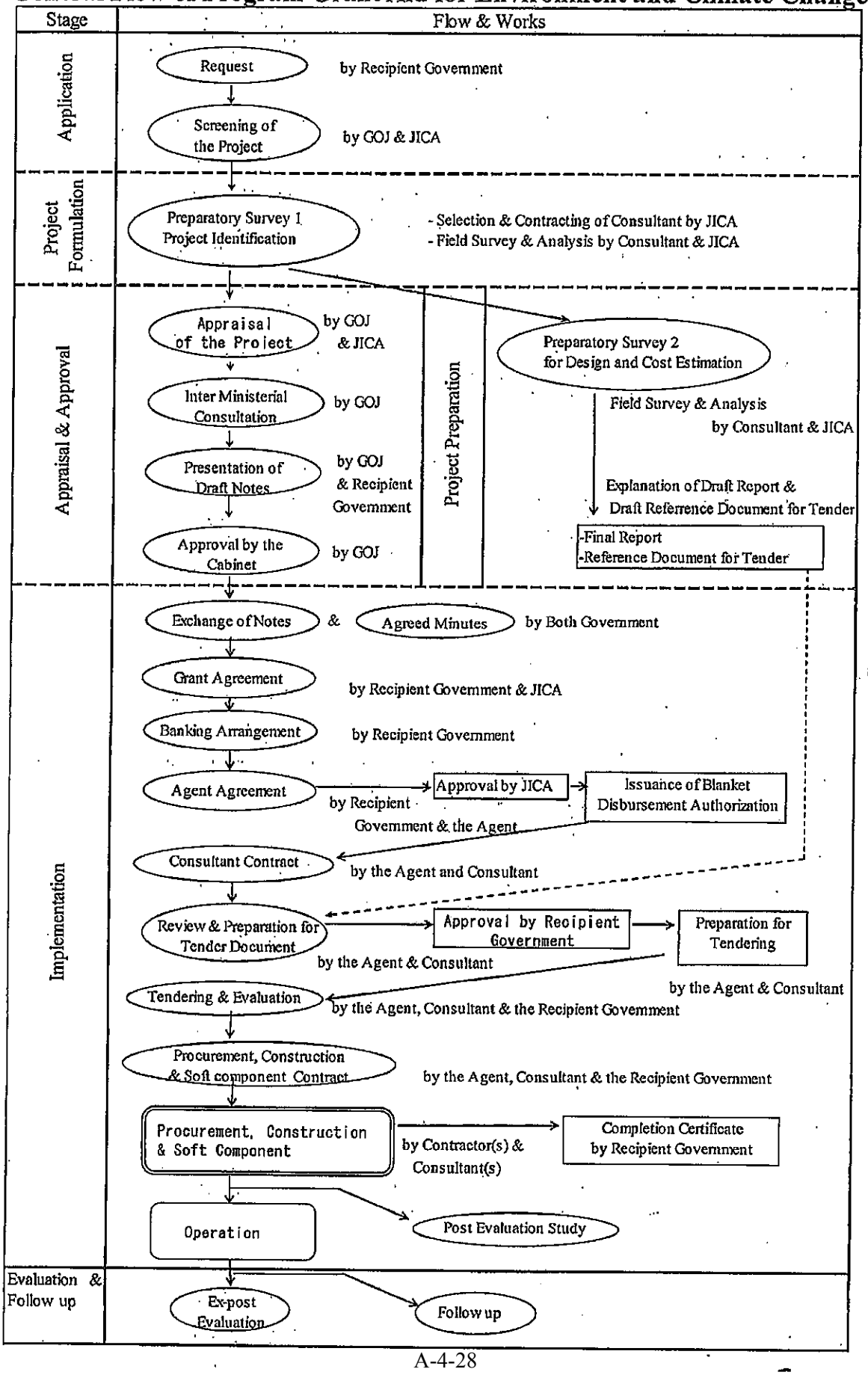
4) Undertakings required by the Government of the Recipient Country
In the implementation of the Grant Aid Project, the Recipient is required to undertake necessary measures as the following:

a) To secure land necessary for the sites of the Project and to clear, level and reclaim the land prior to commencement of the Project.
b) To provide facilities for distributing electricity, water supply and drainage and other incidental facilities in and around the sites.
c) To ensure all the expense and prompt execution for unloading, customs clearing at the port of disembarkation and domestic transportation of products purchased under the Grant Aid,
d) To ensure that customs duty, internal taxes and other fiscal levies that may be imposed in the Recipient with respect to the purchase of the Components and the Agent's services will be exempted by the Government of the Recipient.
e) 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 and stay therein for the performance of their work.

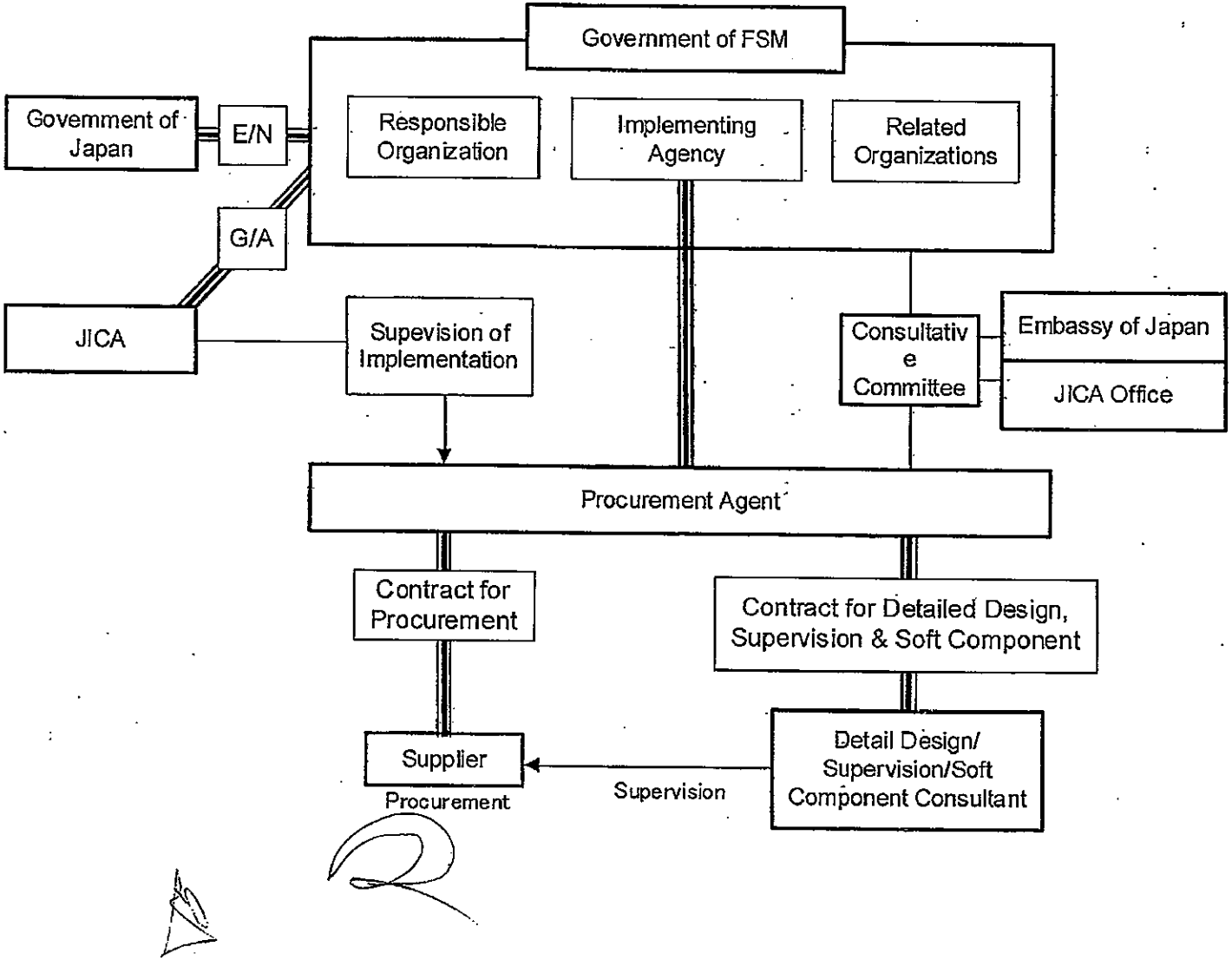
5) "Proper use of funds"
The Recipient is required to operate and maintain the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign personnel necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.

6) "Export and Re-export" of products
The products purchased under the Grant and its accrued interest will not be exported or re-exported from the Recipient.

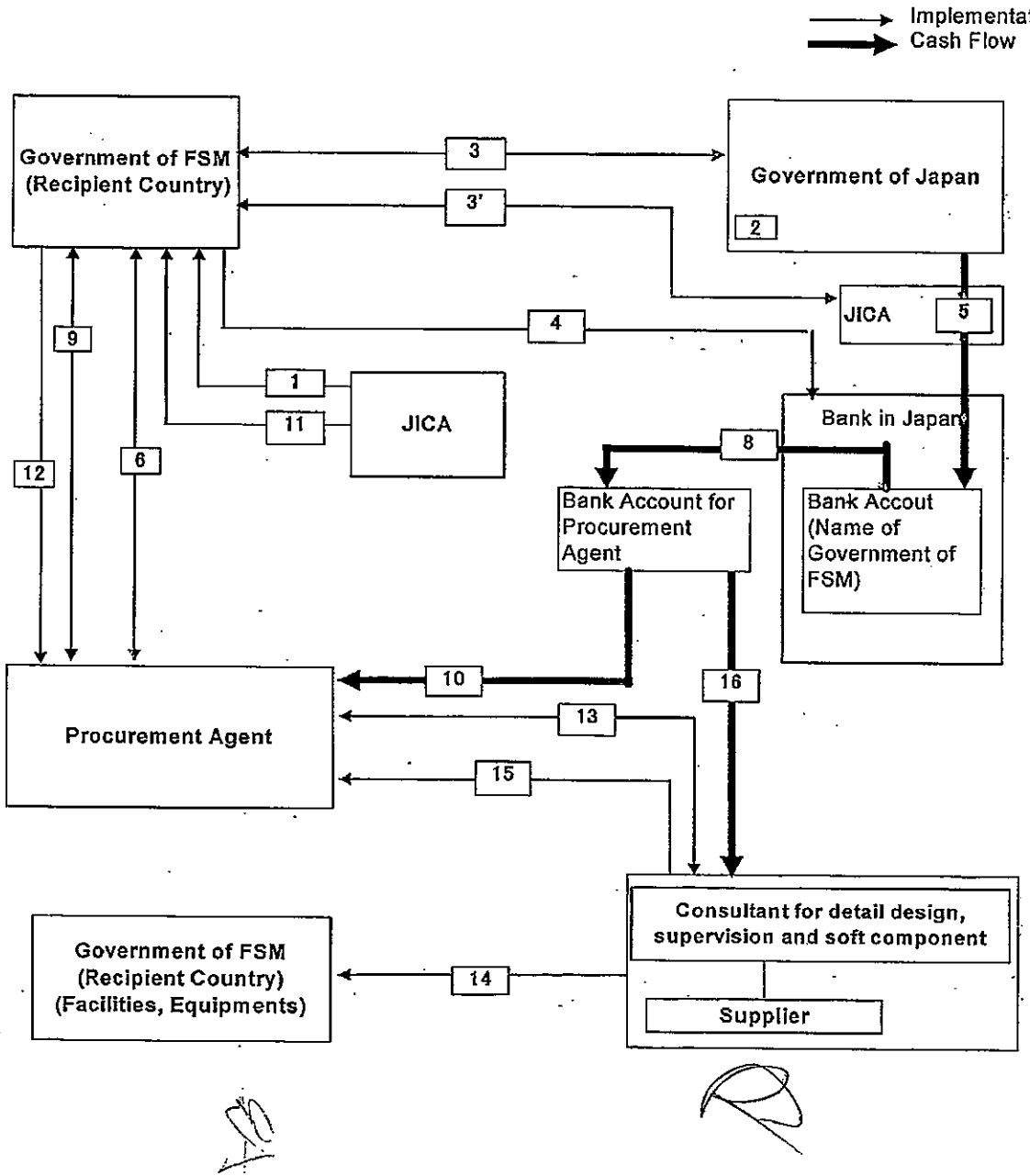
General Flow of Program Grant Aid for Environment and Climate Change



Project Implementation System



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 FSM)

12 Recommendation of Consultant for Detail Design / Supervision (Government of FSM→Procurement Agent)

13 Conclusion of Contract

14 Construction and Procurement

15 Application for Payment

16 Payment

Annex –2

List of Equipments

1-1 List of Equipments
The following table shows a list of equipments procured under the Project.

Item No.	Name of Equipment	Quantity	Final Delivery Point (Site)
1	Photovoltaic Module	90 kW	Federal Government Complex
		60 kW	COM
2	Mounting structure for Photovoltaic Module	1 lot	Federal Government Complex
		1 lot	COM
3	Junction Box	10 unit	Federal Government Complex
		6 unit	COM
4	Collecting Box	3 unit	Federal Government Complex
		2 unit	COM
5	Power conditioner	1 unit	Federal Government Complex
		1 unit	COM
6	Transformer	1 unit	Federal Government Complex
		1 unit	COM
7	Display board	1 unit	Federal Government Complex
		1 unit	COM
8	Data management and monitoring system	1 lot	Federal Government Complex
		1 lot	COM
9	Medium Voltage Switchgear Panel	1 lot	Federal Government Complex
10	Cables and Conduits	1 lot	Federal Government Complex
		1 lot	COM
11	Test Equipment	1 lot	Federal Government Complex
		1 lot	COM
12	Maintenance Tools	1 lot	Federal Government Complex
		1 lot	COM
13	Spare Parts	1 lot	Federal Government Complex
		1 lot	COM

Annex – 3

Project Cost Estimation (Confidential)

This cost estimate is provisional and would be further examined by the Government of Japan for the approval of the Grant Aid.

1. Cost to be borne by the Japanese side: approximately ¥ 527.5 million

Item	Amount (Million Japanese Yen)
1.1 Cost of equipment and materials and transportation	236.7
1.2. Installation and Construction Work	214.7
2. Procurement Agent & Consulting Services Fee	76.1
Total (1.1+1.2+2)	527.5

2. Cost to be borne by the FSM side: US$ 7,300(approximately ¥ 0.73 million)

The contents and cost of work on the FSM side are as follows:

Item	Amount
1. Final connection work with the existing distribution system	2,000 US$ (Approximately ¥0.20 million)
2. Payment of commission to Japanese bank	5,300 US$ (Approximately ¥0.53 million)
Total (1+2)	7,300 US$ (Approximately ¥0.73 million)

3. Conditions for estimation
   (1) Time of estimation: July 2009
   (2) Foreign exchange rate: 1 US$ = ¥ 96.59
   (3) Others:

The above estimation was carried out in accordance with relevant rules and the guideline of Japan's Grant Aid.

Minutes of Discussions
on the Preparatory Survey
on the Project for Introduction of Clean Energy by Solar Electricity Generation System
in the Federated States of Micronesia

The Japan International Cooperation Agency (hereinafter referred to as "JICA") has been conducting the Preparatory Survey (hereinafter referred to as "the Survey") on the Project for Introduction of Clean Energy by Solar Electricity Generation System in the Federated States of Micronesia (hereinafter referred to as "the Project") since July 2009.

As a part of the Survey, JICA sent a mission team, headed by Mr. Hiroyuki Kobayashi, Director of Natural Resources and Energy Conservation Division, JICA, (hereinafter referred to as "the Team") to the Federated States of Micronesia (hereinafter referred to as "FSM") from 10th February to 18th February 2010, in order to confirm the outline design of the Project and the necessary procedures for the implementation of the Project.

The Team held discussions with the concerned officials of the Government of FSM and conducted a field survey.

As the results of the discussions and the field survey, both sides confirmed the main items described on the attached sheet.

Pohnpei, 18th February, 2010

Mr. Hiroyuki Kobayashi
Leader
Mission Team
Japan International Cooperation Agency

Mr. Hubert K. Yamada
Assistant Secretary, Energy Division
Department of Resources and Development
Federated States of Micronesia

Mr. Feliciano M. Perman
General Manager
Pohnpei Utilities Corporation

witnessed by;

Mr. Lorin S. Robert
Secretary
Department of Foreign Affairs
Federated States of Micronesia

Mr. Spensin James
President
College of Micronesia-FSM

ATTACHMENT

1. Confirmation on the outline design of the Project

1-1 Project sites and minimum capacity of photovoltaic (PV) module

Both sides confirmed that the project sites and the minimum capacities of PV module are as follows;

Project site	Total capacity of PV module
Federal Government complex in Pohnpei	20kW
The College of Micronesia-FSM, National Campus in Pohnpei	140kW

1-2 Interconnection point of PV system in the Federal Government complex

Both sides agreed that the PV system to be installed at the President's office in the Federal Government complex will be interconnected with the low voltage network at the President's Office building.

1-3 Installation of the batteries back-up system in the Federal Government complex

Both sides agreed that the batteries back-up facility of the maximum capacity of 1000 Ah (240V) and Power Conditioner (30kW) will be installed in the PV system at the President's Office, in order to ensure electricity supply while Pohnpei Utilities Corporation's (PUC) grid is out.

Concerning a collection system of disposed batteries in Pohnpei, FSM side explained that the existing collection system operated by Pohnpei Waste Management Company shall be applied in the Project in order to avoid environmental negative impacts caused by disposed batteries.

1-4 Operation and maintenance responsibility of equipment

Both sides understand that PUC is to own the equipment and be responsible for operation and maintenance of the system including the batteries back-up system. The Government of FSM will, if necessary, provide PUC financial support, especially for replacement of the equipment such as the batteries.

Both sides agreed that the methods of operation and maintenance as well as maintenance tools will be provided to the staff of PUC. The necessary manual will be provided as a soft component of the Project. Both sides agreed that maintenance staff of COM-FSM will also participate in the Soft Component. COM-FSM proposed to be one of candidate venues for the Soft Component.

2. Necessary procedures for the Project implementation

The Team requested FSM side to complete all necessary procedures for the implementation of the Project concerning "Land usage for PV system" and "Environmental and Social Considerations", which were described in 9.9-1(1) and 9.9-1(3) in the previous M/D signed at 11th December, by the middle of March 2010. FSM side agreed on it.

2-1 The Team reconfirmed to FSM side that there is 12 months warrantee period for the system.

2-2 The FSM side raised the concern for the design of the car parking at COM-FSM and stressed to take into account of heavy rain at the site.

<List of Annex>

Annex-1 Revised list of equipments

Annex-2 Revised layout of PV system

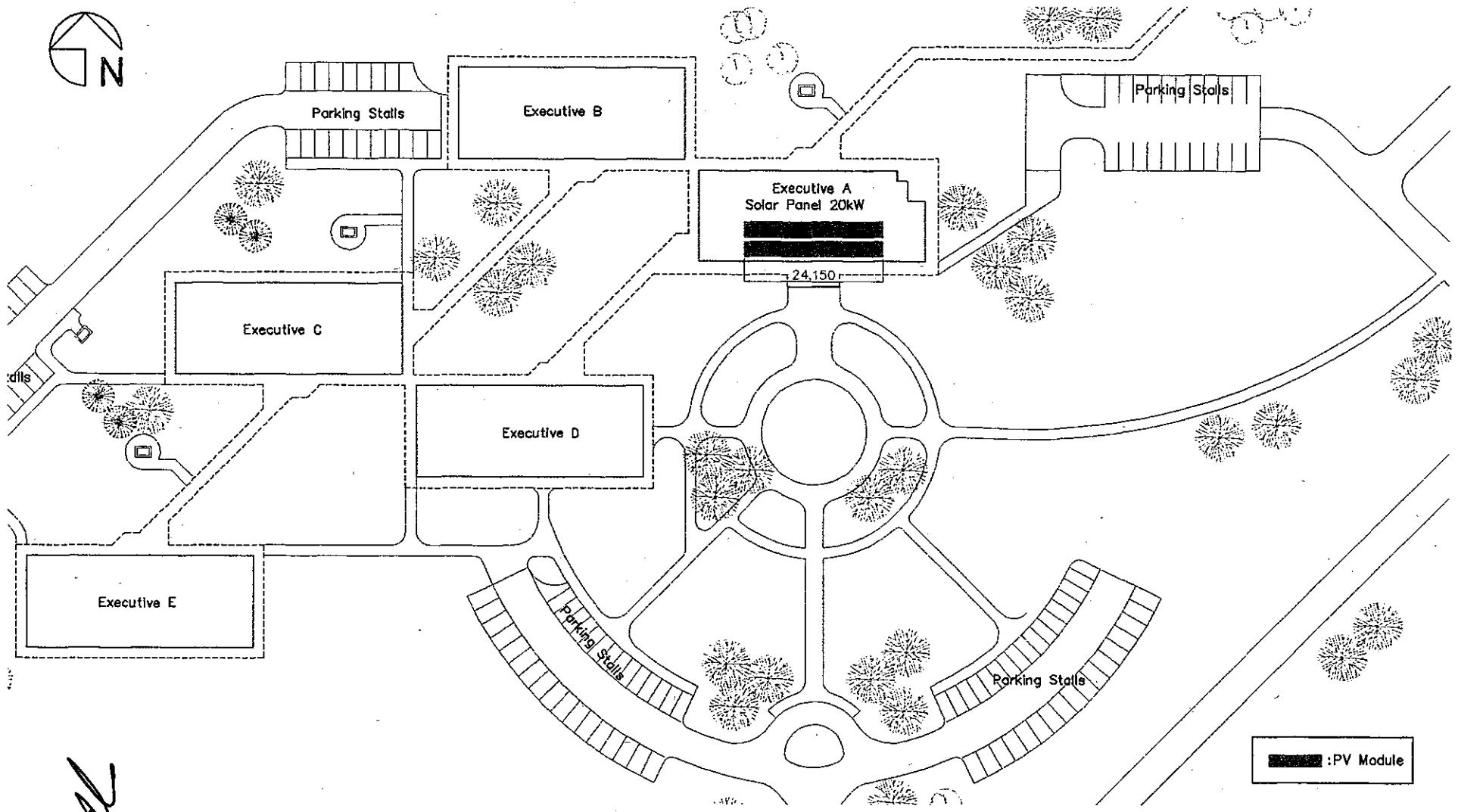
Annex –1

Revised List of Equipments

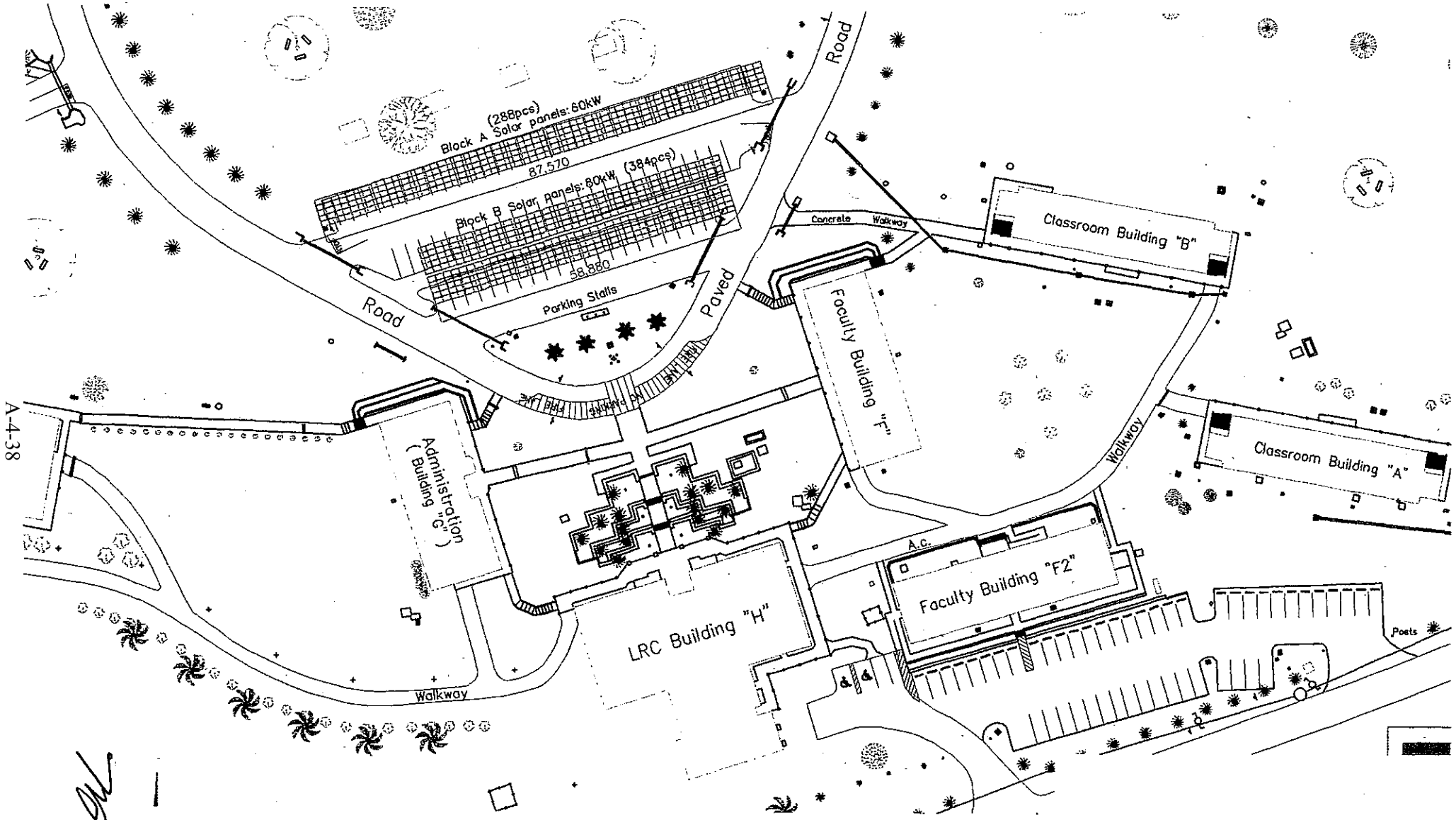
The following table shows a list of equipments procured under the Project.

Item No.	Name of Equipment	Quantity	Final Delivery Point (Site)
1	Photovoltaic Module	20 kW	Federal Government Complex
		140 kW	COM-FSM
2	Mounting structure for Photovoltaic Module	1 lot	Federal Government Complex
		1 lot	COM-FSM
3	Junction Box	2 unit	Federal Government Complex
		14 unit	COM-FSM
4	Collecting Box	1 unit	Federal Government Complex
		3 unit	COM-FSM
5	Power conditioner	1 unit	Federal Government Complex
		2 unit	COM-FSM
6	Transformer	1 unit	Federal Government Complex
		1 unit	COM-FSM
7	Display board	1 unit	Federal Government Complex
		1 unit	COM-FSM
8	Data management and monitoring system	1 lot	Federal Government Complex
		1 lot	COM-FSM
9	Battery Back-up System	1 lot	Federal Government Complex
10	Cables and Conduits	1 lot	Federal Government Complex
		1 lot	COM-FSM
11	Test Equipment	1 lot	Federal Government Complex
		1 lot	COM-FSM
12	Maintenance Tools	1 lot	Federal Government Complex
		1 lot	COM-FSM
13	Spare Parts #	1 lot	Federal Government Complex
		1 lot	COM-FSM

The details shall be described in the Final Report of the Preparatory Survey



Annex - 2 :Layout Plan for PV Modules for Federal Government Complex



Annex - 2 :Layout Plan for PV Modules for College of Micronesia

資料-5　事業事前計画表(概略設計時)

事業事前計画表（概略設計時）

1. 案件名

ミクロネシア連邦国　太陽光を活用したクリーンエネルギー導入計画

2. 要請の背景（協力の必要性・位置付け）

ミクロネシア連邦国（以下「ミ」国と称す）では、1981 年から約 10 年間、米国エネルギー省からの支援により、連邦政府としてのエネルギー開発計画を策定する部署が存在していたが、現在では、連邦政府によるエネルギー政策は存在せず、各州レベルで電力公社もしくは公共公社が主体となり、エネルギー・電力計画、標準・仕様の策定、運営・維持管理体制の整備が行われている。島嶼国の「ミ」国では、主要なエネルギー資源である石油は、全量シンガポールからの輸入に依存しており、電力供給はほぼ 100%ディーゼル発電により賄っている。このため、昨今の気候変動問題への意識の高まり、原油価格高騰の影響を受け、発電供給力がディーゼル発電設備に偏重した現状を見直し、発電資源の多様化が喫緊の課題となっている。かかる状況下、「ミ」国政府は太陽光発電（PV）を代表とする、クリーンエネルギーの開発を重点項目と位置付け、2008 年 1 月に我が国がダボス会議において発表した新たな資金メカニズム「クールアース・パートナーシップ」への参加を決定している。

本計画対象地域であるポンペイ州においては、ポンペイ州公共公社（PUC：Pohnpei Utilities Corporation）がポンペイ州の電力事業を担っている。PUC は、民営化、株式会社化されておらず、1991 年に制定された「州法 2L-179-91」に従い、100%ポンペイ州政府により所有されている。しかしながら、連邦政府もしくは州政府は、PUC の指導・監督を行う立場にはなく、PUC は準政府機関として政府から独立した経営を行っている。PUC はディーゼル発電所（Nanpohmal 発電所）と、水力発電所（Nanpil 発電所）、更にはバージ発電所を所有しているが、現在は同ディーゼル発電所のみが運転可能な状態であり、更に同発電所内の 7 台のディーゼル発電設備のうち 2 台が故障しており、停電が頻発する不安定な電力供給を余儀なくされている。

「ミ」国では、ポンペイ州、チューク州を中心として、1990 年代後半から、離島における村落電化のため家庭用のソーラーホームシステム、病院や学校などの公共施設を対象として PV の導入が進められている。更に、2008 年 10 月には、EU の支援による「Support to the Energy Sector in Five ACP Pacific Islands (REP5)」により、コスラエ州において本計画対象設備と類似の連系 PV システムが導入されている。また、本計画対象地域であるポンペイ州では、中国の支援により連邦政府複合施設とミクロネシア短期大学に PV による街路灯が設置されている。本計画では、これら先行案件の実施により得られた知見を活用しつつ、将来の連系 PV システムの普及促進を図り、気候変動問題の緩和策支援としてふさわしいクリーンエネルギー活用を具体化する系統連系型太陽光発電設備を導入することが要請されている。

3. プロジェクト全体計画概要

(1) プロジェクト全体計画の目標（裨益対象の範囲及び規模）

本計画の実施により、ポンペイ州電力系統により供給される、ポンペイ島の住民合計約 3.5 万人（2000 年推計）に対し、太陽光発電を利用した電力を供給することが可能となる。

(2) プロジェクト全体計画の成果

1) 系統連系型太陽光発電設備の調達・据付が行われる。

2) 太陽光発電を利用した電力が供給される。

(3) プロジェクト全体計画の主要活動

1) 系統連系型太陽光発電設備の調達・据付を行う。

2) 計画対象設備の運営維持管理のための能力強化を行う。

(4) 投入（インプット）

1) 日本側：無償資金協力 5.20 億円

2) 相手国側

a) 施設建設用地の提供
b) 運転・維持管理要員

c） 調達された設備の運転・維持管理費用

(5) 実施体制

1） 主管官庁： 資源・開発省（R&D）

2） 実施機関： ポンペイ州公共公社（PUC）

4. 無償資金協力案件の内容

(1) サイト
連邦政府複合施設、ミクロネシア短期大学

(2) 概要
系統連系型太陽光発電設備の調達と据付

(3) 相手国側負担事項
用地確保、銀行口座開設手数料負担

(4) 概算事業費
5.21 億円（無償資金協力 5.20 億円、「ミ」国側負担 0.01 億円）

(5) 工期
入札期間を含め約 19 ヶ月（予定）

(6) 貧困、ジェンダー、環境及び社会面の配慮
特になし

5. 外部要因リスク

特になし

6. 過去の類似案件からの教訓の活用

特になし

７．プロジェクト全体計画の事後評価に係る提案

(1) プロジェクト全体計画の目標達成を示す成果指標

項　目	現状（2009 年）	計画後（2011 年）
(1) ディーゼル燃料消費量（ℓ）	9,549,000	9,512,000
(2) CO_2排出量（トン）	25,015	24,917

(2) その他の成果指標
特になし

(3) 評価のタイミング
2011 年以降

資料-6　ソフトコンポーネント計画書

ソフトコンポーネント計画書

(1) ソフトコンポーネントを計画する背景

ミクロネシア連邦国（以下、「ミ」国と称す）における、電力需給状況は各州によって異なるが、基本 24 時間給電とし運営している。電力供給については、ほぼ全てをディーゼル発電に依存しているため、また発電燃料の主となる原油の価格高騰もあり、化石燃料への依存からの脱却は大きな課題となっている。そのため、連邦政府としての公式エネルギー政策「国家気候行動計画（1997 年）」では、再生可能エネルギー（太陽光発電）を積極的に導入し、化石燃料への依存度を低減する方針が明確に示されている。連系型 PV システムを導入する本環境プログラム型無償資金協力（以下、「本計画」と称す）は、その政策に合致しており、「ミ」国からの積極的な協力も得られている。

本計画における対象サイトは連邦政府複合施設とミクロネシア短期大学であり、主管官庁はミ国連邦政府の資源・開発省（Department of Resources and Development: R&D）のエネルギー局（Energy Office）、実施機関は、ポンペイ州の電力事業を担っているポンペイ州公共公社（Pohnpei Utilities Corporation: PUC）が担当する。PUC は、ポンペイ州における電力事業を一手に担っており、ポンペイ州政府より選出された役員５名の下、管理部・経理部・上下水道部・送配電部・発電部の５部署から成り、総勢は 2009 年 7 月時点で 136 名である。また、PUC は民営化、株式会社化されておらず、1991 年に制定された「州法 2L-179-91」に従い、100%ポンペイ州政府により所有されているが、PUC は準政府機関として政府から独立した経営を行っている。

PV システムの導入事例に関しては、本計画の対象地域であるポンペイ州には導入されたことがなく、本計画が初となる。そのため、連系型 PV システムの習得環境が整っておらず、適正な技術を R&D Energy Office や本計画対象サイトの電力設備を管轄する PUC が日常の業務を通じて習得することも困難と判断できる。また、連系型 PV システムは既存の電力系統に連系するため、現地の PUC の協力なくしては成り立たず、更に将来的な普及を考慮した場合でも現地の PUC へ技術移転することが望ましいと判断できる。これらのことから、連系型 PV システムに関する維持管理概念及びその方法を定着させることは若干時間がかかるものと考えられるが、本計画にて実施機関となる PUC へ導入設備の維持管理運転に関する適切な技術移転を、太陽光発電の基礎レベルから太陽光発電設備の維持管理に係る応用レベルまでの広い範囲について、また定着度を確認しながら数回に別けて適正に実施することにより、本計画にて導入する連系型 PV システムの持続的で円滑な維持管理が可能となる。

1) 現状の課題

- 連系型 PV システムに関する維持管理体制が明確化されていない。
- 連系型 PV システムに関する技術知識が乏しい。
- 連系型 PV システムに関する維持管理概念及びその方法についての知識が乏しい。
- 連系型 PV システムに関するトラブルシューティング対応が困難である。
- 連系型 PV システムに適応する電気料金の設定が未定である。

以上、現状の問題点とその改善案をまとめると次表のようになる。

表１　現状の問題点とその改善案

現状の問題点	改善案	必要なソフトコンポーネント
・連系型 PV システムに関する維持管理体制が明確化されていない。	・PUC が主体となり、PUC 内に維持管理体制を確立する。	・最適な維持管理体制の細分化、具体化への提言を行い、関係各機関各者と協議・検討を行う。
・連系型 PV システムに関する技術知識が乏しい。	・連系型 PV システムの維持管理マニュアルを整備する。	・マニュアルの作成及び実施指導を支援する。
・連系型 PV システムに関する維持管理概念及びその方法についての知識が乏しい。	・「独立型」および「連系型」を含めた PV システムに関する技術トレーニングを実施する。 ・モニタリング方法、定期点検方法等モニタリングに関するトレーニングを実施する。	・適正な PV システムに関する技術トレーニングを実施する。 ・適正なモニタリングに関する技術トレーニングを実施する。
・連系型 PV システムに関するトラブルシューティング対応が困難である。	・維持管理マニュアルにはトラブルシューティングも含め策定する。 ・マニュアルの実施指導、啓蒙活動を行い、維持管理が適切に行なわれるようにする。	・マニュアルの作成及び実施指導を支援する。 ・同　上
・連系型 PV システムに適応する電気料金設定が未定である。	・最適な電気料金を設定する。	・最適な電気料金の設定についての提言を行い、関係各機関各者と協議・検討を行う。

(2)　ソフトコンポーネントの目標

本計画の対象機材の運営維持管理について、実施機関である PUC が設備を所有した形態において、維持管理マニュアルに基づき、持続的で円滑な運営維持管理が実施できることを目標とする。

(3)　ソフトコンポーネントの成果

ソフトコンポーネントの成果は以下に示す通りである。

1) 本計画で施設される連系型 PV システムの維持管理マニュアルがトラブルシューティングを含んで作成される。
2) 本計画の連系型 PV システムの基礎的な知識が得られ、機材の維持管理が持続的に行われる。
3) 必要に応じ、最適な電気料金が設定され、持続的で円滑な維持管理体制が構築される。

これらの成果を得るためには、以下の活動を実施する。

以下の活動にあたっては、連系型 PV システムについて無償資金協力の対象地域であるポンペイ州では初めての導入となることから、実施機関である PUC には連系型 PV システムに関する運営維持管理のノウハウはほとんど無いといえる。そのため、太陽光発電の基礎レベルから太陽光発電設備の維持管理に係る応用レベルまでの広い範囲についてトレーニングを実施する。具体的な内容は表２に示すとおりであり、カテゴリー１～４に大別できる。実施工程は、カテゴリー毎にある一定期間を設けて分けて実施することにより、確実かつ効率的な定着を図り、全４回とする。

各実施内容の必要日数ついては、相手国との相互協力でのマニュアル等の作成作業や技術移転からその定着度の確認までと実施内容が幅広く、それらを着実に進めていくために、１週間を最小単位として考える。また、体制については、マニュアル等の作成作業では２チーム構成等にすることで作業効率の向上が図れ、教育では講師１名で講義を主導的に進め、もう１名が受講者のフォローすることで効果的な教育が可能となるため、総括１名・補佐１名の２名体制とする。

表 2 トレーニング内容

カテゴリー	具体的実施内容（目的）	投入量	
1. O&M 体制の構築	1.1 O&M 実施者の責任内容の明確化	0.25MMx2 名	計 1.00MMx2 名
	1.2 最適な電気料金の提言	0.25MMx2 名	
	1.3 「ミ」国側と相互協力にて O&M マニュアルの作成	0.50MMx2 名	
2. 技術トレーニング	2.1 ＰＶシステムの原理と基礎知識	0.25MMx2 名	計 1.25MMx2 名
	2.2 連系型ＰＶシステムの特徴	0.25MMx2 名	
	2.3 連系型ＰＶシステ導入時の検討課題		
	2.4 据付	0.25MMx2 名	
	2.5 点検		
	2.6 運転		
	2.7 メンテナンス		
	2.8 トラブルシューティング	0.50MMx2 名	
3. 管理組織トレーニング	3.1 電気料金徴収方法	0.25MMx2 名	計 0.75MMx2 名
	3.2 O&M マニュアルの適正化	0.25MMx2 名	
	3.3 O&M 体制の評価	0.25MMx2 名	
4. モニタリング	4.1 モニタリング方法の適正化	0.25MMx2 名	計 1.00MMx2 名
	4.2 定期点検	0.25MMx2 名	
	4.3 評価項目	0.25MMx2 名	
	4.4 モリタリング結果報告	0.25MMx2 名	
合　計		4.00MMx2 名	

(4) 達成度の確認方法

実施工程は４回に別け、各工程にて表２のカテゴリーの１～４を順次実施するが、各工程での達成度を以下の通りに確認・評価する。

カテゴリー１：維持管理マニュアルの評価・指導

カテゴリー２：表 2 内 2.1～2.3 理解度確認レポート作成、2.4～2.8 理解度確認レポート作成及び技能評価

カテゴリー３：維持管理者へのインタビュー調査及び実作業評価

カテゴリー４：維持管理者へのインタビュー調査及び実作業評価

(5) ソフトコンポーネントの活動（投入実施計画）

1) ソフトコンポーネント実施内容

本計画対象機材の維持管理方法を具体的に理解し実践してもらうため、ソフトコンポーネント計画にて実施する内容は、前述した表２に記載したとおりである。

2) オリエンテーションの実施

ソフトコンポーネントの実施にあたっては、基本的に実施機関 PUC の協力が不可欠であり、コンサルタントは、ソフトコンポーネントの目的、実施内容、活動スケジュール等についてオリエンテーションを開催し、理解を徹底させる。

「ミ」国からのオリエンテーションへの参加者は、本計画の対象である PUC に加え、主管官庁の R&D Energy Office、対象サイトの連邦政府複合施設およびミクロネシア短期大学からの関係者を含み、ソフトコンポーネント委員会に含まれない関係者に対しても必要なことは情報連係していく。例えば、対象サイトの関係者には、システム設置場所の所有者としてシステム維持管理体制の基本事項について正しく認識してもらうこと、および導入連系型 PV システムへの異変を発見した際等の PUC への連絡ルート構築等、初動体制への協力を仰ぐことを目的としオリエンテーションに参加してもらう。

3) ソフトコンポーネント委員会（仮称）の設置

開始直後、PUC は、ソフトコンポーネントの円滑な実施とソフトコンポーネント終了後の持続的運用を促進するため、ソフトコンポーネント委員会（仮称）を設置する。

同委員会は、ソフトコンポーネントの実質的窓口となり、推進を行うと共に、本計画期間中、本機材の維持管理が持続的かつ円滑に行われるようソフトコンポーネント委員会（仮称）を定期的に主催する。これはソフトコンポーネントの達成状況把握、意見交換、課題討議の場とする。

また、コンサルタントは対象国が本計画終了後も同体制の継続が必要と判断した場合、その継続が円滑に進むようソフトコンポーネント内でサポートしていく。

4) 維持管理マニュアル作成

本計画中に、PUC は、コンサルタントと協議し、維持管理活動を行うためのマニュアルを作成する。「ミ」国側のイニシアティブを引き出すために PUC が主体となり、マニュアルの原案を作成し、それについてコンサルタント側で評価・コメント・フィードバックし、維持管理マニュアルを完成させる。また、この維持管理マニュアルは、トラブルシューティングを含み作成する。

(6) ソフトコンポーネントの実施リソースの調達方法

本件ソフトコンポーネントの活動を有効的に、かつ効率的に行うためには、「ミ」国側にソフトコンポーネント委員会を設置する。ソフトコンポーネント委員会はコンサルタントの意向を十分に汲み取りながら機材据付後の機材の維持管理活動を主体的に行う。この委員会は、PUC から５名程度（例：実際の維持管理者及びその上司）で構成し、実施体制は以下の組織図とする。

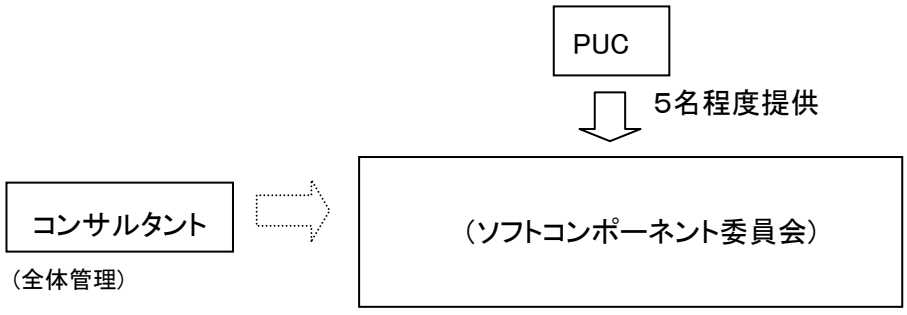


図１　ソフトコンポーネント実施体制（案）

表 3　ソフトコンポーネント活動役割分担

担　当	日本人コンサルタント	PUC
本計画の組織	2 名	5 名程度 （実際の維持管理者及びその上司）
本計画の運営方法	全体の進捗状況の管理	業務全体の管理・実際の維持管理
電気料金	提　言	検討・決定
本計画内容のオリエンテーション	説　明	開　催
維持管理マニュアル	助　言	原案作成
維持管理のフォローアップ	管理・指導	結果の提出
報告先	在ミクロネシア日本大使館 及び JICA	日本人コンサルタント

本計画で導入される連系型 PV システムは日本製となる予定であることから、それらの設備は日本の電力品質確保に係る系統連系技術要件ガイドラインに準拠したものとなる。そのため、ソフトコンポーネント実施者は、そのガイドラインを熟知した日本人コンサルタントが望ましい。

(7)　ソフトコンポーネントの実施工程

ソフトコンポーネントの実施工程は図 2 のとおりで表 2 に示すカテゴリー毎に実施していく。また、それぞれのカテゴリーの実施時期については以下のとおりである。

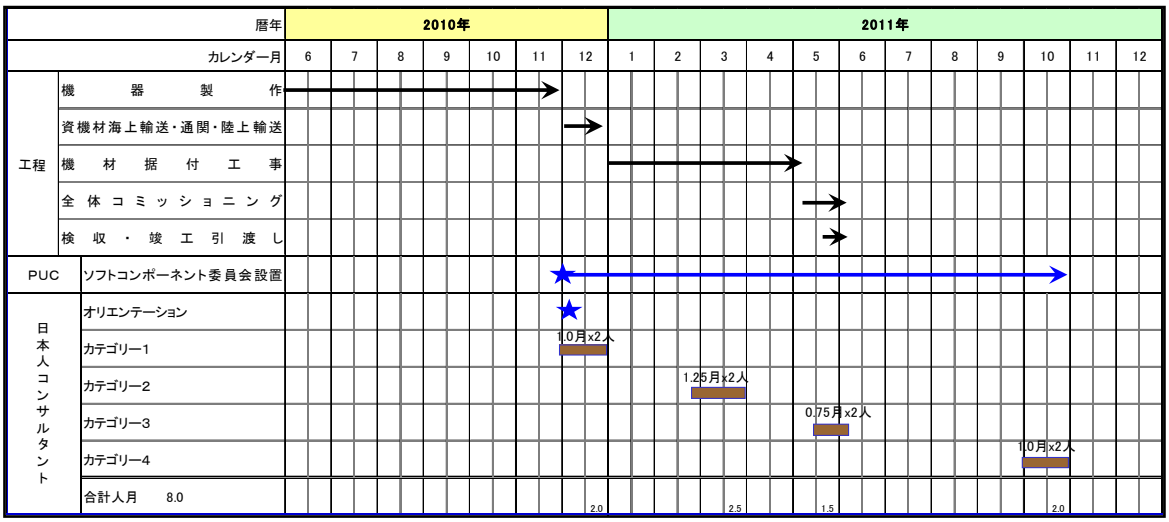
カテゴリー１：維持管理体制構築の支援を目的に行うことから、また機材据付前に維持管理体制を明確化させておくことは設備据付時における当事者意識を喚起できることから、設備据付以前に実施する。

カテゴリー２：据付・点検・運転等について実設備を利用し行うため、据付工事の半ば頃に実施する。

カテゴリー３：設備が運開するまでに備えておくべき維持管理マニュアル等について行うため、設備運開前に実施する。

カテゴリー４：「ミ」国側が自主的に維持管理できているかを確認することに焦点を置き実施するため、据付完了後約４ヶ月を目途に実施する。

本計画対象機材は、新規に据付けされるシステムであり、ほとんど基礎からシステムの維持管理体制を作り上げる必要がある。そのため、ソフトコンポーネントは据付工事開始前から開始し、基礎レベルから順次実施していく。



＊進捗状況報告書については、各工程の終了後、施主に提出する。

図 2　ソフトコンポーネント実施工程

(8)　ソフトコンポーネントの成果品

本計画のソフトコンポーネント実施により得られる成果品は次の通りである。

1) オリエンテーション開催記録
2) ソフトコンポーネント委員会の開催記録
3) 進捗状況報告書
4) 理解度確認レポート
5) 実際の維持管理者へのインタビュー調査及び実作業評価の結果
6) 維持管理マニュアル

(9)　相手国機関の責務

1)　PUC は、本ソフトコンポーネント実施に協力するソフトコンポーネント委員会を設置する。
2)　PUC は、本ソフトコンポーネント実施に必要となる作業室等を用意する。
3)　PUC は、本ソフトコンポーネントに必要な人員を提供する。
4)　ソフトコンポーネント委員会は、コンサルタントと協議し、維持管理マニュアルの作成を自ら実施する。
5)　PUC は、コンサルタントの提言に基づき、必要に応じて導入する連系型 PV システムに最適な電気料金を検討・決定する。
6)　PUC は、維持管理マニュアルに基づき、連系 PV システムを適切に維持管理していく。
7)　PUC は、維持管理マニュアルに基づいた一定期間においては、実績報告を日本人コンサルタントへ提出する。

資料-7　参考資料／入手資料リスト

7. 参考資料／入手資料リスト

調査名： ミクロネシア連邦国 太陽光を活用したクリーン・エネルギー導入計画準備調査

番号	名 称	形態 図書・ビデオ・地図 ・写真等	ｵﾘｼﾞﾅﾙ・ｺﾋﾟｰ	発 行 機 関	発行年
1	Infrastructure Development Plan (FY2004 – FY2023)	図書	コピー	Department of Transportation, Communications & Infrastructure	2004
2	Statistical Yearbook Federated States of Micronesia 2008	図書	コピー	Office of Statistics, Budget & Economic Management, Overseas Development Assistance & Compact Management (SBOC)	2008
3	Environmental Impact Assessment Regulations	図書	コピー	Pohnpei Environmental Protection Agency	1995
4	Financial Statements and Additional Information and Independent Auditors' Report (2007-2008)	図書	コピー	Pohnpei Utilities Corporation	2009
5	Preparation of Operation and Rates Analysis (Interim Report)	図書	コピー	Ridgway Capital Projects Limited	2006

資料-8　プロジェクトの裨益効果

８．プロジェクトの裨益効果

(1) ディーゼル燃料消費量の節減効果

PUC より入手した 2004 年から 2008 年の NANPOHNMAL ディーゼル発電所の運転実績から、発電電力量(kWh)当たりの燃料消費量を次のとおり算出した。

表 － 1 ディーゼル発電所燃料消費量

FY	Exported power	Fuel consumption [litter]	Fuel cost [US Dollar]	Unit fuel consumption [litter / kWh]	Unit fuel cost [US Dollar / kWh]
2004	38,920,480	10,677,445	4,074,718	0.274	0.105
2005	37,590,730	10,309,913	3,977,759	0.274	0.106
2006	36,751,090	10,167,915	6,162,076	0.277	0.168
2007	36,499,450	10,196,966	8,484,587	0.279	0.232
2008	34,395,740	9,548,553	11,183,601	0.278	0.325
Average	36,831,498	10,180,158	6,776,548	0.276	0.187

出所：PUC からの入手資料より調査団にて作成

上記 2004～2008 年の平均 kWh 当たり燃料消費量 0.276 litter/kWh を適用すると、年間燃料節減量は、

年間燃料節減量［litter］
＝（Capital 年間発電電力量［kWh］＋COM 年間発電電力量［kWh］）× 0.276 [litter/kWh]
＝（72,548 ＋ 63,469）× 0.276
＝ 37,541 litter

となる。

設備導入から本計画の目標年次である 2016 年まで 6 年間の燃料節減量を算出すると、

2016 年までの燃料節減量＝37,541 litter × 6 年＝225,246 litter

となる。

2)CO2 排出量の削減効果

(1)で算出した年別ディーゼル燃料削減量を基に、以下の係数を用いて CO_2 排出量の削減効果を算出する。

CO_2削減量［kg］＝ 軽油CO_2排出係数 × ディーゼル燃料節減量
＝ 2.62 [kg-CO_2/liter] × ディーゼル燃料節減量 [litter]
＊ 排出係数については平成19年3月環境省地球環境局の「総排出量算定方法ガイドライン」を引用。

その結果、年間 CO_2 排出削減量は

年間 CO_2 排出削減量［kg］＝ 2.62［kg-CO_2/liter］× 年間ディーゼル燃料節減量 [litter]
＝ 2.62 × 37,541
＝ 98,357［kg］

となり、2011 年から 2016 年の 6 年間で、

2016 年までの CO_2 排出削減量［ton］＝　年間 CO_2 排出削減量［kg］/1000 × 6 年
＝　98,357 / 1000　× 6
＝ 590［ton］

の CO_2 排出削減が可能である。