

資料-1 調査団員・氏名

1. 調査団員・氏名

1-1 協力準備調査

担当業務	氏名	所属
総括	松永 龍児	JICA 気候変動対策室副室長
計画管理	安元 孝史	JICA 資金協力支援部 実施監理第三課
調達監理計画	白石 喜久	JICS 業務第一部 企画・管理課
副業務主任/太陽光発電システム 2 /環境社会配慮 2	元木 要	ICONS 国際協力株式会社
系統連系太陽光発電システム 2 /関連制度・基準 2	櫻井 正博	ICONS 国際協力株式会社 (補強)
系統連系太陽光発電システム 4 /関連制度・基準 4	泉川 雅弘	四国電力株式会社
機材・設備計画 2 /維持管理体制 3	栗田 貴之	ICONS 国際協力株式会社
調達計画/積算 2	石井 優一	ICONS 国際協力株式会社
建築設計/業務調整 1	鶴岡 葉介	八千代エンジニアリング株式会社

1-2 概略設計概要説明調査

担当業務	氏名	所属
総括	千賀 和雄	独立行政法人 国際協力機構 マーシャル諸島支所長
業務主任/太陽光発電システム 1 /環境社会配慮 1	小川 忠之	八千代エンジニアリング株式会社
副業務主任/太陽光発電システム 2 /環境社会配慮 2	元木 要	ICONS 国際協力株式会社
系統連系太陽光発電システム 1 /関連制度・基準 1	藤沢 慶哲	四国電力株式会社
系統連系太陽光発電システム 4 /関連制度・基準 4	泉川 雅弘	四国電力株式会社
調達計画/積算 1	阿部 真	八千代エンジニアリング株式会社

資料-2 調査行程

2. 調査行程

大洋州地域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

(マーシャル諸島国)

2-1 協力準備調査

日数	月日	曜日	調査内容		宿泊地
			官団員	コンサルタント	
			総括:松永 龍児 計画管理:安元 孝史 調達監理計画:白石 喜久	元木 要、櫻井 正博、泉川 雅弘、栗田 貴之、 石井 優一、鶴岡 葉介	
1	6月28日	日	→マジュロ	●成田 → グアム ●関西空港→グアム(泉川団員のみ)	グアム
2	6月29日	月	●外務省表敬 ●資源開発省表敬 ●日本大使館表敬 ●事務次官室表敬 ●エネルギータスクフォースチームとの会合	●グアム → マジュロ	マジュロ
3	6月30日	火	●資源開発省、マーシャル電力公社との合同ミーティング ●太陽光発電システム据付対象地視察	●資源開発省表敬 ●マーシャル電力公社への表敬、打合せ ●資源開発省へのインセプション・レポート、質問票の説明、協議 ●サイト調査(マジュロ 病院) ●サイト調査(マーシャル高校)	マジュロ
4	7月1日	水	●資源開発省とミニッツに関する協議 ●太陽光発電システム据付対象地視察	●資源開発省とミニッツに関する協議 ●資源開発省、マーシャル電力公社との技術的協議 ●サイト調査(マーシャル諸島短期大学) ●サイト調査(マジュロ空港 集水地)	マジュロ
5	7月2日	木	●ミニッツ署名 ●大使館報告 ●JICAマーシャル支所への報告	●ミニッツ署名 ●大使館報告 ●JICAマーシャル支所への報告	マジュロ
6	7月3日	金	●マーシャル国祝日	●サイト調査(マーシャル電力公社発電所、市中配電状況) ●サイト調査(マジュロ 病院) ●資源開発省、マーシャル電力公社との技術的協議	マジュロ
7	7月4日	土	●マジュロ→ホノルル(松永総括、白石団員)	●データ整理、情報収集 ●サイト調査(マーシャル電力公社発電所、市中配電状況)	マジュロ
8	7月5日	日	●マジュロ→コロール(安元団員)	●データ整理、情報収集	マジュロ
9	7月6日	月		●資源開発省、マーシャル電力公社の技術的協議 ●サイト調査(マジュロ 病院) ●市場調査 ●環境社会配慮関連調査	マジュロ
10	7月7日	火		●サイト調査(マーシャル電力公社発電所) ●資源開発省、マーシャル電力公社との技術的協議 ●市場調査	マジュロ
11	7月8日	水		●市場調査 ●資源開発省、マーシャル電力公社との技術的協議 ●保健省、資源開発省との会合	マジュロ
12	7月9日	木		●資源開発省、マーシャル電力公社との技術的協議 ●保健省、資源開発省との会合	マジュロ

日数	月日	曜日	調査内容		宿泊地
			官団員	コンサルタント	
			総括:松永 龍児 計画管理:安元 孝史 調達監理計画:白石 喜久	元木 要、櫻井 正博、泉川 雅弘、栗田 貴之、 石井 優一、鶴岡 葉介	
13	7月10日	金		<ul style="list-style-type: none"> ●フィールドレポート署名 ●大使館報告 ●JICAマーシャル支所報告 	マジュロ
14	7月11日	土		●マジュロ → グアム	グアム
				●マジュロ → ポンペイ(鶴岡団員のみ)	ポンペイ
15	7月12日	日		●グアム → 成田	

2-2 概略設計概要説明調査

日数	月日	曜日	調査内容		Stay at
			官団員	コンサルタント	
			総括 千賀 和雄	小川 忠、元木 要、藤沢 慶哲、泉川 雅弘 阿部 真	
1	11月29日	日		●成田→グアム	グアム
2	11月30日	月		●グアム→マジュロ	マジュロ
3	12月1日	火	<ul style="list-style-type: none"> ●大使館表敬 ●団内打ち合わせ(JICA支所) ●外務省表敬、協議 ●資源開発省、協議 ●マーシャルエネルギー公社表敬、協議 ●概要設計概要説明、ミニッツ案協議 		マジュロ
4	12月2日	水	<ul style="list-style-type: none"> ●入札図書説明 ●サイト調査、発電所調査、配電状況調査 		マジュロ
5	12月3日	木	<ul style="list-style-type: none"> ●ミニッツ署名 ●大使館報告 		マジュロ
6	12月4日	金	●資料整理およびデータ解析(「マ」国祝日)		マジュロ
7	12月5日	土	●マジュロ → ポンペイ		ポンペイ

資料-3 関係者(面会者)リスト

3. 関係者（面談者）リスト

3-1 協力準備調査

<u>所属団体、氏名</u>	<u>役職</u>
資源開発省 (Ministry of Resources and Development)	
Mr. Thomas Kijiner Jr.	Secretary
Ms. Rebecca Lorrenij	Deputy Secretary
Mr. Nick Wardrop	Energy Adviser
Ms. Angeline Haine	Energy Planner
Mr. Walter Myazoe	Energy Officer
外務省 (Ministry of Foreign Affairs)	
Ms. Kino S. Kabua	Secretary
保健省 (Ministry of Health)	
Dr. Mane Paul	Assistant Secretary
Mr. Russell Edwards	Assistant Secretary
Mr. Franei Siu	BT Counselor
財務省 (Ministry of Finance)	
Mr. Bruce Bifimon	Assistant Secretary Customs, Treasury, Revenue & Taxation
マーシャルエネルギー公社 (Marshalls Energy Company)	
Mr. Steve Wakefield	Manager
Mr. Steve Gooden	Director Distribution Technical
Mr. Roger Wirson	Director, Physical Plant
環境保護局 (Environmental Protection Authority)	
Mr. Michal Honeth	Coastal Advisor
Mr. Terry Keyin	Deputy General Manager
経済政策・計画・統計局 (Economic Policy, Planning and Statistics Office)	
Mr. Carl Hacker	Director
マーシャル諸島短期大学 (Collage of Marshall Islands)	

Mr. Roger Wilson

Director of Physical Plant

在マーシャル日本国大使館

Prof. Dr. Kazuyuki Ohdaira
Mr. Tomoaki Miyamoto

Charge'd' Affaires
Adviser(Economic and Technical Cooperation)

JICA マーシャル事務所

Mr. Kazuo Senga
Mr. Takayuki Murakami

Resident Representative
Volunteer Coordinator

[現地建築業者]

Pacific International, Inc.

Mr. Jerry Kramer
Mr. Robert "Bobby" Muller

Chief Executive Officer
Project manager

MJCC

Mr. Hideo Kikuchi
Mr. Robert "Bobby" Muller

Managing Director
Account Dept

Anil Development, Inc. / DAR sales & services

Mr. Charles T. Dominic

Managing Director

[レンタカー業者]

Japan Recycle Corporation

Mr. Susumu Yoshimura

General Manager

ELM Motor

Mr. Henry Lin

General Manager

3-2 概略設計概要説明調査

資源開発省 (Ministry of Resources and Development)

Mr. Thomas Kijiner Jr.
Ms. Rebecca Lorrenij
Ms. Angeline Haine
Mr. Walter Myazoe

Secretary
Deputy Secretary
Energy Planner
Energy Officer

外務省 (Ministry of Foreign Affairs)

Ms. Kino S. Kabua Secretary

保健省 (Ministry of Health)

Dr. Mane Paul Assistant Secretary
Mr. Russell Edwards Assistant Secretary
Mr. Franei Siu BT Counselor

財務省 (Ministry of Finance)

Mr. Bruce Bifimon Assistant Secretary
Customs, Treasury, Revenue & Taxation

マーシャルエネルギー公社 (Marshalls Energy Company)

Mr. Steve Wakefield Manager
Mr. Roger Wirson Director, Physical Plant

環境保護局 (Environmental Protection Authority)

Mr. Michal Honeth Coastal Advisor
Mr. Terry Keyin Deputy General Manager

マーシャル諸島短期大学 (Collage of Marshall Islands)

Mr. Roger Wilson Director of Physical Plant

資料-4 討議議事録(M/D)

**Minutes of Discussions
of the Preparatory Survey
of the Project for the introduction of Clean Energy
by Grid-Connected Solar Electricity Generation System**

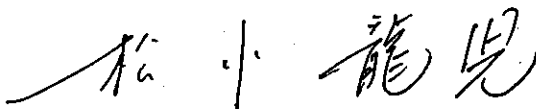
The Government of Japan (hereinafter referred to as "GoJ") has established Cool Earth Partnership as a new financial mechanism. Through this, GoJ is cooperating actively with developing countries' efforts to reduce greenhouse gasses emissions, such as efforts to promote clean energy. A new scheme of 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 the introduction of Clean Energy by Grid-Connected solar electricity generation system in the Republic of Marshall Islands (hereinafter referred to as "the Project").

JICA sent to Marshall Islands the Preparatory Survey Team (hereinafter referred to as "the Team"), headed by Mr. Ryuji MATSUNAGA, Deputy Director General, Office for Climate Change, JICA, and is scheduled to stay in the country from June 29 to July 11 as the Preparatory Survey for Detailed Design.

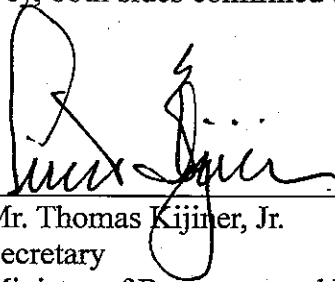
The Team held discussions with the concerned officials of the Government of the Republic of Marshall Islands (hereinafter referred to as "RMI") and conducted a field survey.

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

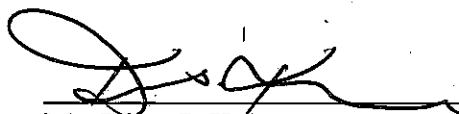
Majuro, July 2, 2009



Mr. Ryuji MATSUNAGA
Leader
Preparatory Survey Team
Japan International Cooperation Agency
JAPAN



Mr. Thomas Kijiner, Jr.
Secretary
Ministry of Resources and Development
Republic of the Marshall Islands



Ms. Kino S. Kabua
Secretary
Ministry of Foreign Affairs
Republic of the Marshall Islands



Mr. Steve Wakefield
Manager
Marshall's Energy Company (MEC)

ATTACHMENT

1. Current Situation

Based on the result of the previous project formulation study and the official request from the Government of RMI, Detailed Design and Draft Tender Documents shall be created under the Survey.

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 national grid.

3. Responsible Organization and Implementing Agency

The responsible organization is the Ministry of Resources and Development (MRD). (The organization chart of the responsible ministry is shown in Annex-1.)

The implementing agency is the Marshalls Energy Company (MEC). (The organization chart of the implementing organization is shown in Annex-2.)

4. Project Component

4-1. After discussions with the Team, the installation of the on-grid power generating system using photovoltaic including following equipment was requested by RMI side.

- (1) Photovoltaic (PV) Module (Panel) (total capacity between 160 – 200 kW)
- (2) Junction Box
- (3) Power Conditioner
- (4) Transformer
- (5) Data collecting and display device

4-2. Project site is the Majuro Hospital as shown in Annex-3

4-3. The RMI side explained that there is no duplication between the contents of the Project and any other plans being implemented by the other donors or the RMI side.

4-4. The Team will assess the appropriateness of the request and will report the findings to JICA Headquarters and the GoJ. The RMI side has understood that the final components and the design of the Project shall be decided (confirmed) after further survey.

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

The RMI side understood the Japan's Program Grant Aid for Environment and Climate Change scheme explained by the Team as described in Annex-4, 5 and 6.

6. Schedule of the Study

- (1) The Team will proceed to further survey in RMI until July 10, 2009.
- (2) JICA will prepare the draft report and reference document in English and dispatch a mission to RMI in order to explain their contents in the end of November, 2009.

- (3) When the contents of the report are accepted in principle by the Government of RMI, JICA will complete the final report and reference document, and submit them to the Government of RMI 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 RMI side confirmed that major undertakings as shown in Annex-7 should be taken by RMI side at its own budget. In addition, the RMI side should be responsible for the following issues;

(1) Securing necessary land

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

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

(3) Vehicles for Operation and Maintenance

(4) Tables and PCs, if necessary

7-2 Land Acquisition Procedures

The RMI side agreed to complete all necessary procedures for official land acquisition for the above 7-1 (1) by the end of September, 2009.

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 RMI side agreed with the policy of GoJ.

7-4 Coordination with Related Organizations

The Responsible Organization for the Project (MRD) shall be the focal point for the Team, and responsible for the coordination with related organizations.

7-5 Application of the Related Laws and Regulations

The Responsible Organization for the Project (MRD) shall be responsible for the application of related laws and regulations for the operation of the Grid-Connected PV system before commissioning of the Project.

7-6 Property of Equipment and Materials

The Responsible Organization for the Project (MRD) shall own the equipment and materials provided under the Project during and after implementation of the Project.

7-7 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 RMI side. The RMI side took the JICA Guideline into consideration, and shall complete the necessary procedures.

7-8 Operation and Maintenance

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

7-9 Customs and Tax exemption

The RMI side agreed that the RMI side shall be responsible for the exemption and/or reimbursement (payment/assumption) of all customs, tax, levies and duties incurred in RMI for implementation of the Project.

7-10 The RMI side shall ensure the security of all concerned Japanese nationals working for the Project, if deemed necessary.

7-11 The RMI side shall provide necessary numbers of counterpart personnel to the Team during the period of their studies in RMI.

7-12 The RMI side shall submit all the answers to the Questionnaire, which the Team handed to the RMI side on July 10, 2009.

<List of Annex>

Annex-1 Organization Chart of Ministry of Resources and Development

Annex-2 Organization Chart of Marshalls Energy Company

Annex-3 Project site / Candidate site of the Project

Annex-4 Japan's Environment Program Grant Aid Scheme

Annex-5 Flow of Funds for Project Implementation

Annex-6 Project Implementation System

Annex-7 Major Undertakings to be taken by Each Government

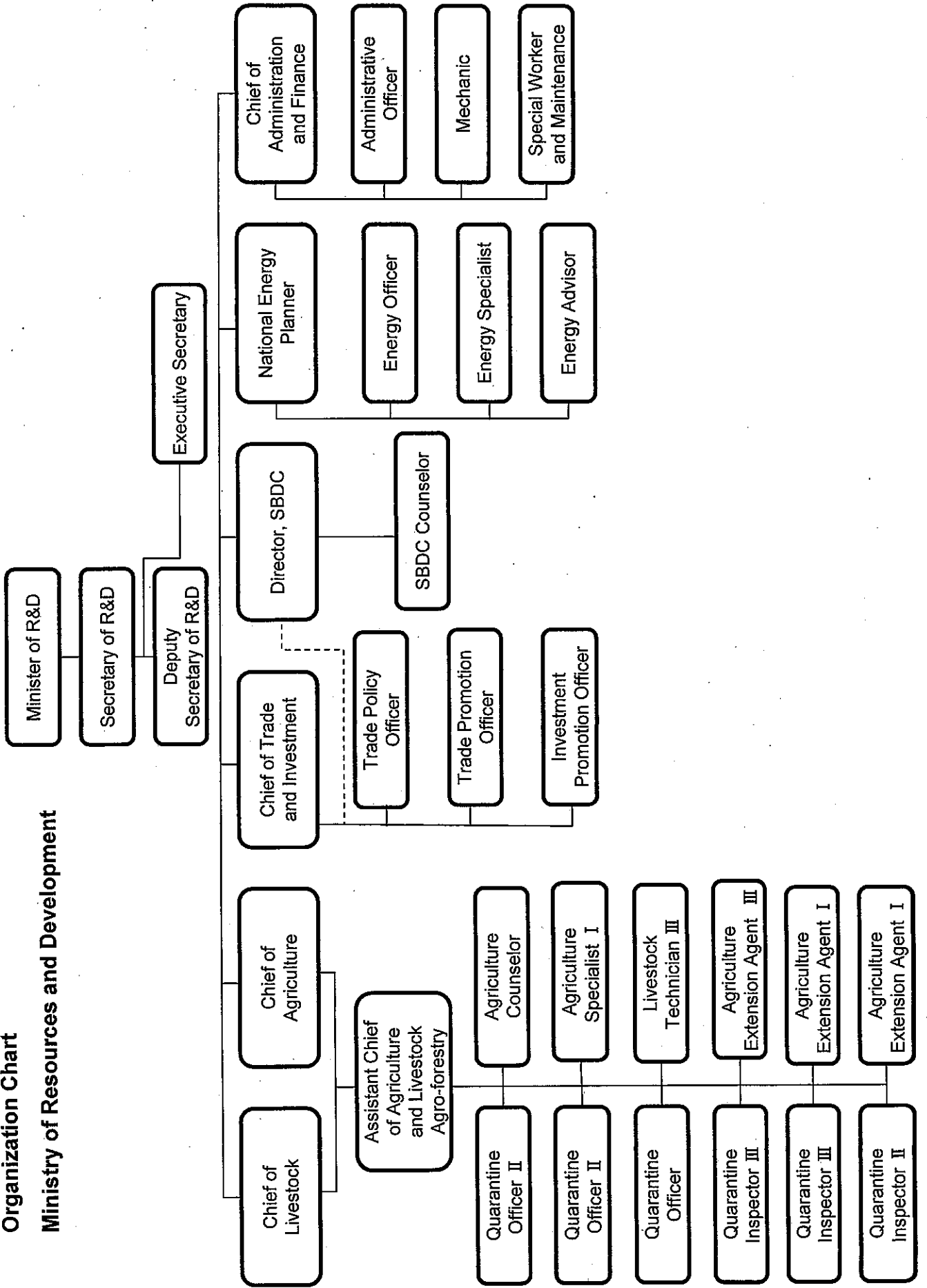
Annex-8 Terms of Reference of the Consultative Committee (Provisional)

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**Organization Chart
Ministry of Resources and Development**



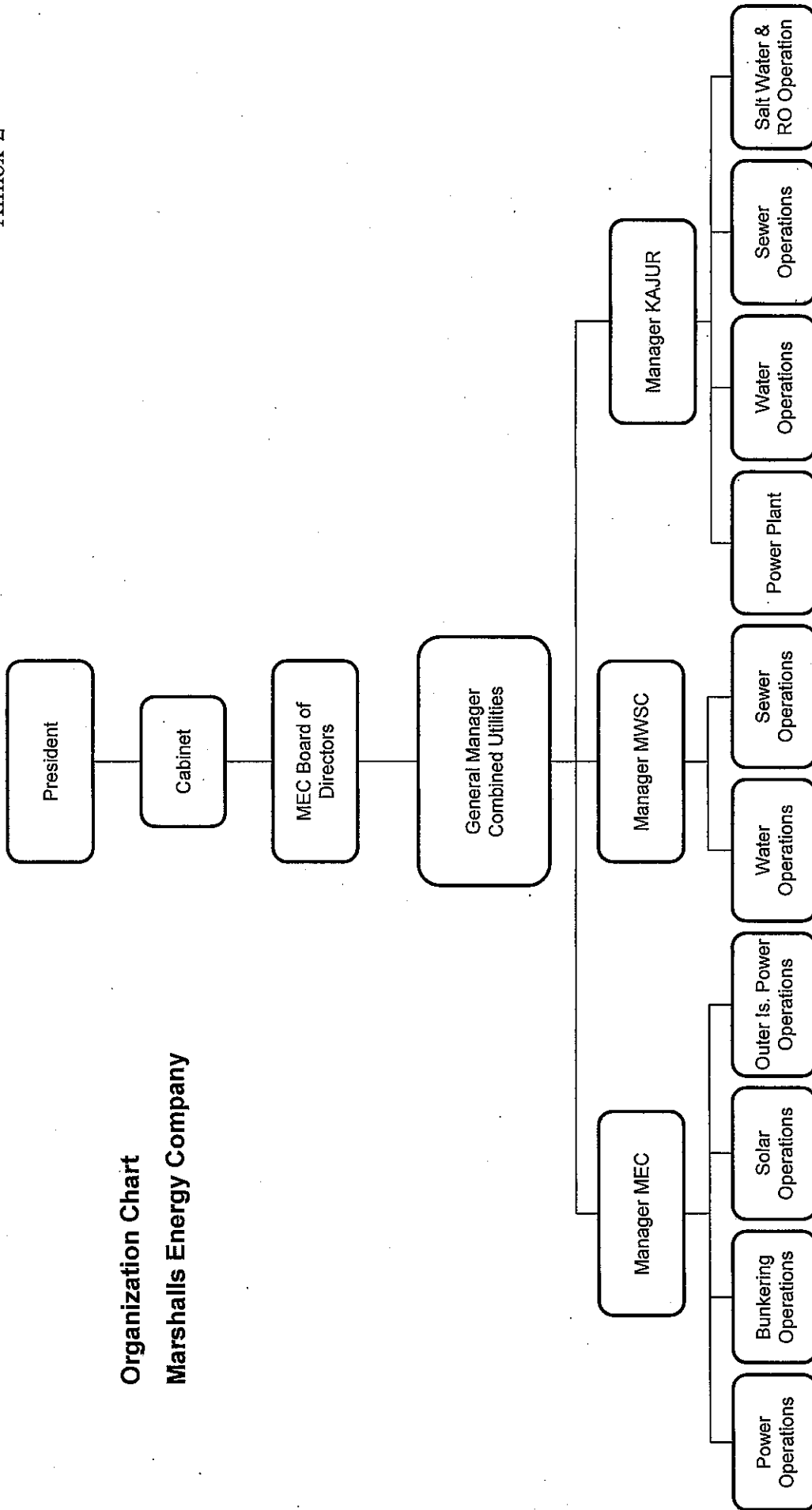
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**Organization Chart
Marshall's Energy Company**



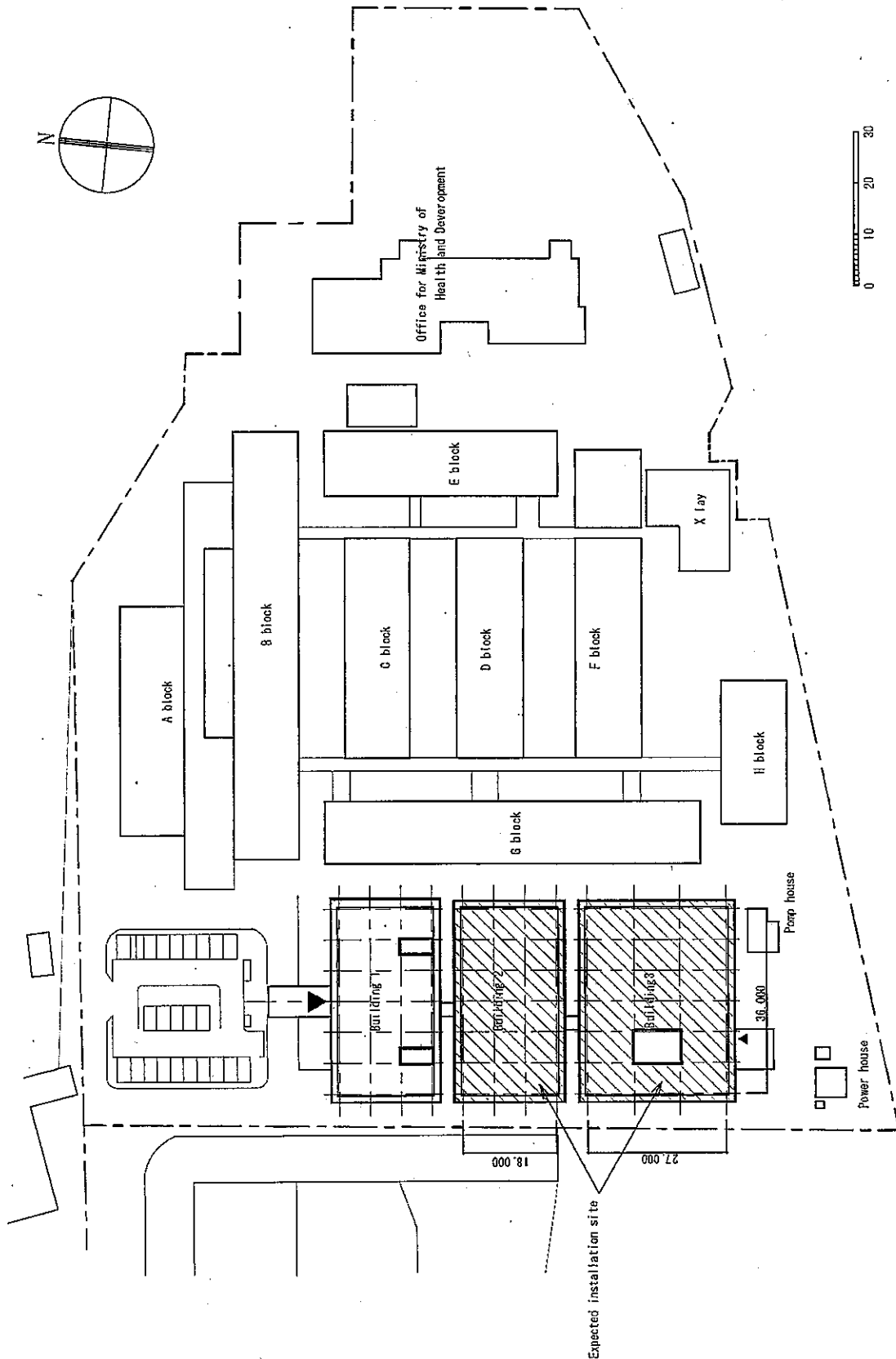
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Candidate Site of the Project



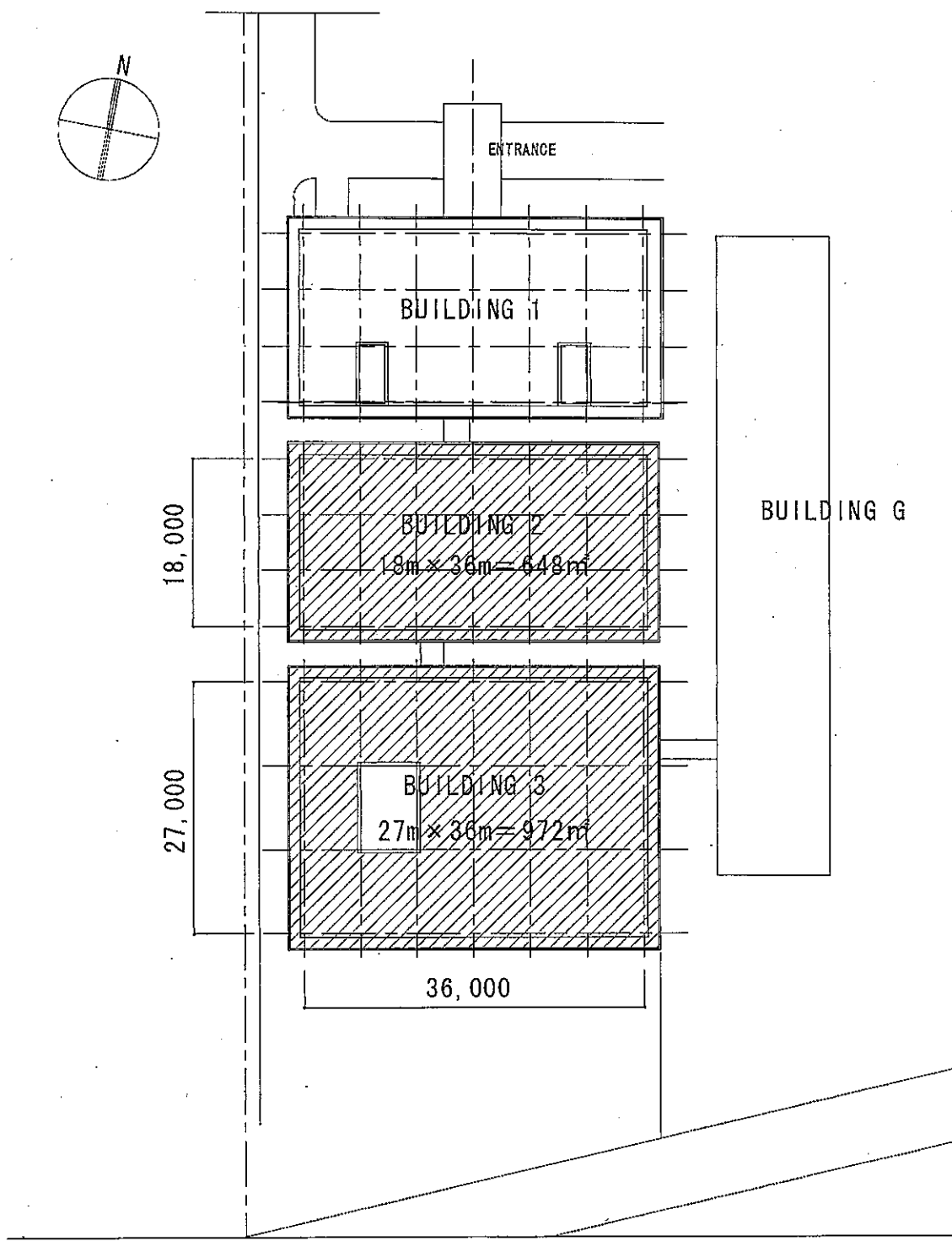
MAJURO HOSPITAL LAYOUT PLAN

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Candidate Site of the Project



SPACE FOR INSTALLATION OF PV PANEL ON THE ROOF TOP OF BUILDING 2 AND 3 OF MAJURO HOSPITAL

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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 (Phase 1)	Preparatory Survey (Phase 1 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 (Phase 2)	Preparatory Survey (Phase 2 for detailed 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.

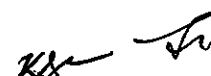
Secondly, the Recipient submits the official request to the Government of Japan, while the appropriateness, necessity and the basic components of the project are examined in the course of Phase 1 of the Survey,

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

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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.

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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.


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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 Survey

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


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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.

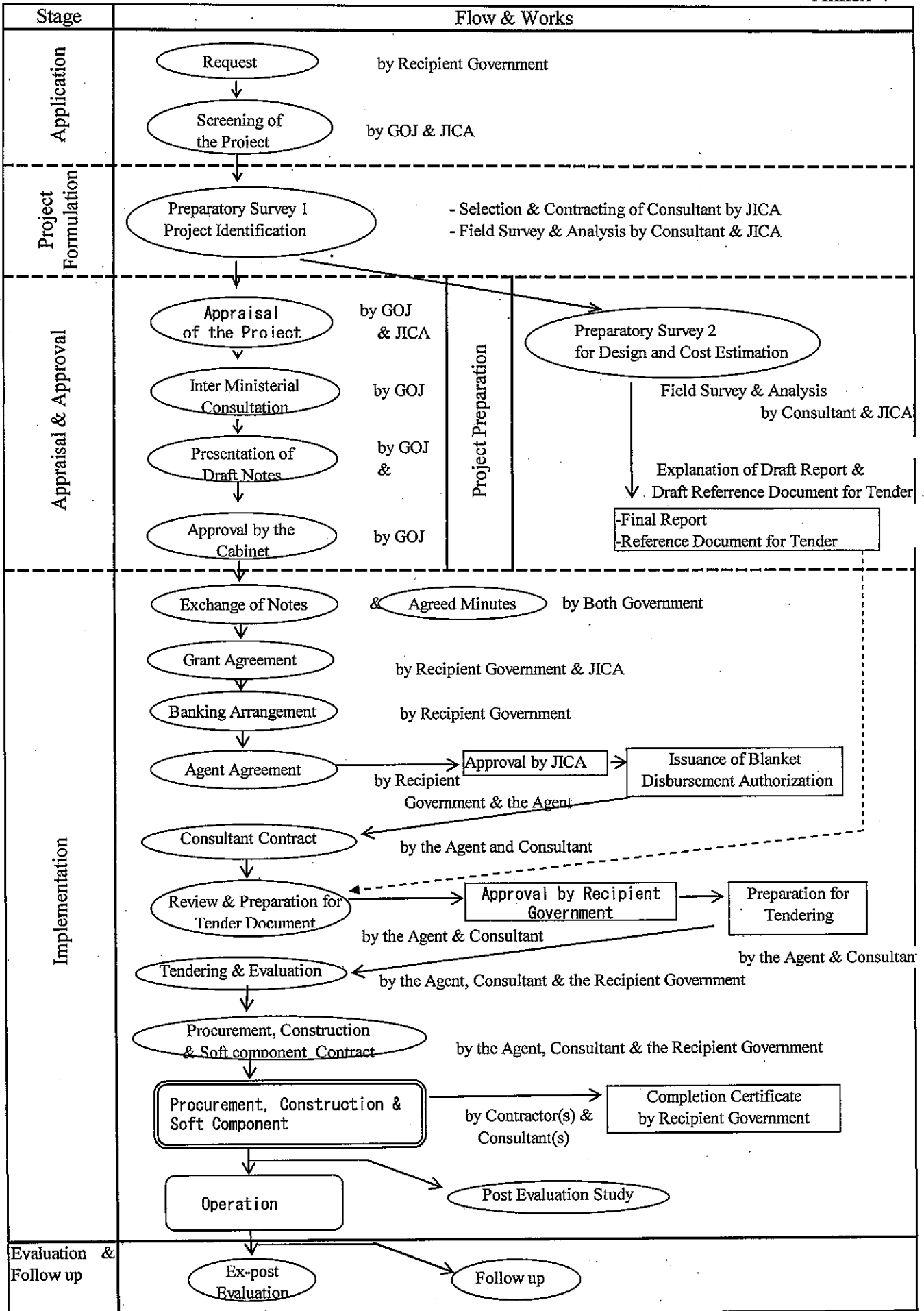
6) "Export and Re-export" of products

The products purchased under the Grant and its accrued interest will not be exported or re-exported from the Recipient.


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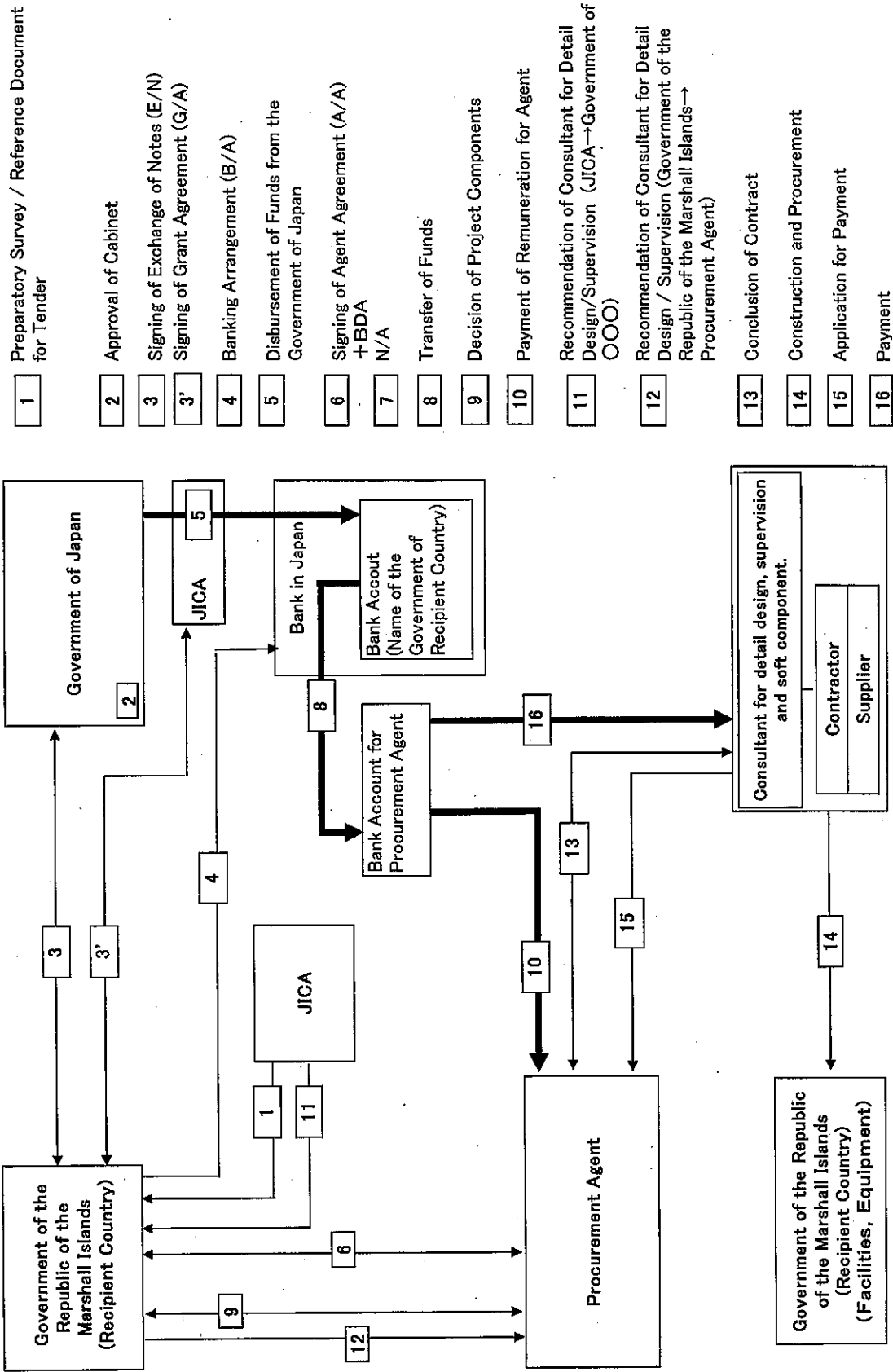




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Flow of Funds for Project Implementation

 Implementation Flow
 Cash Flow

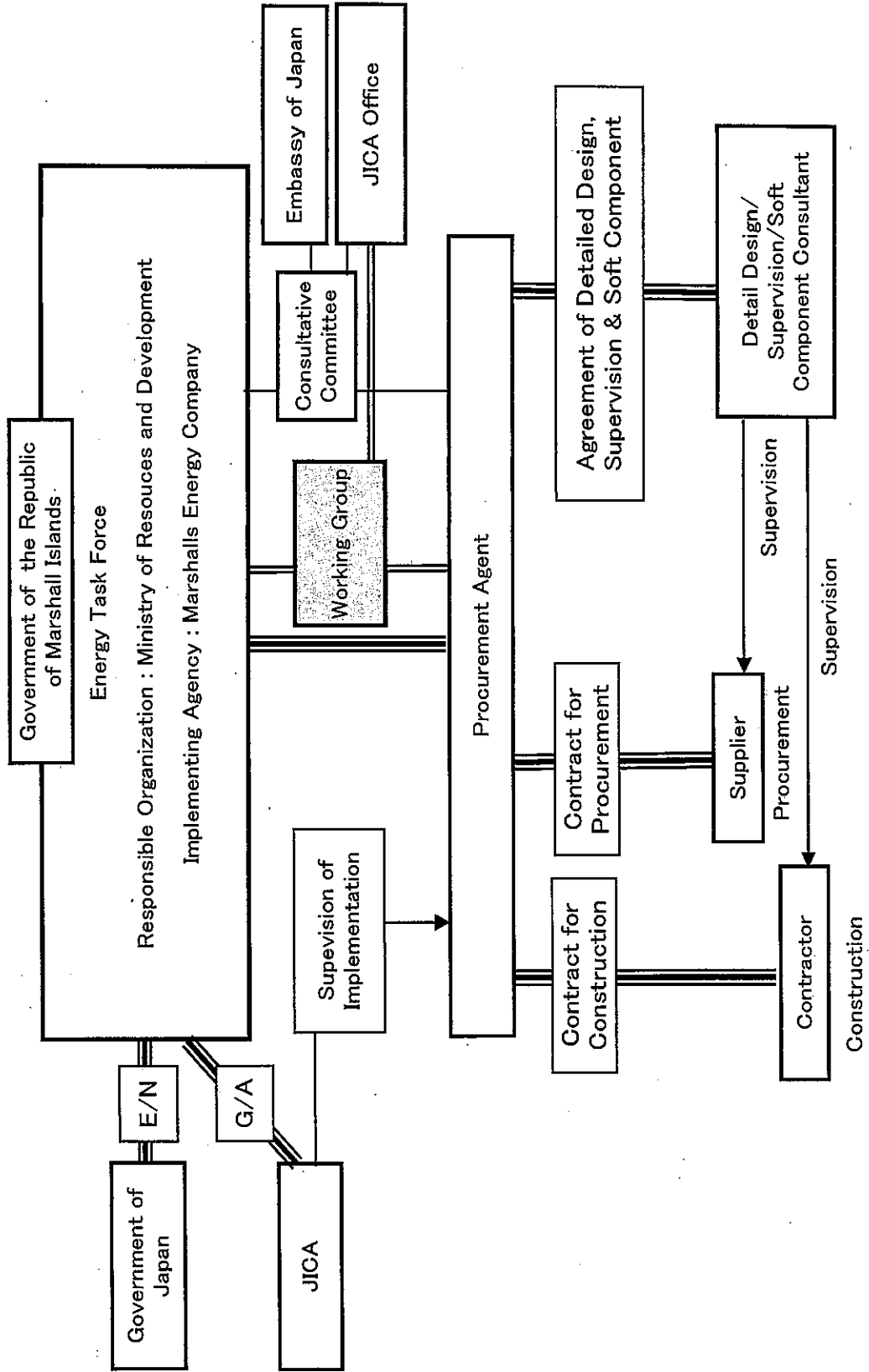


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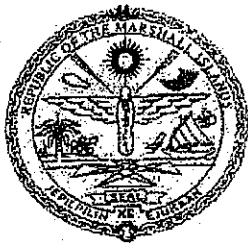
Project Implementation System



A-4-7

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**REPUBLIC OF THE MARSHALL ISLANDS
MINISTRY OF RESOURCES & DEVELOPMENT**

Post Office Box 1727
Majuro, Marshall Islands 96960
Phone: (692) 625-3206 Fax: (692) 625-7471
Email: rn1sec@ntamar.net

ENERGY TASK FORCE

The Energy Task Force was created during the event of the Economic Emergency 2003. The Energy Task Force role is to mitigate issues relating to fuel crises and other energy related issues.

Members: Chief Secretary Casten Nemra (Chairman), Deputy Secretary Jorelik Tiboni (Chairman), Secretary Tommy Kijiner, Jr. (RND), Secretary Kino Kabua (MOFA), Yumi Crisistomo (OEPPC), Deborah Manase (OEPPC), Secretary Wilbur Heine (IA), Carl Hacker (EPPSO), Roger Cooper (MAWSC), Ben Graham (Consultant), Steve Wakefield (MEC), and Angeline C. Heine (Energy Division, RND), *Energy Adviser (Nick Wardrop Ministry of Finance (Kayo Yamaguchi-Kotton))*

Implementation for Outer Island Solar System

In terms of implementing the Solar Units, there is an existing MOU between the Ministry of Resources & Development (RND) and Marshall's Energy Company (MEC). The MOU states that while the RND through its Energy Division is responsible for the development and implementation of the country's renewable energy power projects and other related issue, the MEC is mandated to provide, install, operate, and maintain the renewable energy power projects in the RMI, with necessary technical assistance.

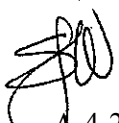
MOFA: Ministry of Foreign Affairs
RND: Ministry of Resources & Development
IA: Ministry of Internal Affairs
EPPSO: Economic Planning Policy Statistics Office
OEPPC: Office of Environment Planning and Policy Coordination
MAWC: Majuro Atoll Waste Company
MEC: Marshall Islands Energy Company
MOU: Minutes of Understanding

Major undertakings to be taken by each Government

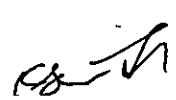
No.	Items	To be covered by Grant Aid	To be covered by Recipient Side
1	To secure land		●
2	To clear, level and reclaim the site when needed urgently		●
3	To construct gates and fences in and around the site		●
4	To construct a parking lot if necessary		●
5	To construct roads		
	1) Within the site	●	
	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.		●

Terms of Reference of the Consultative Committee (Provisional)

1. To confirm an implementation schedule of the Program for the speedy and effective utilization of the Grant and its accrued interest.
2. To discuss the modifications of the Program, including modification of the design of the facility.
3. To exchange views on allocations of the Grant and its accrued interest as well as on potential end-users.
4. To identify problems which may delay the utilization of the Grant and its accrued interest, and to explore solutions to such problems.
5. To exchange views on publicity related to the utilization of the Grant and its accrued interest.
6. To discuss any other matters that may arise from or in connection with the G/A.


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Minutes of Discussions
on
the Outline Design Study
on
The Project for Introduction of Clean Energy by Solar Electricity Generation System
in the Republic of the Marshall Islands

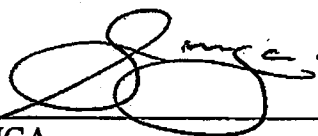
(Explanation on Draft Final Report)

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 Republic of the Marshall Islands (hereinafter referred to as "RMI"), and through discussions, field survey and technical examination of the results of the survey in Japan, JICA prepared a Draft Final Report of the Outline Design.

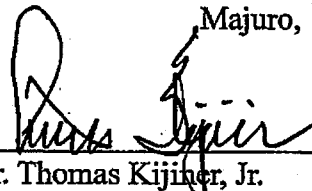
In order to explain and to consult with the concerned officials of the Government of RMI on the component of the Draft Final Report, JICA sent RMI the Draft Final Report Explanation Team (hereinafter referred to as "the Team"), which is headed by Mr. Kazuo SENGA, Representative of Office of RMI, JICA, from 30th November 2009 to 5th December 2009.

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

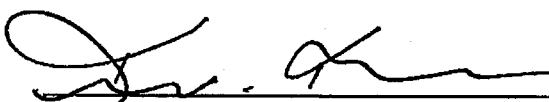
Majuro, 3rd December, 2009



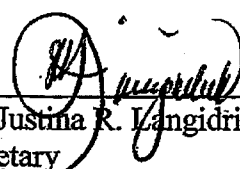
Mr. Kazuo SENGA
Leader
Preparatory Survey Team
Japan International Cooperation Agency
JAPAN



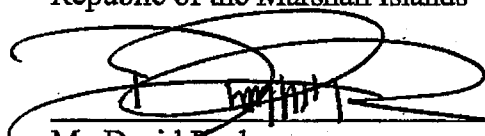
Mr. Thomas Kijiner, Jr.
Secretary
Ministry of Resources and Development
Republic of the Marshall Islands



Ms. Kino S. Kabua
Secretary
Ministry of Foreign Affairs
Republic of the Marshall Islands



Ms. Justina R. Langidrik
Secretary
Ministry of Health
Republic of the Marshall Islands



Mr. David Paul
General Manager
Marshall's Energy Company (MEC)
Republic of the Marshall Islands

ATTACHMENT

1. Components of the Draft Final Report

The Ministry of Resources and Development (hereinafter referred to as "MRD"), Ministry of Foreign Affairs, and Marshalls Energy Company (hereinafter referred to as "MEC") agreed and accepted in principal 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 RMI side understood components of the Minutes of Discussion signed by both sides on 2nd 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 site and capacity of PV module

Both sides confirmed that project site is Majuro Hospital and the capacity of PV module is 192kW.

3-2. Official permission to set the PV system on the project site

Both sides confirmed completion of necessary procedures for official permission from related organization to set the PV system on the roof of Majuro Hospital.

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 RMI side agreed that if there is a remaining amount of the Project cost after tenders, additional items of equipment would be procured based on priorities which were set in the Final Report.

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

6. Project Cost

The RMI side agreed that the Project cost should not exceed the upper limit of amount agreed on in 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.

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 all 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 tender for the Project. The RMI 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 RMI side understood that the MRD 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 Ministry of Resources and Development (Chair)
- (2) Representative of Ministry of Foreign Affairs
- (3) Representative of Ministry of Finance
- (4) Representative of Ministry of Health
- (5) Representative of Marshalls Energy Company
- (6) Representative of JICA Marshall Islands 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 MRD 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 RMI 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 RMI side to abide by the following undertakings by the RMI side in addition to major undertakings described in the previous M/D. The RMI side agreed to do so.

(1) Land Acquisition for PV system

The Responsible Organization for the Project (MRD) issued a Memorandum to Ministry of Health to utilize the New Hospital Wing (Building-2, Building-3) Roof for installation of PV Module on 30th June, 2009.

In response to the above request, Ministry of Health agreed to install the PV system as requested by the MRD on 9th of July, 2009 as shown in Annex-4. Therefore, the RMI side has completed all necessary procedures for official land acquisition for the following equipment and materials for PV system ;

- 1) for PV Modules

- 2) for underground cables between equipment
- 3) for Power Conditioners

(2) Generated Energy by PV system

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

(3) Environmental and Social Considerations

The RMI side agreed that the MRD shall be responsible for obtaining necessary permission by Environment Protection Agency (EPA) by 15th of January, 2010. The RMI side shall report the result to JICA Marshall Islands Office. The Team shall provide necessary data and information for the application.

(4) Application of the Related Laws and Regulations

There are no official laws and regulations to be applied on building design and construction work in RMI. Therefore, the RMI side agreed the structural design for the roof top installation of PV system shall comply with the Architectural Regulation in Japan.

Electrical design for Grid-connected PV system should be done in accordance with JIS/IEC.

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

(5) Customs and Tax Exemption

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

(6) Assignment of Counterpart Personnel

1) Overall project management

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

The RMI side shall inform the name of the following number of Counterpart Personnel to JICA Marshall Islands office by 15th of January, 2010:

- Two staff from MRD
- Two staff from MEC

2) Soft Component

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

The RMI side shall inform the name of the following number of Counterpart Personnel to JICA Marshall Islands office by 15th of January, 2010:

- One staff from MRD
- Five staff from MEC

(7) Banking Arrangement

The RMI 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 RMI side designates the Procurement Agent as the representative authorized to act in the name of the RMI 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 voltage power cable with the load side of existing switchgear shall be done by RMI side. Japanese side is responsible for the procurement of necessary terminal equipment for the same connection work. However the RMI side is responsible for the procurement of the double bushing.

(9) Arrangement for the remote monitoring system

All necessary work for the Internet connection(LAN) for the proposed electrical room in Majuro Hospital and MEC's power plant shall be arranged by the RMI side.

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

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

The RMI side has reconfirmed that the RMI Government, through MRD, is the owner of equipment and the Marshalls Energy Company (MEC) is responsible for Operation and Maintenance (O&M) of equipment. The RMI side confirmed that the Equipment procured under the Project shall be operated and maintained in accordance with the existing Franchise Agreement dated on 15th April 2003 between MRD and MEC. The Team explained that the RMI side 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 RMI 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-4 Utilization of New Hospital Wing Roof for Grid-connected Solar PV

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.

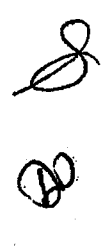
Those tenderers which substantially conform to the technical specifications and other stipulations of the tender documents, will be judged in principle on the basis of the submitted price, and the tenderer who offers the lowest price will be designated as the successful tenderer.

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.

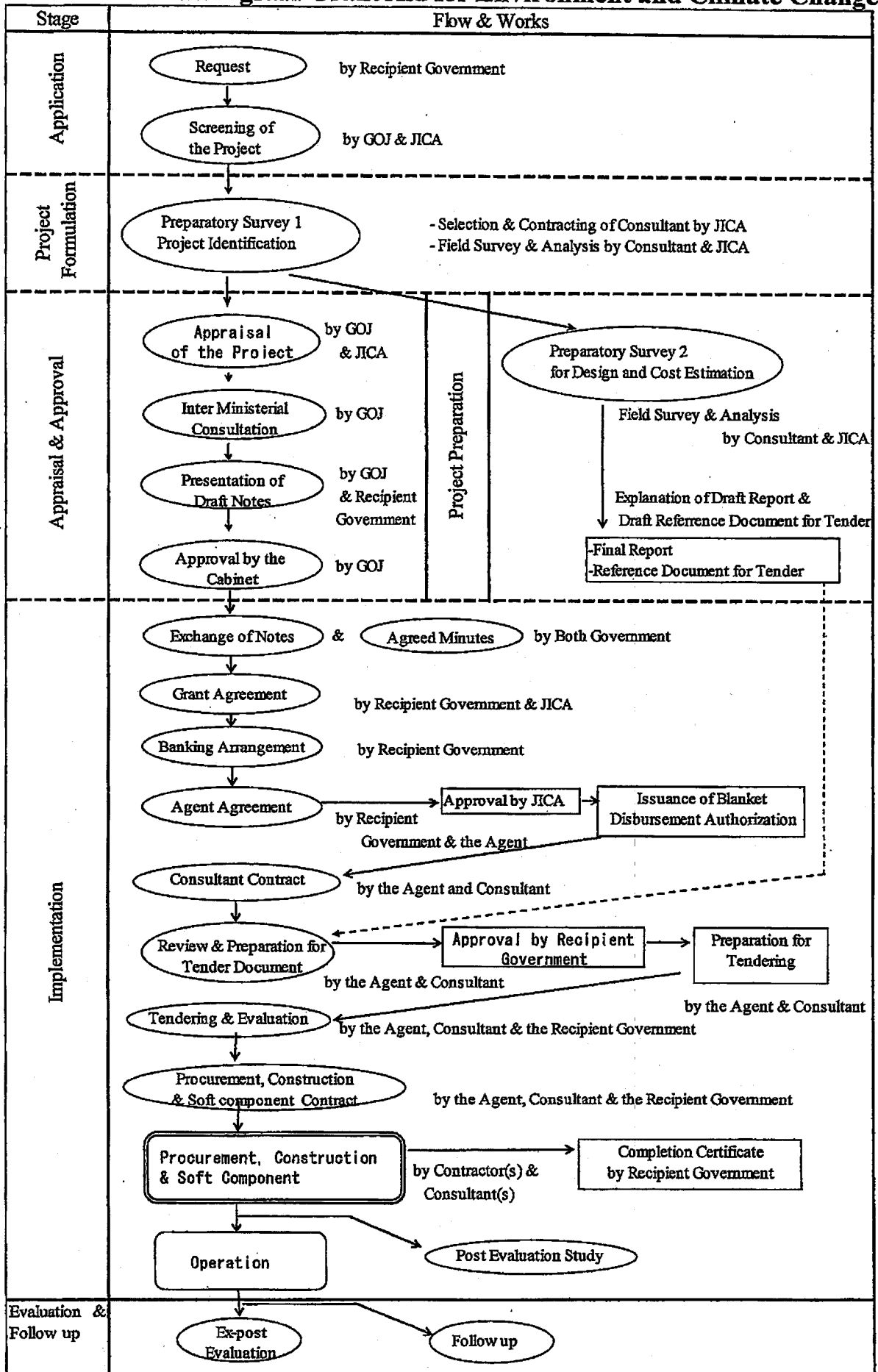
5) "Proper use of funds"

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.

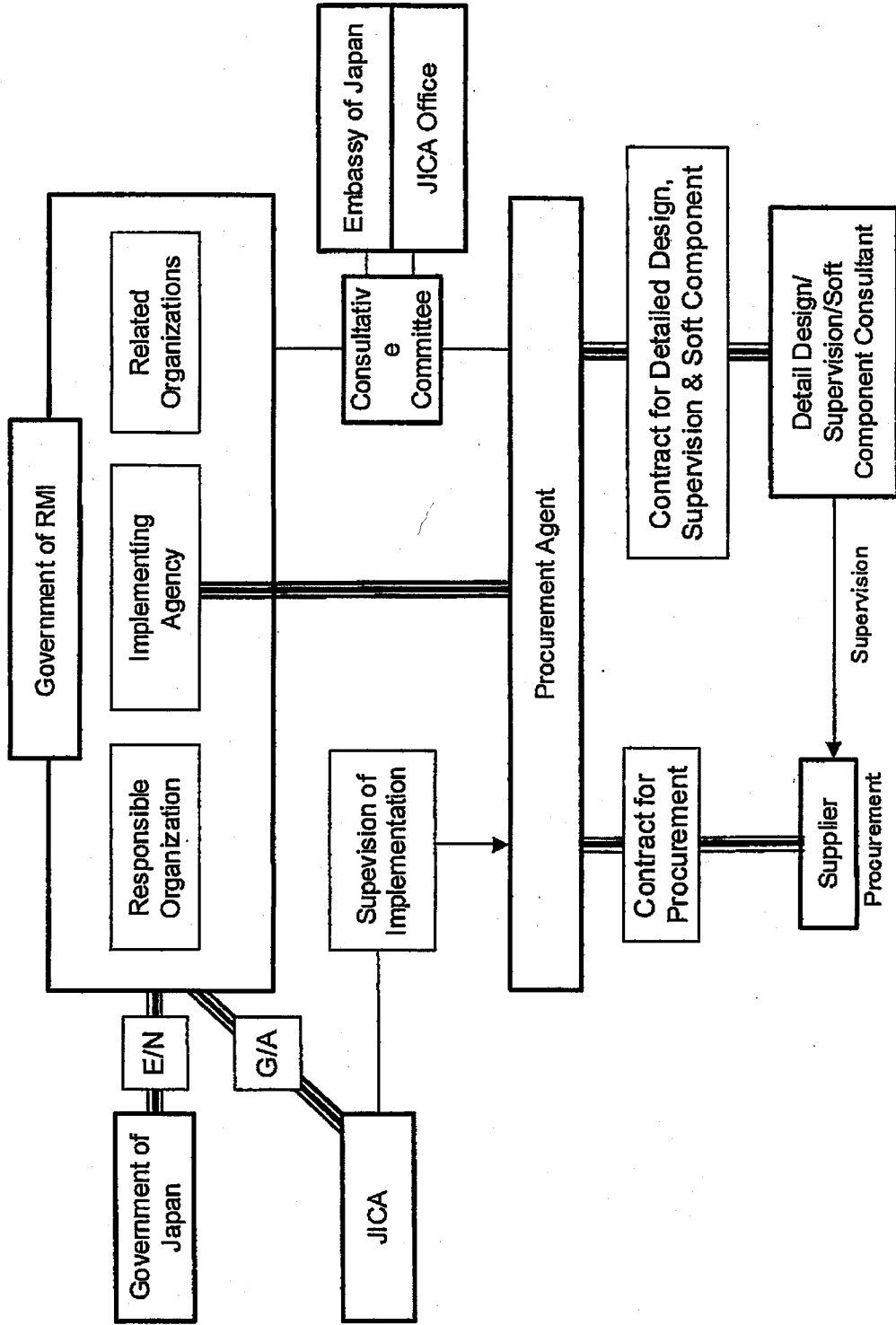
6) "Export and Re-export" of products

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

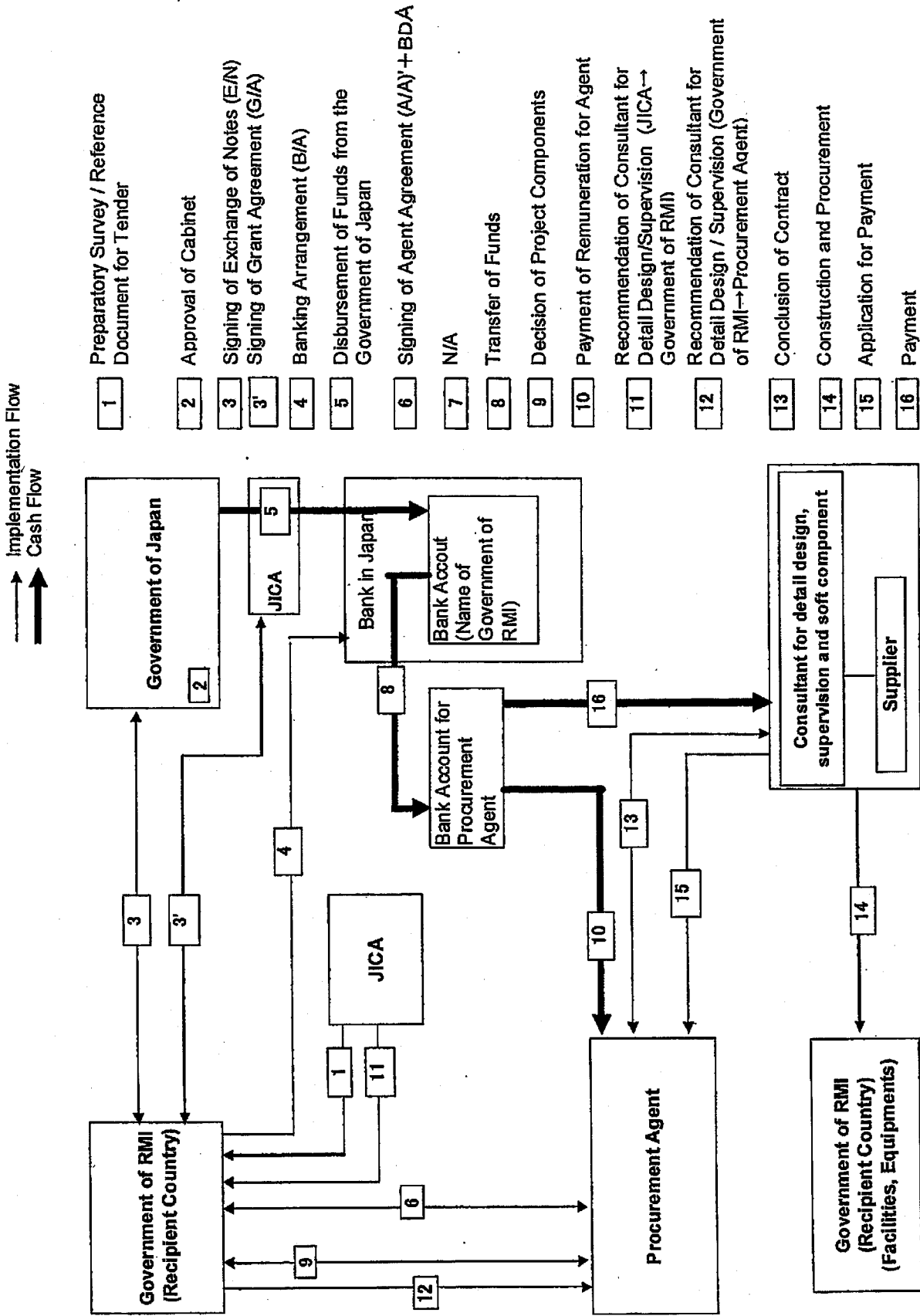


Project Implementation System



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Flow of Funds for Project Implementation



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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	939 pcs.	Majuro Hospital
2	Mounting structure for Photovoltaic Module	1 lot	Majuro Hospital
3	Junction Box	19 unit	Majuro Hospital
4	Collecting Box	4 unit	Majuro Hospital
5	Power conditioner	2 unit	Majuro Hospital
6	Transformer	1 unit	Majuro Hospital
7	Display board	1 lot	Majuro Hospital
8	Data management and monitoring system	1 lot	Majuro Hospital
9	Cables and Conduits	1 lot	Majuro Hospital
10	Test Equipment	1 lot	Majuro Hospital
11	Maintenance Tools	1 lot	Majuro Hospital
12	Spare Parts	1 lot	Majuro Hospital
13	Power conditioner (for replenishment)	1 unit	Majuro Hospital

1-2 List of optional equipments

The following table shows the list of optional equipments.

Item No.	Name of Equipment	Final Delivery Point (Site)
1	Photovoltaic Module	Majuro Hospital
2	Power conditioner	Majuro Hospital

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 ¥ 503.6 million

Item	Amount (Million Japanese Yen)
1. Procurement cost of equipment and materials	430.3
2. Procurement Agent & Consulting Services Fee	73.3
3. Total (1+2)	503.6

2. Cost to be borne by the RMI side: US\$ 6,000 (approximately ¥ 0.6million)

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

Item	Amount
1. High voltage side connection work and connection section works	1,500 US\$ (Approximately ¥0.15 million)
2. Payment of commission to Japanese bank	5,300 US\$ (Approximately ¥0.53 million)
3. Total (1+2)	6,800 US\$ (Approximately ¥0.68 million)

Operation and Maintenance Cost on the Marshall Islands side are as follows:

The equipment to be procured in the Project is basically maintenance-free, however, it will be necessary to always keep replacement parts on hand. Moreover, in cases of periodic inspections or when abnormal situations or breakdowns occur, it will be necessary to dispatch MEC engineers and thereby incur personnel expenses. Therefore, the Marshall Islands side will need to budget for the following operation and maintenance expenses (annual) to ensure that no problems arise in the operation and maintenance of equipment.

(1) Personnel expenses	Approximately 20,000US\$ (Approximately 2 million yen)
(2) Expendable and replacement parts costs	Approximately 20,000US\$ (Approximately 2 million yen)
(3) Total	Approximately 40,000US\$ (Approximately 4 million yen)

Since the above cost amounts to no more than approximately 1% of the Marshall Islands

distribution system operation and maintenance budget in 2008 (approximately 18,785,000 US\$/year), there should be no major problem in securing the operation and maintenance costs for the Project.

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.



Republic of the Marshall Islands
MINISTRY OF HEALTH
P.O. Box 15
Majuro, Marshall Islands 96960



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July 9, 2009

TO : Thomas Kijner, Jr.
Secretary of Resources and Development

FROM : Secretary of Health

SUBJECT : Utilization of New Hospital Wing Roof for Grid-connected Solar PV

I am pleased to inform you that you have my concurrence as per the request, in reference to the installation of the Grid-connected Solar PV system at the new hospital wing roof, as specified in the memorandum. In furtherance, I believe the project will benefit the Ministry of Health as well as reduce the electrical loads carried by the Majuro Energy Company.

Thank you.


Justina B. Langidrik, MPH

Cc: Rebecca Lorenz, Assistant Secretary
Mr. Nick Wardrop, Adviser



REPUBLIC OF THE MARSHALL ISLANDS
Ministry of Resources and Development
P.O. Box 1727
Majuro, Marshall Islands MH 06960

MEMORANDUM

Date: June 30, 2009

To: Mrs. Justina Langitrik
Secretary of Health

For Info: Minister of Resources & Development
Minister of Health
Acting Chief Secretary
Hospital Administrator
MEC Manager
National Energy Planner

From: Secretary of Resources & Development

Subject: Utilization of New Hospital Wing Roof for Grid-connected Solar PV

I am pleased to reference our telephone discussion this morning regarding the utilization of the roof of the New Wing at the Majuro Hospital as the site for the installation of a grid-connected solar PV project.

As background, the grid-connected solar PV project will be funded under the Japanese Government's Cool Earth Initiative. The project is worth approximately \$4,000,000 (USD Four Million). It is anticipated that a system between 160 to 200 kW power rating will be installed.

As you are aware, the existing rooftop space in Majuro does not always provide the ideal space necessary to install larger grid-connected solar PV systems. The new wing of the Majuro Hospital is being considered because:

1. There is sufficient roof space on the new hospital wing to house a system of this size;
2. The blue-print for the building, which is required in determining its structural integrity, is readily accessible; and

Tel.: (692) 625-3206/4020 • Fax: (692) 625-7471 • Email: rndsec@ntamar.net

資料-5 事業事前計画表(概略設計時)

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
マーシャル諸島国 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）
<p>本計画は「マ」国産エネルギーの活用によるエネルギー源の多様化と気候変動対策に資する電力供給体制の構築に寄与することを上位目標とし、実施される。</p> <p>「マ」国においては2008年7月の石油価格高騰のあおりを受け、国家緊急事態宣言の発令がなされており、その後再生可能エネルギー利用への期待が大きく高まっている。またライフラインである電力を米国からの自由連合盟約（COMPACT）による財政援助や他国からの援助（我が国のノンブローなど）に大きく依存しており、国家として健全とは言えない状況にある。現在、「マ」国では、ディーゼル発電が主たる発電源動力となっている。また「マ」国では、エネルギー全体の90%は輸入燃料に依存しており、燃料の価格変動がエネルギーの供給体制に大きく影響を及ぼす非常に脆弱な状況にあり、エネルギー供給体制の強化が課題となっている。かかる状況からの脱却のため、「マ」国は、2001年の国家社会・経済サミット（第2回）の開催後、「マ」国の2003年から2018年にわたる15カ年の経済開発計画である、国家構想2018（Vision 2018）を示し、その中で国家経済、社会開発、教育促進などの分野の政策と併せて国家エネルギー政策（National Energy Policy）を2003年に制定した。さらに「マ」国は、「社会経済の発展のため、「マ」国の全国民に、入手可能で、信頼性が高く、持続可能なエネルギーを供給すること」を今後15年のエネルギー分野の展望として示し、次のゴールを設定した。①2015年までに都市部は100%の世帯、離島部では95%の世帯の電化を行う。②2020年までにエネルギーの20%を再生エネルギーにて供給する。③2020年までに一般世帯およびビジネス関連施設の50%、政府関連施設の75%のエネルギー利用効率の向上。④2015年までにMECのエネルギー供給ロスの20%削減。</p> <p>これらゴールには、将来的には再生エネルギーの活用を含めての全国民への電力供給を目指すことが示されており、太陽光発電はその中核的な存在と位置づけられている。</p> <p>その意味でも当国において再生可能エネルギーを有効活用する意義は非常に大きい。そのため、今回グリッド接続型太陽光発電設備を設置し、輸入燃料への依存度を軽減し国家としての自立性を高めるとともに、昨年発生したようなエネルギー危機からのインパクトを軽減させることが重要である。</p> <p>また、本計画は、マジュロ病院を対象施設として実施される。本計画の実施により温室効果ガスの削減と経済成長の取り組みの両立を目指す「マ」国政府の取り組みに寄与する。またマジュロ病院は第一次、第二次医療施設を兼ねており多くのマーシャル国民により利用されていることから、本計画により、マジュロ病院に太陽光発電設備が設置されることにより、マーシャル国民の太陽光発電、再生可能エネルギー利用への認識を深めさせることができる。</p>
3. プロジェクト全体計画概要
<p>(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）</p> <p>本計画の実施により、マジュロ環礁の電力系統により供給される、マジュロ市住民合計約2.6万人に対し、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</p> <p>(2) プロジェクト全体計画の成果</p> <ol style="list-style-type: none">1) <u>系統連系型太陽光発電設備の調達・据付が行われる。</u>2) 太陽光発電を利用した電力が供給される。 <p>(3) プロジェクト全体計画の主要活動</p> <ol style="list-style-type: none">1) <u>系統連系型太陽光発電設備の調達・据付を行う。</u>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。 <p>(4) 投入（インプット）</p>

<ul style="list-style-type: none"> 1) <u>日本側：無償資金協力 5.27 億円</u> 2) 相手国側 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 1) 主管官庁： 資源開発省（MRD） 2) 実施機関： マーシャルエネルギー公社（MEC）
4. 無償資金協力案件の内容
<ul style="list-style-type: none"> (1) サイト マジュロ病院 (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 5.27 億円（無償資金協力 5.26 億円、「マ」国側負担 0.01 億円） (5) 工期 入札期間を含め約 26 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
<p>特になし</p>
6. 過去の類似案件からの教訓の活用
<p>特になし</p>
7. プロジェクト全体計画の事後評価に係る提案
<ul style="list-style-type: none"> (1) プロジェクト全体計画の目標達成を示す成果指標 本調査でマジュロ発電所のディーゼル発電設備の運転実績（燃料消費量）がなかったため、主に常時運転している 6.4MW ディーゼル発電機の燃料消費量を基に試算を行った。結果は以下のとおり。 <ul style="list-style-type: none"> ① ディーゼル燃料消費量：2009 年比で 2011 年に 56,032 リットルの削減。 ② CO2 排出量：2009 年比で 146 トンの削減。 (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

添付資料-6 ソフトコンポーネント計画

ソフトコンポーネント計画

(1) ソフトコンポーネントを計画する背景

マーシャル諸島国（以下、「マ」国と称す）におけ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、発電燃料の主となる原油の価格高騰の影響もあり、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。一方、「マ」国は、国家エネルギー政策を2003年に制定し、「社会経済の発展のため、全国民に、入手可能で、信頼性が高く、持続可能なエネルギーを供給すること」を今後15年のエネルギー分野の展望として示した。さらに、2009年7月に新国家エネルギー政策およびエネルギー行動計画（National Energy Policy and Energy Action Plan）を制定し、再生可能エネルギーの活用など連系型PVシステムを導入することを含めて、エネルギー政策を実施するための具体的な計画を示している。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計画（以下、「本計画」と称す）は、その政策にも合致しており、「マ」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マジュロ国立病院であり、主管官庁は「マ」国政府の資源開発省（Ministry of Resources and Development: MRD）、実施機関は、マ国の電力事業を担っているマーシャルエネルギー公社（Marshalls Energy Company: MEC）が担当する。MECは、マジュロに電力部門と水道部門を有しており、電力部門では、マジュロ発電所、燃料販売、太陽光発電および離島の発電所（イバイなど）事業を管轄している。MECは総勢176名の比較的小さな組織であり、100%政府保有の株式会社（公社）であるが、株式を民間資本に買収される可能性は一切ないことを本調査にて確認している。

PVシステムの導入事例に関しては、離島部の電化促進のために、EUや台湾などの援助により、約1,470台のSHSが設置されている。また、本計画の対象地域であるマジュロでは、マーシャル短期大学（College of Marshall Islands）に、本年6月、米国の援助により、60kWの太陽光発電設備が設置されており、構想としては2011年までに200kW程度の太陽光発電設備がグリッド連系される計画であるが、現在は学内の消費に留まっている。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、エネルギー政策を担当するMRDや本計画対象サイトの電力設備を管轄するMEC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、MEC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MECへ技術移転することが望ましいと判断できる。

一方、MEC技術者に関しては、離島のSHSの維持管理を指導する技術者が若干名おり、運用管理実績もあることから、基本的な太陽光発電についての知識は有しているものと判断できる。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MECへ導入設備の維持管理運転に関する適切な技術移転を、連系型PVシステムの基礎レベルから維持管理に係る応用レベルまでの広く浅い範囲について、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システムに適應する電気料金が未定である。

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。	・MEC が主体となり、MEC 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 システムの維持管理マニュアルを整備する。 ・「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。	・マニュアルの実施指導を支援する。 ・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 MEC が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、本計画の対象地域であるマジロでは、マーシャル短期大学に連系型 PV システムが建設中であるが、まだ普及段階ではないため、実施機関である MEC 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、確実に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については、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 チーム構成等によること

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 「マ」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 P Vシステムの原理と基礎知識	0.25MMx2名	計1.25MMx2名
	2.2 連系型P Vシステムの特徴	0.25MMx2名	
	2.3 連系型P Vシステム導入時の検討課題		
	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 モニタリング結果報告	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 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、基本的に実施機関である MEC 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。

「マ」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 MEC に加え、主管官庁の MRD のエネルギー計画部 (Energy Planning Division)、および対象サイトのマジュロ病院の関係者 (電気設備管理者) 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と、および導入する連系型 PV システムへの異変を発見した際の MEC 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、MEC 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、MEC 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。「マ」国側のイニシアティブを引き出すために MEC 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、「マ」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、MEC から 5 名程度 (例: 実際の維持管理者及びその上司) および設備所有者である MRD から 1 名程度で構成し、実施体制は以下の組織図とする。

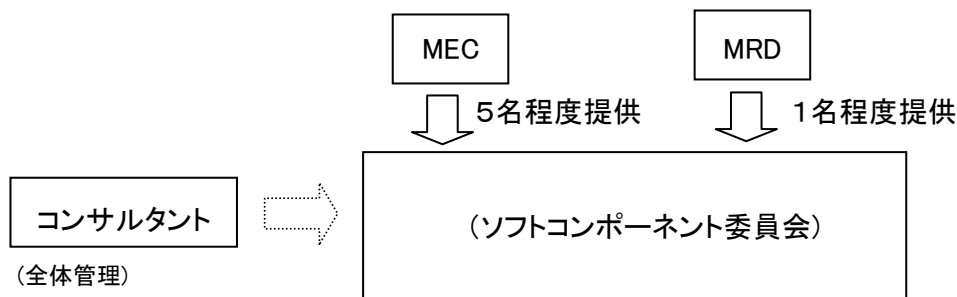


図1 ソフトコンポーネント実施体制 (案)

表3 ソフトコンポーネント活動の役割分担

担 当	日本人コンサルタント	MEC	MRD
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)	1名程度
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	助 言
本計画内容のオリエンテーション	説 明	開 催	開催補助
維持管理マニュアル	助 言	原案作成	助 言
維持管理のフォローアップ	管理・指導	結果の提出	助 言
報告先	在マーシャル日本大使館 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：「マ」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。

本計画の対象機材は、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。

暦年		2010年												2011年																									
カレンダー月		6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12																			
工程	機 器 製 作	→																																					
	資機材海上輸送・通関・陸上輸送																																						
	機 材 据 付 工 事																																						
	全 体 コ ミ ッ シ ョ ニ ン グ																																						
	検 収 ・ 竣 工 引 渡 し																																						
MEC	ソフトコンポーネント委員会設置																																						
日 本 人 コ ン サ ル タ ン ト	ワークショップ																																						
	カテゴリ-1																																						
	カテゴリ-2																																						
	カテゴリ-3																																						
	カテゴリ-4																																						
	合計人月	8.0																																					

*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) MEC 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) MEC は、本ソフトコンポーネント実施に必要な作業室等を用意する。
- 3) MEC および MRD 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改善を自ら実施する。
- 5) MEC 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) MEC は、維持管理マニュアルに基づき、連系型 PV システムを適切に維持管理していく。
- 7) MEC 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。

以上

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：大洋州地域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	オリジナル・コピー	発行機関	発行年
1	Majuro New Hospital files	図書(図面)	コピー	Marshalls Energy Company	2006
2	Majuro Reservoir Info	図書(図面)	コピー	Marshalls Energy Company	2006
3	Collage of Marshall Islands files	図書(図面)	コピー	Ministry of Resources and Development	2009
4	Environmental Impact Assessment Regulations	図書	コピー	Environment Protection Authority	1994
5	Yearbook 2005-2006	図書	コピー	Economic Policy, Planning and Statistic office	2006
6					
7					
8					
9					
10					
11					
12					

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

本調査でマジロ発電所のディーゼル発電設備の運転実績(燃料消費量)が得られなかったため、主に常時運転している6.4MWディーゼル発電機の燃料消費量(スペック220g/kWh)を用いて、3-2-2基本計画(1)計画の前提条件3)想定される発電電力量で想定した導入系統連系PVシステムの1年間の発電電力量に基づき、本計画の目標年次である2016年までの燃料消費削減量を算出すると、表1のようになる。(なお、kWh当たりの燃料消費量は、軽油の比重を0.8g/cm³とすると、220/0.8/1000=0.28liter/kWhとなる。ゆえに、年間ディーゼル燃料削減量は、200,117kWh×0.28liter/kWh=56,032literと算出される。)

表1 年別ディーゼル燃料削減量

	2011	2012	2013	2014	2015	2016	Total
年別ディーゼル燃料削減量[liter]	56,032	56,032	56,032	56,032	56,032	56,032	336,192

出所：調査団にて作成

2)CO₂排出量の削減効果

表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CO₂排出量の削減効果を算出する。

$$\begin{aligned} \text{CO}_2\text{削減量 [kg]} &= \text{軽油CO}_2\text{排出係数} * \text{ディーゼル燃料削減量} \\ &= 2.62 \text{ [kg-CO}_2\text{/liter]} * \text{ディーゼル燃料削減量 [liter]} \end{aligned}$$

* 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、各年次のCO₂排出削減量は表2に示す通りとなり、2011年から2016年の6年間で、合計880tonのCO₂排出削減が可能である。

表2 年別CO₂削減量

	2011	2012	2013	2014	2015	2016	Total
CO ₂ 排出削減量[kg]	146,803	146,803	146,803	146,803	146,803	146,803	880,818

出所：調査団にて作成