

資 料

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1. 調査団員・氏名

調査団員氏名、所属

第 1 次現地調査

No.	氏名	担 当	所属
官調査団員リスト			
1	高島 宏明	団長	JICA ラオス事務所長
2	江原 由樹	計画管理	JICA 産業開発部 調査役
3	村松 美江	プロジェクト形成	JICA 産業開発部インハウスコンサルタント
4	細矢 慎二	調達監理計画	JICS 業務第二部 特別業務室
調査団員リスト			
4	松田 康治	業務主任/太陽光発電システム全般	(株)ニュージェック
5	中澤 孝志	系統連系太陽光発電システム	(株)ニュージェック
6	今井 亨	機材・設備計画	(株)ニュージェック
7	和田 哲郎	建築設計	(株)ニュージェック
8	木村 友一	業務調整 1	(株)ニュージェック

第 2 次現地調査(詳細調査)

No.	氏名	担 当	所属
調査団員リスト			
1	松田 康治	業務主任/太陽光発電システム全般	(株)ニュージェック
2	中澤 孝志	系統連系太陽光発電システム	(株)ニュージェック
3	今井 亨	機材・設備計画	(株)ニュージェック
4	丸岡 巧	調達計画/積算 1	(株)ニュージェック
5	三雲 是宏	制度・基準/環境社会配慮	(株)ニュージェック
6	石橋 丈治	系統運用	(株)ニュージェック
7	和田 哲郎	建築設計	(株)ニュージェック
8	高澤 徳洋	業務調整 2	(株)ニュージェック

第 3 次現地調査(協力準備調査概要書(案)の現地説明・協議)

No.	氏名	担 当	所属
官調査団員リスト			
1	米山 芳春	団長	JICA ラオス事務所次長
2	江原 由樹	協力計画	JICA 産業開発部 調査役
調査団員リスト			
3	松田 康治	業務主任/太陽光発電システム全般	(株)ニュージェック
4	中澤 孝志	系統連系太陽光発電システム	(株)ニュージェック
5	今井 亨	機材・設備計画	(株)ニュージェック
6	木村 友一	業務調整 1	(株)ニュージェック

2. 調査行程

第1次現地調査

No.	月日	曜日	官団員				コンサルタント				
			団長	計画管理	プロジェクト形成	調達監理 (JICS)	業務主任/太陽光発電全般	系統連系太陽光発電システム	機材・設備計画	建築設計	業務調整
1	12月16日	水	高島 宏明	江原 由樹	村松 美江	細矢 慎二	松田 康治	中澤 孝志	今井 亨	和田 哲郎	木村 友一
2	12月17日	木	MPWT及びMEM表敬訪問	ラオス着			カンボジアからラオスへ移動			カンボジアからラオスへ移動	
3	12月18日	金	大使館表敬訪問	JICA及び大使館表敬訪問、PMO表敬訪問及び合同庁舎内案内		JICA及び大使館表敬訪問、PMO表敬訪問及び合同庁舎内案内	官団員と同じ			MEM本館屋上と駐車場調査、PMO合同庁舎内既存駐車場仮調査	
4	12月19日	土		ワットアイ国際空港駐車場及び屋外電気室調査		ワットアイ国際空港駐車場及び屋外電気室調査				官団員と同じ	
5	12月20日	日		内作業	ラオス着	内作業				団内打合せ及び資料整理	
6	12月21日	月		DOE表敬訪問、MOE表敬訪問、MPI表敬訪問及びPV設置可能性調査		DOE表敬訪問、MPI表敬訪問及びPV設置可能性調査				DOE、MPI表敬訪問及びMPI本館及び付属機関PV設置可能性調査、EDL訪問案件説明及び資料請求・受領	DOE及びMOE表敬訪問、MPI訪問及び現地調査
7	12月22日	火		PMO表敬訪問及び合同庁舎内の調査許可依頼、MEMとのPV設置場所について協議、PMO内駐車場調査		MEMとの協議、PMO内駐車場調査				官団員と同じ	PMO内駐車場調査
8	12月23日	水		MPIへPV設置可能性報告(否採択)、DCAとのMMD協議(村松発ラオス)		MPIへのMMD協議				L-JATS訪問及び資料請求・入手、DCAとのMMD協議	空港ターミナル内電気室調査 発ラオス
9	12月24日	木	PMO訪問、大使館帰国前報告	DOEとのMMD協議、PMO訪問、大使館帰国前報告(発ラオス)	成田着	DOEとのMMD協議、PMO訪問、大使館帰国前報告				PMO訪問(官邸敷地内駐車場再確認)	着関空
10	12月25日	金		着成田		財務実行協議用資料作成、発ラオス				発ラオス	発ラオス
11	12月26日	土				着成田				着関空	着成田

第2次現地調査

	業務主任/太陽光発電システム全般	系統運系太陽光発電システム	機材・設備計画	調達計画/種算1	制度・基準/環境社会配慮	系統運用	建築設計	業務調整2
1	松田 康治 /NEWJEC	中澤孝史 /NEWJEC	今井 亨 /NEWJEC	丸岡 巧 /NEWJEC	三雲 是宏 /NEWJEC	石橋 文治 /NEWJEC	和田 哲郎 /NEWJEC	高澤 徳洋 /NEWJEC
2	国際空港空港からBKK経由でビエンチャン入り (TG 623 11:00 - 15:30, TG574 19:55 - 21:05)	国際空港空港からBKK経由でビエンチャン入り (TG 623 11:00 - 15:30, TG574 19:55 - 21:05)						BKKからビエンチャン入り (TG 574 19:55 - 21:05)
3	・DCAへの表敬訪問及び打合せ(10:00 - 11:00) ・Wattay国際空港ターミナルビル内表示装置設置位置調査 ・WREAへの表敬訪問(16:00 - 16:30)	・JICAラオス事務所への表敬訪問及び打合せ(8:30 - 9:10) ・PMOへの表敬訪問及び打合せ (10:00 - 11:40) ・L-JATSへの表敬訪問(14:00 - 14:50) ・日本大使館(Eou)への表敬訪問 (16:00 - 16:30)						同左
4	・Wattay国際空港太陽軌道計測(駐車場内)及び電力計設置(3階電気室) ・PMO打合せ(14:00 - 15:00)(上層部の承認がおりていないため、図面収集・現地調査で済ませず。) ・EDLとの系統連系に係る電気仕様打合せ・協議 (15:30 - 16:40)							同左
5	・Wattay国際空港太陽軌道再計測(駐車場内)及び電力計稼動チェック及び再設置(3階電気室)							丸岡に同行
6	ラオス国対ドル替レートの情報収集	PVシステム電気関係仕様・数量作成・整理						丸岡に同行
7	2月11日のプレゼン資料作成	資機材(ケーブル等)・ガリソン価格等 マーケット調査						佐藤整理
8	2月11日のプレゼン資料作成	PVシステム電気関係仕様・数量作成・整理						佐藤整理
9	DOE環境部門と打合せ(9:00 - 9:40) 打合せ議事録作成・発送	PVシステム電気関係仕様・数量作成・整理						DOE環境部門と打合せ(9:00 - 9:40) 2月11日プレゼンの打合
10	JICAへL-JATSの件説明報告(9:00 - 9:40) DOEへ招待状確認 PMOへ承認確認(承認 10:10 - 11:15) プレゼン内容確認・修正 (14:00 - 16:30)	現地鋼材工場訪問 (9:30 - 11:30) プレゼン内容確認・修正(14:00 - 16:30)						午前中松田と同行 午後招待状配布 保険会社調査
11	プレゼン配布資料の修正・印刷・コピー	PVシステム電気関係仕様・数量作成・整理						2月11日の会場等の確認・その他の手配
12	第1回プレゼンテーション 於 DOE 会議室(9:30 - 12:00)							同左
13	プレゼン議事録作成 ・JICA打合せ(14:00 - 14:40)	PVシステム空港電気関係仕様・数量作成・整理						・プレゼン議事録作成 ・JICA打合せ(14:00 - 14:40)
14	・プレゼン議事録作成	PVシステム空港電気関係仕様・数量作成・整理						・プレゼン議事録作成 ・業務引継ぎ
15	現地要収集資料の確認と次週の作業予定 検討	PVシステム電気関係仕様・機器概算数量検討						ラオスからBKKへ戻る (TG571 13:50 - 14:55)

業務主任(太陽光発電システム全般)	系統連系太陽光発電システム	機材・設備計画	調運計画/積算1	制度・基準/環境社会配慮	系統運用	建築設計	業務調整2
松田 康治 /NEWJEC	中澤孝中 /NEWJEC	今井 亨 /NEWJEC	丸岡 巧 /NEWJEC	三雲 晃宏 /NEWJEC	石橋 文治 /NEWJEC	和田 哲郎 /NEWJEC	高澤 徳洋 /NEWJEC
PMO(9:30 - 12:00) DCA(15:00 - 15:40) LAA(15:50 - 16:20)	PMO仮置き場子エック 図提供依頼(9:00-12:00)	PMO仮置き場子エック 電気室調査依頼、単線結線 図提供依頼(9:00-12:00)	ローカルコンサルタント打合せ(9:45 - 11:30) ローカルコンサルタント打合せ (14:00 - 15:00)	関空からBKK経由でビエンチャン入り(TG 623 11:00 - 15:30, TG 574 19:55 - 21:05)	関空からBKK経由でビエンチャン入り(TG 623 11:00 - 15:30, TG 574 19:55 - 21:05)	関空からBKK経由でビエンチャン入り(TG 623 11:00 - 15:30, TG 574 19:55 - 21:05)	
団内打合せ(9:00-11:00) EDL(14:00 - 14:40) PMO(15:50 - 16:10)	団内打合せ(9:00 - 11:00) 積算用資料作成	団内打合せ(9:00 - 11:00) 積算用資料作成	団内打合せ(9:00 - 11:00) 積算打合せ(11:00 - 12:00)	団内打合せ EDL(14:00 - 14:40) PMO(15:50 - 16:10)	団内打合せ EDL(14:00 - 14:40) PMO(15:50 - 16:10)	団内打合せ 積算依頼用資料作成 PMO(15:50 - 16:10)	
LAA(9:00 - 10:45) 図面コピー	LAA(9:00 - 10:45) 技術仕様書修正	LAA(9:00 - 10:45) 空港駐車場再調査	ローカルコントラクター打合せ(9:45 - 11:00)	LAA(9:00 - 10:45) 空港駐車場再調査	LAA(9:00 - 10:45) 空港駐車場再調査	現地業者訪問(9:45-11:00) 空港駐車場再調査	
LAA配線調査 空港駐車場構造検討	LAA 配線調査 技術仕様書・材料仕様書修正	LAA 配線調査 技術仕様書・材料仕様書修正	現地業者単価収集(10:00 - 11:30) DOE(14:00 - 15:30) 現地業者打合せ(16:00 - 17:00)	LAA配線調査 技術仕様書修正	LAA配線調査 技術仕様書修正	現地業者単価収集 空港駐車場レイアウト・構造検討	
DOEとPMO対応協議(8:40 - 9:40) 技術仕様書英文化	技術仕様書(電気)最終化	技術仕様書(電気)最終化	現地業者打合せ(10:30 - 11:30) 現地業者単価調査(16:00 - 17:00)	技術仕様書(電気)最終化	技術仕様書(電気)最終化	空港駐車場レイアウト・構造検討 現地業者単価調査	
空港駐車場概要図作成	系統接続基準検討	空港駐車場配線施工計画 検討	建設単価整理	関空からBKK経由でビエンチャン入り(TG 623 11:00 - 15:30, TG 574 19:55 - 21:05)	空港駐車場配線図作成	空港駐車場概要図作成 空港駐車場概略数量算出	
PMO駐車場概要図作成 25日ブレゼン資料準備	系統接続基準検討	空港駐車場配線施工計画 検討	建設単価整理	環境スクリーニング準備	空港駐車場配線図作成	業者見積検討	
PMO(9:00-10:20) L-JATS(14:00 - 14:40) LAA(14:50 - 15:35)	PMO(9:00-10:20) PMO接続系統図修正	PMO(9:00-10:20) PMO配線施工計画検討	PMO(9:00-10:20) 建設単価整理 現地業者打合せ	PMO(9:00-10:20) 環境スクリーニング実施	PMO(9:00-10:20) PMO駐車場配線図作成	PMO(9:00-10:20) PMO駐車場構造・配置検討	
招待子エック及び配布 空港駐車場構造・配置検討 ブレゼン資料作成	ブレゼン資料作成	PMO配線施工計画作成	DOEへ業者報告	関税等の諸税調査	PMO駐車場配線図作成 ブレゼン資料レビュー	架台設計条件検討 架台概設計	
ブレゼン資料作成・印刷 日降雨量資料入手 LAA予算・執行額調査・整理	ブレゼン資料レビュー	PMO配線施工計画作成 ブレゼン資料レビュー	現地業者打合せ	ラオス労働条件調査・検討	PMO駐車場配線図作成	現地業者打合せ	
第二回ブレゼンセッション(9:30 - 12:00) 議事録作成	第二回ブレゼンセッション(9:30 - 12:00) 議事録作成	第二回ブレゼンセッション(9:30 - 12:00) 議事録作成	第二回ブレゼンセッション(9:30 - 12:00) 現地業者打合せ	第二回ブレゼンセッション(9:30 - 12:00) 議事録作成	第二回ブレゼンセッション(9:30 - 12:00) 議事録作成	第二回ブレゼンセッション(9:30 - 12:00) 業者見積検討	
帰国報告書作成 JICA帰国前報告(14:30 - 15:00) EOJ帰国前報告(16:00 - 16:45)	JICA帰国前報告(14:30) EOJ帰国前報告(16:00)	JICA帰国前報告(14:30) EOJ帰国前報告(16:00)	輸送ルート確認 現地業者打合せ及び離国挨拶	関税等の諸税調査 JICA帰国前報告(14:30)	輸送ルート確認 JICA帰国前報告(14:30)	輸送ルート確認 JICA帰国前報告(14:30)	
土	団内会議(今後国内での作業事項確認)						
日	カンボジア準備作業						
月	ビエンチャンからプノンペンへ移動(VN 841, 10:20 - 11:50)						

第3次現地調査

日程	日	曜日	官団員		コンサルタント			
			団長	協力計画	業務主任/太陽光発電システム全般	系統連系太陽光発電システム	機材・設備計画	業務調整1
1	5-Sep-10	日	米山 芳春 /JICA	江原 由樹 /JICA	松田 康治 /NEWJEC	中澤孝史 /NEWJEC	今井 亨 /NEWJEC	木村 友一 /NEWJEC
2	6-Sep-10	月		成田からピエンチャン入り MEM 表敬訪問(MD項目DRと概要説明: 9:00-) JICA 事務所表敬訪問 (11:00-) PMO 表敬訪問(MD項目DRと概要説明: 14:00-)	関空発ピエンチャン入り (TG 623 11:45 - 15:35, TG574 19:50 - 21:00)	関空発ピエンチャン入り (TG 623 11:45 - 15:35, TG574 19:50 - 21:00)	関空発ピエンチャン入り (TG 623 11:45 - 15:35, TG574 19:50 - 21:00)	ピエンチャン入り (TG 641 11:00-15:30, TG574 19:55 - 21:05)
3	7-Sep-10	火		DCA 表敬訪問(9:00-) PMO面談(PMOの要望確認とJICAの立場 説明:14:00-) PMOからの要望に対する対応検討(JICA & DOE) PMO からJICAへの正式要望書案作成	関空発ピエンチャン入り (TG 623 11:45 - 15:35, TG574 19:50 - 21:00)	EDL表敬訪問 (9:00 -) 概要書案説明・質疑応答(系統連系保護装置) 国内線駐車場他現地視察 及び追加図面収集(増設対応)(午後)		
4	8-Sep-10	水		(1) MEMにて「協力準備調査概要書(案)」説明及び質疑応答 (9:00-12:00) (参加者: MEM, PMO, MPWTLAA, EDL) (2) MEM Viraphonh 局長からPMOの要望に対する対応案の提案 - PMOに今年1月の署名MDOの遵守を迫る案 - EDL新本館敷地内の駐車場にPMO減分を確保する案 - 空港の設置スペースを拡張してPMO減分を確保する案 (DCAからはその場で拡張OKとの口頭承諾あり) (3) EDL 新本館建設現場視察(午後)	関空発ピエンチャン入り (TG 623 11:45 - 15:35, TG574 19:50 - 21:00)			
5	9-Sep-10	木		(1) MD 修正案作成(JICA & DOE) (2) PMO 訪問(JICAの対応説明及びPMO からJICA宛のレター内容確認:10:00-)	関空発ピエンチャン入り (TG 623 11:45 - 15:35, TG574 19:50 - 21:00)			
6	10-Sep-10	金		大使館報告 (9:00 - 9:50) ピエンチャン発	大使館報告 ピエンチャン発 (TG571 13:50 - 14:55, TG622 23:30 - 07:00)	大使館報告 ピエンチャン発 (TG571 13:50 - 14:55, TG622 23:30 - 07:00)	大使館報告 ピエンチャン発 (TG571 13:50 - 14:55, TG622 23:30 - 07:00)	大使館報告 ピエンチャン発 (TG571 13:50 - 14:55, TG640 22:10 - 06:00)
7	11-Sep-10	土		成田着	関空着	関空着	関空着	成田着

3. 関係者(面会者)リスト

関係者（面会者）リスト

エネルギー鉱業省	Ministry of Energy and Mines (MEM)	
Mr. Bountheung PHENGTHAVONGSA	Director of the Cabinet	政務官
Mr. Viraphonh VIRAVONG	Director General, Department of Electricity (DOE)	局長
Mr. Hatsady SYSOULATH	Deputy Director General , DOE	副局長
Mr. Anousak PHONGSAVATH	Head of Division, Rural Electrification Division (RED), DOE	部長
Mr. Khanthara SISAMOUTH	Deputy Director of Division, Rural Electrification Division, DOE	副部長
Mr. 橋本 信雄	JICA Expert, Power Policy Advisor, DOE	専門家
Mr. Chantho MILATTANNAPHENG	Director of Division, Social and Environmental Management Division, DOE	室長
公共事業運輸省	Ministry of Public Works and Transportation (MPWT)	
Mr. Vanpheng CHANTHAPONE	Deputy Director General, Department of Civil Aviation (DCA)	副局長
Mr. Somphonh SYGNAVONG	Director of Aerodrome Division, Department of Civil Aviation	部長
ラオ空港公団	LAO Airport Authority (LAA)	
Mr. Khamkong MOLAPHOUM	Director General	総裁
Mr. Donh SITHAMMALA	Deputy Director General	副総裁
Mr. Baysy VONGXAY	Director of Power/Water Supply Center	所長
Mr. Chanmany KHOUNXaignabouasy	Chief of Accounting Office	係長
ラオス電力公社	Electricité du LAOS (EDL)	
Mr. Boung MANIVONG	Director of Business – Finance Division	部長
Mr. Vanhdy VILAYSANE	Deputy Director, Technical Department	副部長
Mr. Xanaphone PHONEKEO	Manager, Technical Standard Office	室長
Mr. Khamphila PHOMMASEN	Deputy Manager of Statistics & Planning Office	副室長
Mr. Bounkheut VILAYHAK	Deputy Chief of Technical Standard Office	係長
Mr. Sengphet SOULIGNAVONG	Manager of Loss Reduction & DSM Department	室長
総務庁	Prime Minister’s Office (PMO)	
Prof. Dr. VONGDARA Boviengkham	Chairman of the Prime Minister’s Office, Vice Minister	副首相
Mr. Phaychith SENGMANY	Deputy Director – General of Cabinet	政務官
Mr. Outhen KEOBOUALA	Director General, Administration and Protocol Department	部長
Mr. Inpone SULIUTTAMITH	Deputy Director of Administration and Protocol Department	副部長

Engr. Somphone PHANOUSITH	Permanent secretary of National Science Council, Assistant Advisor to the Prime Minister, National Science Council	技術官
Mme Khempheng PHOLSENA	Minister to the Prime Minister's Office, Head of Water Resources and Environmental Administration (WREA), Chairperson of the Lao National Mekong Committee	長官
Mr. Keo Ta PHE TSAKHONE	Department of the Finance	技術官

計画投資省

Ministry of Planning and Investment (MPI)

Mr. Fongsamout KHAMVALVONGSA	Secretary to Minister	秘書官
Mr. SOMMALA Kouthong	Senior Officer, Asia- Pacific and Africa Division, Department of International Cooperation	事務官

L-JATS

Lao-Japan Airport Terminal Services

Mr. Kaykeo VORARATH	General Director	社長
Mr. Chanthaboun PATHAMMAVONG	Deputy General Manager, Facility Department	取締役
Mr. Yoshitaka TAKEMURA	Deputy General Director, General Manager	取締役
Mr. Bounheuang SOUKHASEUM	Assistant Manager, Maintenance Section, Facility Department	副部長

在ラオス大使館

Embassy of Japan

宮下 正明 大使
中村 建 一等書記官
目徳 有一 二等書記官

JICA ラオス事務所

Japan International Cooperation Agency, Laos Office

高島 宏明 所長
戸川 正人 所長
米山 芳春 次長
浅岡 浩章
松崎 瑞樹
服部 容子

4. 討議議事録 (M/D)

Minutes of Discussions

on

the Preparatory Survey

on

The Project for Introduction of Clean Energy by 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 The Project for Introduction of Clean Energy by Solar Electricity Generation System (hereinafter referred to as "the Project").

JICA sent to the Lao People's Democratic Republic (hereinafter referred to as "Lao PDR") the Preparatory Survey Team (hereinafter referred to as "the Team"), headed by Mr. Hiroaki TAKASHIMA, Chief Representative, JICA Laos Office, and is scheduled to stay in Lao PDR from December 17th to 25th, 2009.

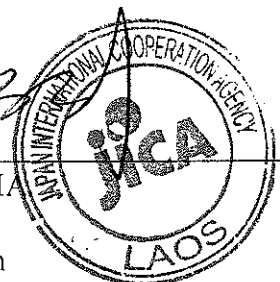
The Team held discussions with the concerned officials of the Government of Lao PDR (hereinafter referred to as "GoL") and conducted a field survey.


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

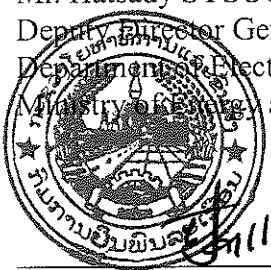
Vientiane Capital

DATE: 12th January, 2010

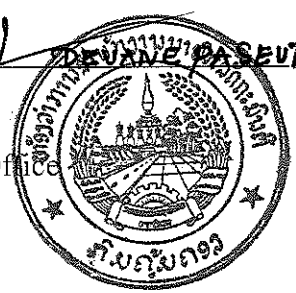

Mr. Hiroaki TAKASHIMA
Leader
Preparatory Survey Team
Japan International Cooperation Agency




Mr. Hatsady SYSOULATH
Deputy Director General
Department of Electricity
Ministry of Energy and Mines




The Prime Minister's Office



Mr. Yakua LOPANGKAO
Director General
Department of Civil Aviation
Ministry of Public Works and Transportation

ATTACHMENT

1. Current Situation

GoL recognizes the importance of renewable energies promotion including solar energy as a sustainable energy resource and one of countermeasures against climate change.

In Lao PDR, Solar Home System is popular equipment in un-electrified rural area. Even though, GoL recognizes lack of awareness of effects of climate change among people. GoL is keen to promote renewable energy including solar power.

Department of Electricity, Ministry of Energy and Mines is now drafting the “National Renewable Energy Strategy”. The target of the strategy is to electrify 90 percent of all households by 2020, and 30 percent of these are expected to utilize renewable energy including solar energy.

In this situation, both sides confirm that the Project, which introduces photovoltaic (PV) power generation systems connected to the national power grid, is one of the important pilot systems to accelerate introduction of solar energy.

2. Objective of the Project

The objective of the Project is to promote clean energy utilization and achieve CO2 emissions reductions by installing the PV system to be connected to the national grid.

3. Responsible Organization and Implementing Organization

The responsible organization is Ministry of Energy and Mines (hereinafter referred to as “MEM”) (The organization chart of responsible organization is shown in Annex-1). MEM will take overall responsibility of the Project including necessary coordination between relevant ministries and organizations.

The implementing organizations are Prime Minister’s Office (hereinafter referred to as “PMO”) and Ministry of Public Works and Transportation (The organization chart of the implementation organizations are shown in Annex-2). The implementation organizations shall take responsibilities, such as securing the land space and preparation, under coordination by MEM for smooth implementation of the Project.

4. Items Requested by GoL

4-1. After discussions with the Team, the installation of the on-grid power generating system using photovoltaic including following equipments were requested by the GoL.

The Team took note the request from GoL, and explained that the amount of capacity might be reduced through assessment by the relevant Japanese authorities. GoL understood the explanation.

Table 1 Projects requested by Lao Government

	Description
Location	PMO Complex and Wattay International Airport
Outline	The power produced is used for each building and excess power will be

	transmitted to the national grid.
Requested equipment	(1) Solar module PMO: approximately 50 kWp Wattay International Airport: approximately 90 kWp Total capacity will be 140 kWp (2) Junction boxes (3) Power Conditioners (4) Distribution boards (5) Cables for electric distribution (6) Data collecting and display device
Capacity Building	(1) On the Job training (2) Operation and maintenance training (3) Data collection and analysis training

4-2. The project sites are shown in Annex-3.

4-3. GoL explained that there is no duplication between requested contents of the Project and any other plans implemented by the other donors or GoL.

4-4. GoL has understood that the detailed component and the design of the Project shall be confirmed at the time of 2nd phase of the Preparatory Survey.

4-5. The Team will report the findings and items requested by the GoL to JICA Headquarters and the Government of Japan.

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

GoL understood the Japan's Program Grant Aid for Environment and Climate Change scheme explained by the Team as described in Annex-4, 5, 6, 7 and 8.

GoL suggested that some items indicated in Annex-8 such as item No.3 and some items of No. 7 would not be necessary in the Project. The Team took note and explained that those items should be clarified with the result of 2nd Preparatory Survey and detailed design.

6. Schedule of the Study

6-1. The Team will proceed to further survey in Lao PDR until December 25th 2009 as the 1st phase of the Preparatory Survey.

6-2. After completion of the 1st phase of the Preparatory Survey, the Team will report the results to GoL, JICA Headquarters and GoJ.

6-3. Based on the results of the 1st phase of the Preparatory Survey, JICA will conduct the 2nd phase

of Preparatory Survey for the discussion of detailed component and design as well as collection of further data necessary for design by the end of March 2010.

6-4. JICA will prepare the draft report and reference document in English and dispatch a mission to Lao PDR in order to explain their contents at the end of July 2010.

6-5. When the contents of the report are accepted in principle by the GoL, JICA will prepare the final report and reference document, and submit them to the GoL and to the Procurement Agent by the end of August 2010.

7. Other Relevant Issues

7-1 Permission of Land Acquisition / Usage

GoL agreed that the lands and facilities to install the PV system shall be allocated by the Implementation Organizations, and necessary arrangements shall be completed by the time of the 2nd Phase of the Preparatory Survey.

GoL also agreed to secure temporary stockyard during installation of the equipment and materials.

7-2 Procurement of Equipment

The Team explained that, in accordance with the policy of Government of Japan, products of Japan shall be procured for major equipments in the Project. GoL also requested products of Japan for major equipments.

7-3 Coordination with Relevant Organizations

The responsible Organization for the Project shall be the focal point for the Team, and responsible for the coordination with the relevant organizations. GOL agreed to establish a consultative committee in order to coordinate with the Japanese side such as the JICA Laos Office and the procurement agency. Terms of Reference of the Consultative Committee is referred to Annex-9.

7-4 Environmental and Social Considerations

The Team explained the outline of JICA Environmental and Social Considerations Guideline (hereinafter referred to as "the JICA Guideline") to GoL. GoL took the JICA Guideline into consideration, and shall complete the necessary procedures.

7-5 Operation and Maintenance

The Implementation Organizations secure and allocate the necessary budget and personnel for the operation and maintenance of grid-connected PV system procured and installed under the Project. Responsible Organization oversees the operation and maintenance activities by the Implementation Organizations.

7-6 Customs and Tax exemption

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

7-7 GoL shall ensure the security of all concerned Japanese nationals working for the Project, if deemed necessary.

7-8 GoL shall provide necessary numbers of counterpart personnel to the Team during the period of their Surveys in Laos

<List of Annex>

Annex-1 Organization Chart of Responsible Organization

Annex-2 Organization Charts of Implementing Organizations

Annex-3 Candidate site of the Project

Annex-4 Program Grant Aid for Environment and Climate Change

Annex-5 General Flow of Program Grant Aid for Environment and Climate Change

Annex-6 Flow of Funds for Project Implementation

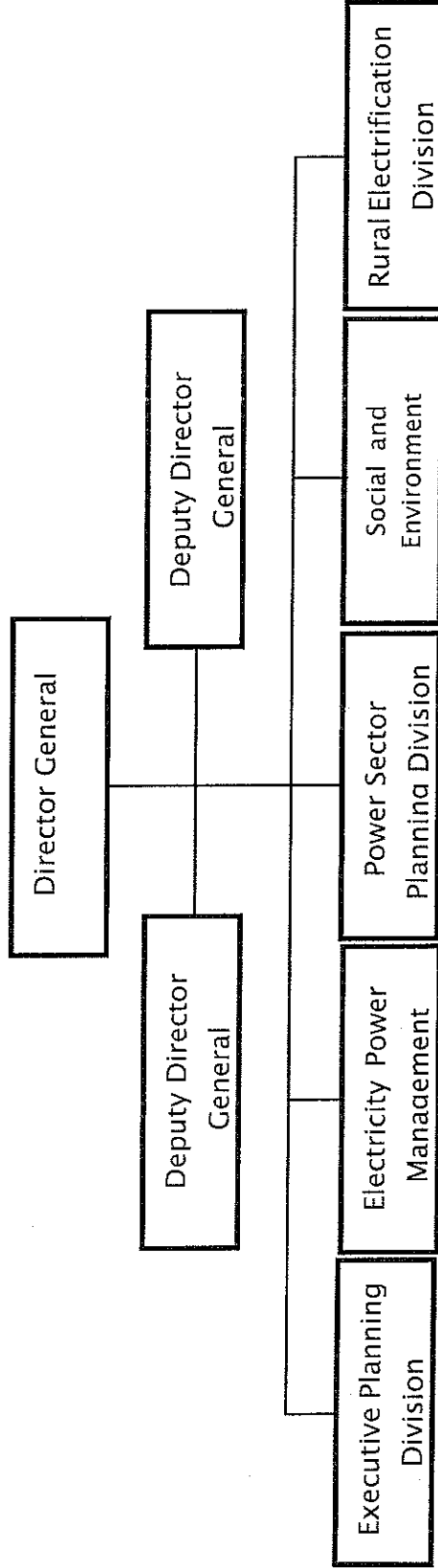
Annex-7 Project Implementation System

Annex-8 Major Undertakings to be taken by Each Government

Annex-9 Terms of References of the Consultative Committee

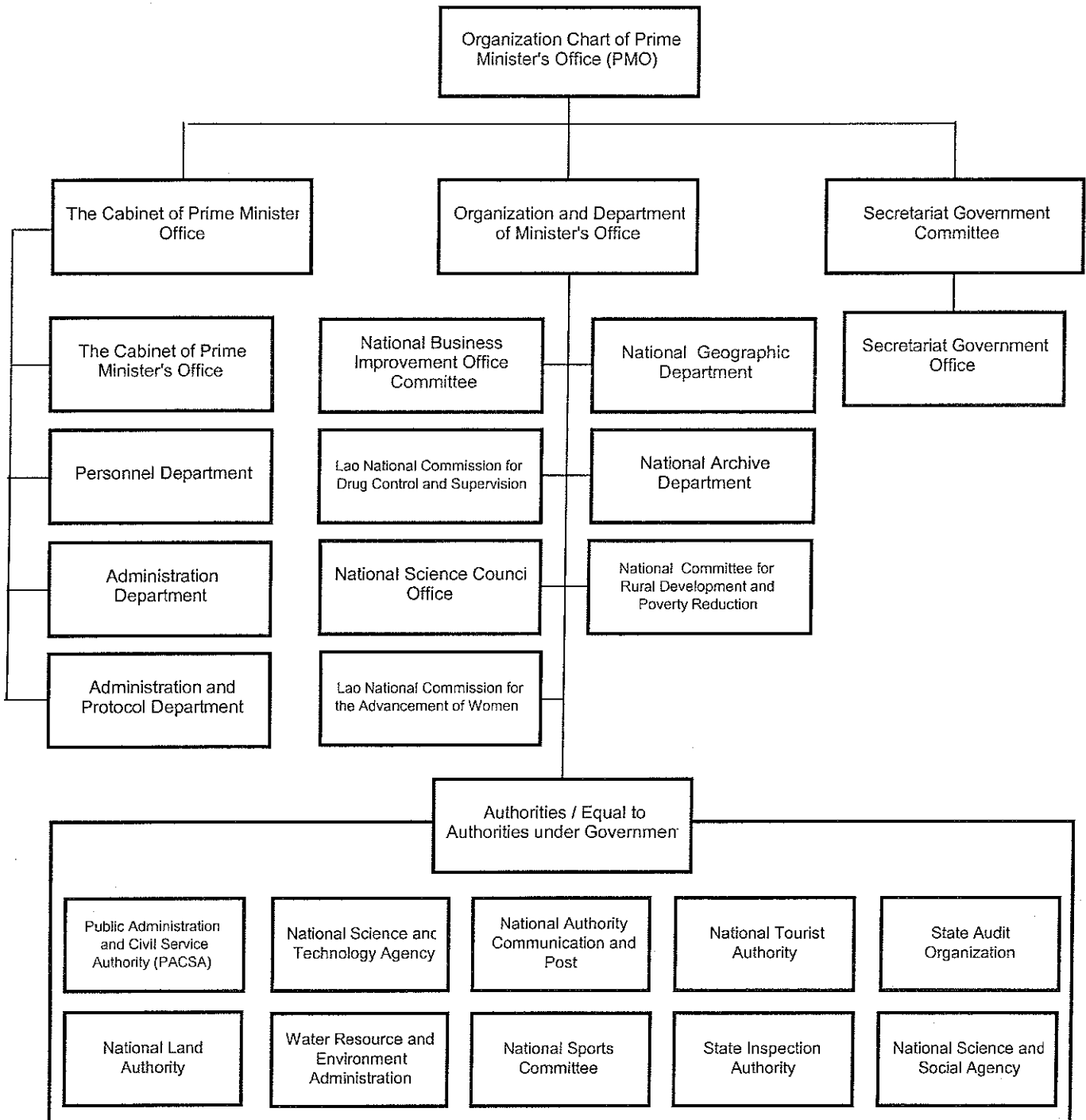
Organization Chart of Responsible Organization (Department of Electricity, Ministry of Energy and Mines)

Department of Electricity



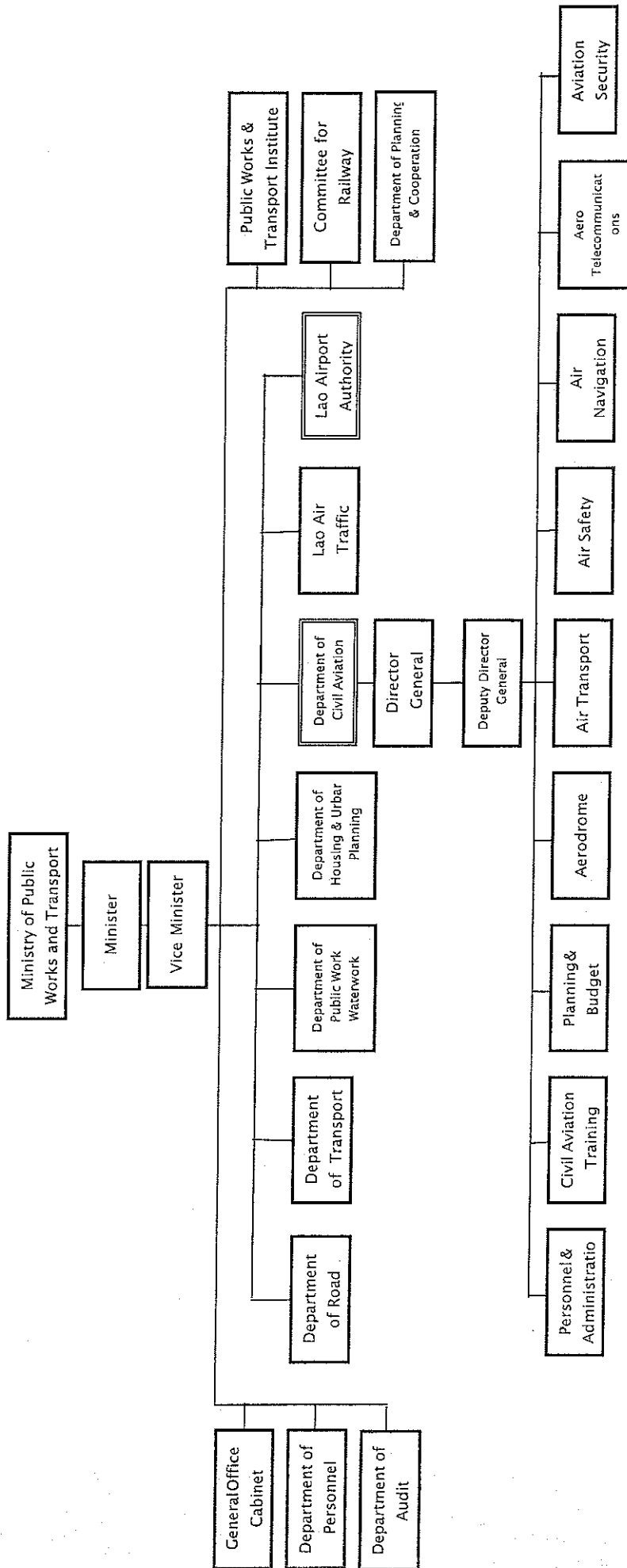
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Organization Charts of Implementing Organization (Prime Minister’s Office)



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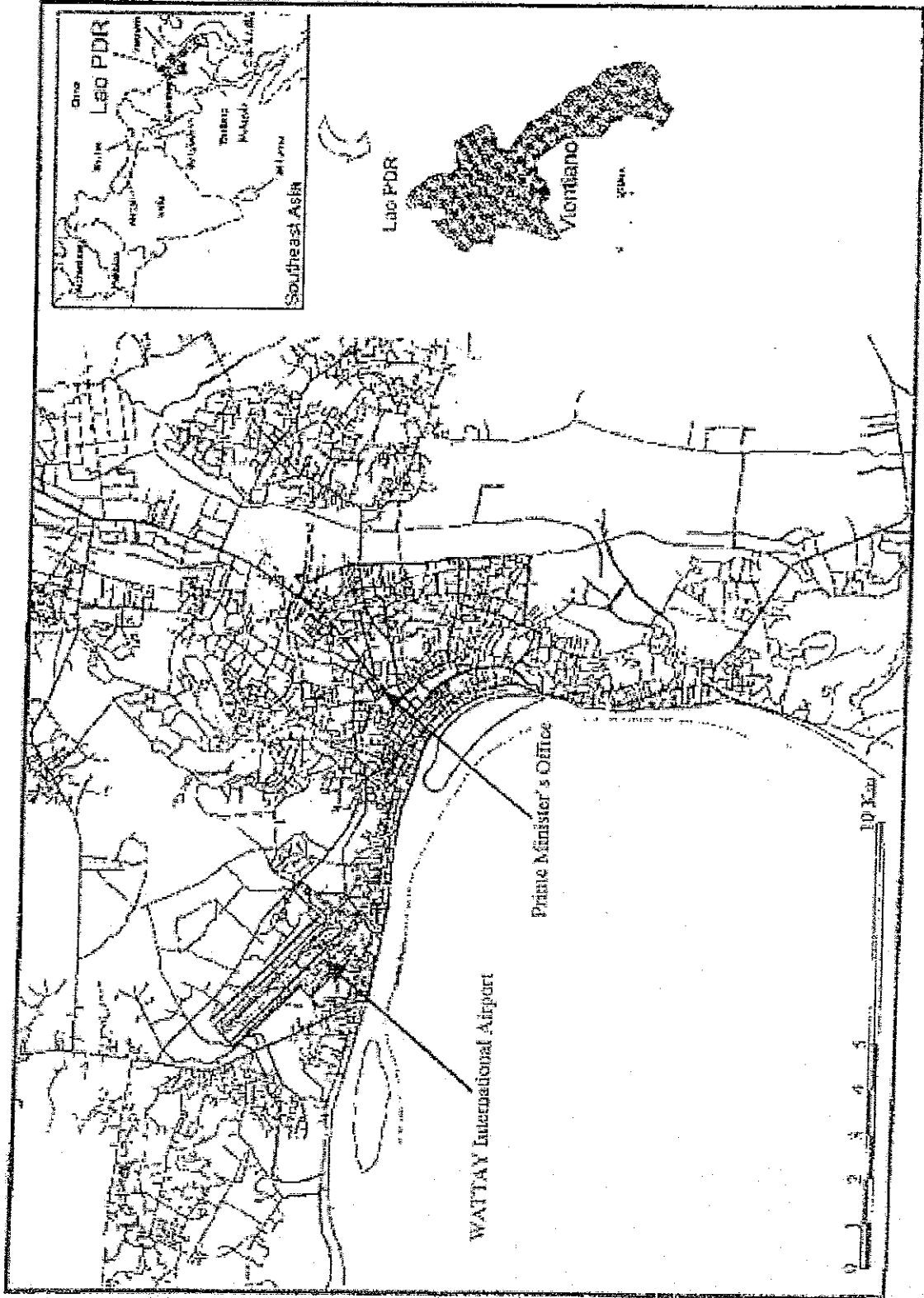
Organization Charts of Implementing Organization (Ministry of Public Works and Transportation)



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Candidate Site for PV System supported by the Project

Location:



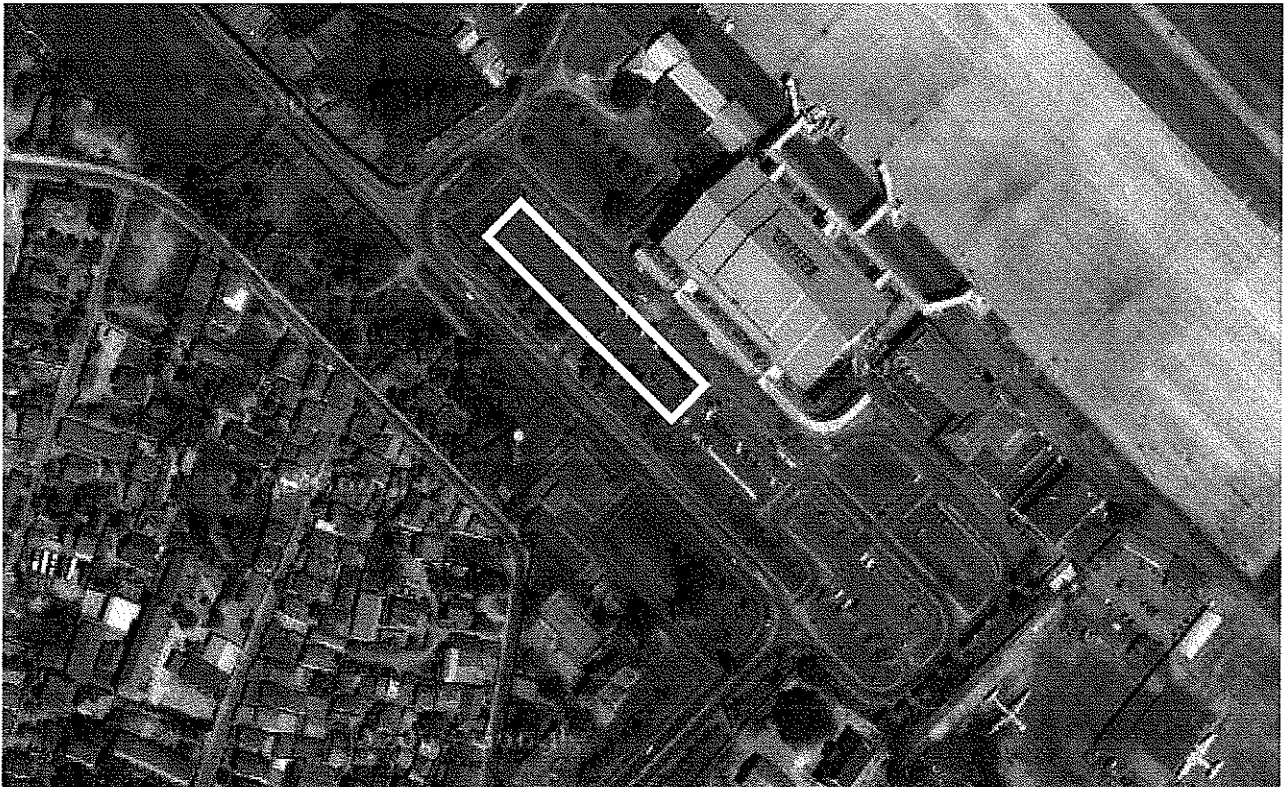
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Candidate Site for PV System supported by the Project
Site Map:

Prime Minister's Office



WATTAY International Airport



h. Sun

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.

/s/

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

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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

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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"

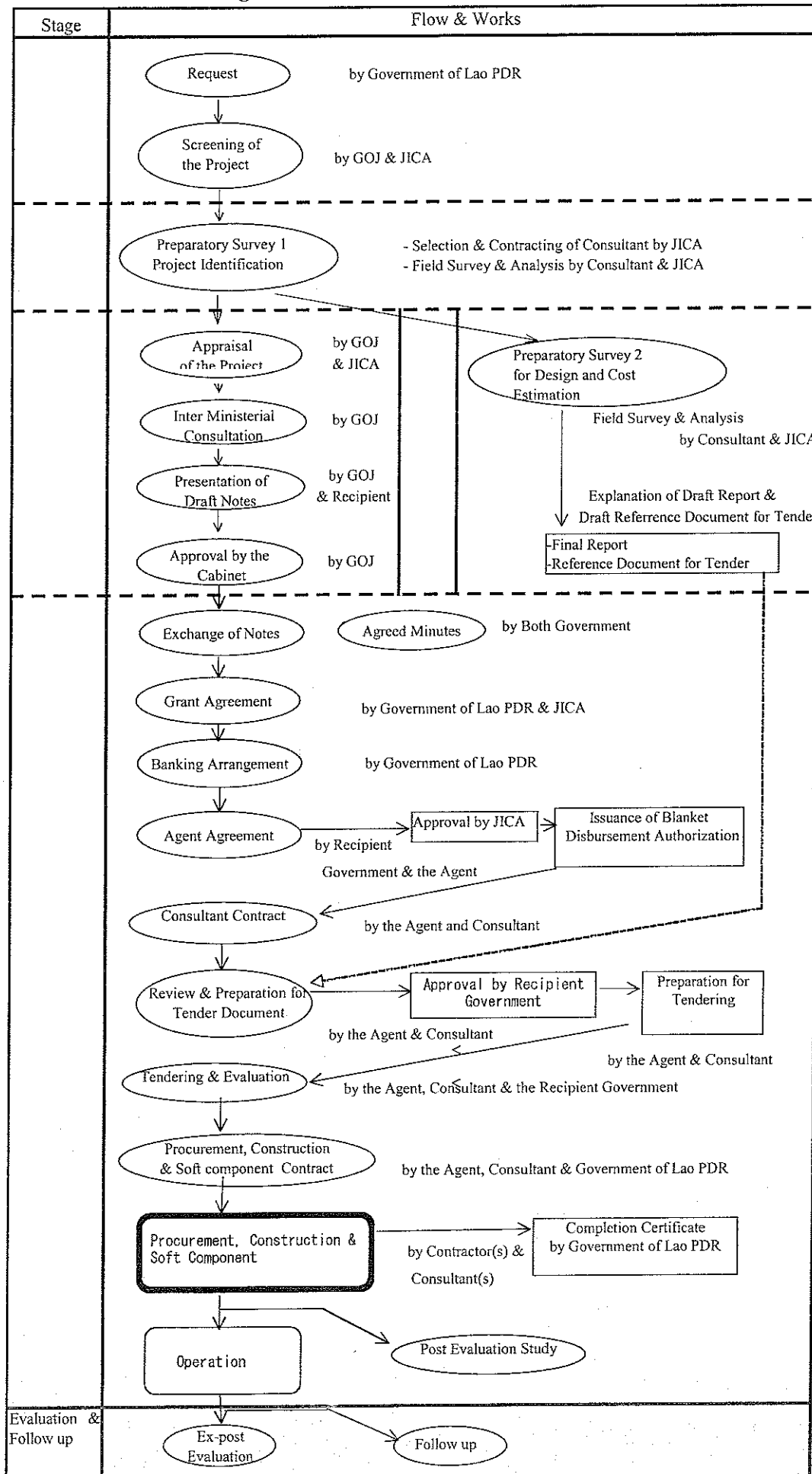
The Recipient is required to operate and maintain the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign personnel necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.

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.

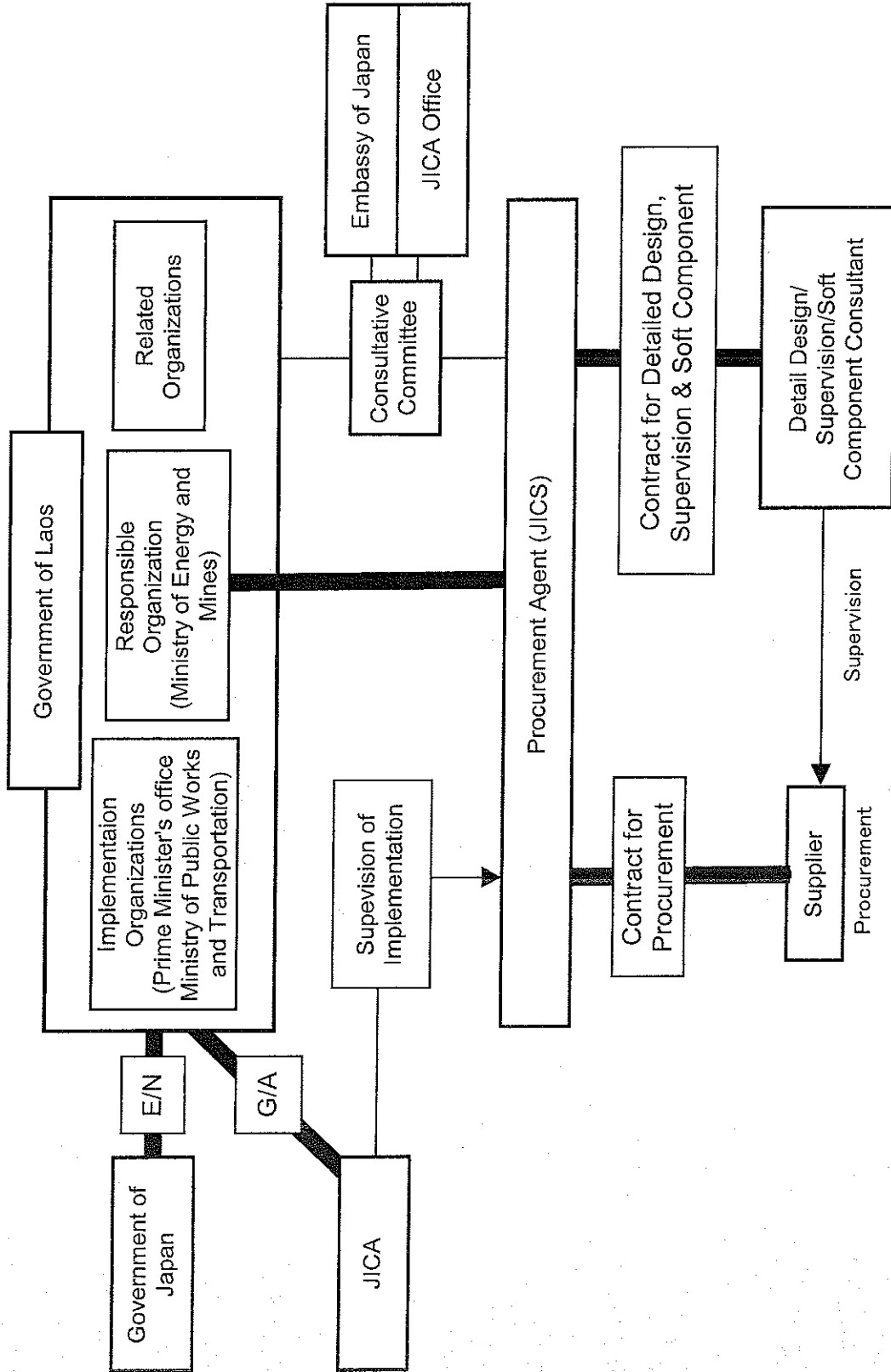
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General Flow of Program Grant Aid for Environment and Climate Change



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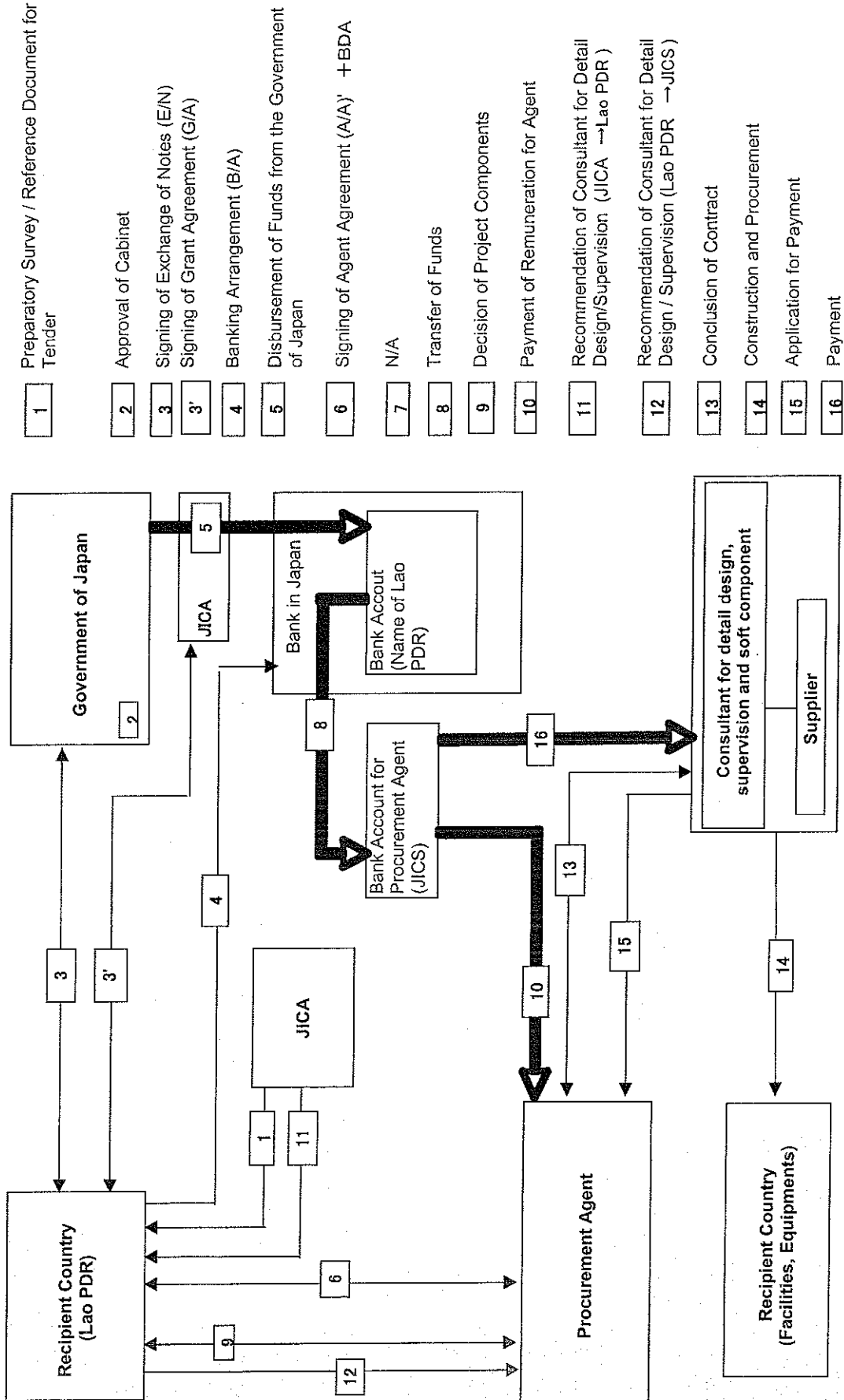
Project Implementation System



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Flow of Funds for Project Implementation

Implementation Flow
Cash Flow



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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 all the expense and prompt execution of unloading and customs clearance at the port of disembarkation in the recipient country		
	1) Marine or air transportation of the products from Japan or third countries to the recipient	●	
	2) To ensure all the expense and prompt execution of unloading, tax exemption 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 Programme.		●

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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 Preparatory Survey (Outline Design)
on
The Project for Introduction of Clean Energy by Solar Electricity Generation System
in
the Lao People's Democratic Republic

(Explanation on Draft Final Report)

In December 2009, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched to the Lao People's Democratic Republic (hereinafter referred to as "Lao PDR") a Preparatory Survey Team on the Project for the Introduction of Clean Energy by Solar Electricity Generation System (hereinafter referred to as "the Project"), to hold discussions with relevant officials of the Government of Lao PDR (hereinafter referred to as "GoL") to conduct field surveys and to make technical evaluations. After discussing results of the Preparatory Survey in Japan, JICA prepared a Draft Outline Design Study Report.

In order to explain and to consult with the concerned officials of GoL on the components of the Draft Final Report, JICA dispatched to Lao PDR a Preparatory Survey Team for Draft Final Report Explanation (hereinafter referred to as "the Team"), which is headed by Mr. Yoshiharu YONEYAMA, Senior Representative of JICA Laos Office, from September 5th to 11th, 2010.

As a result of the discussions held between the Team and concerned officials of GoL and further consideration in Japan, the main items described on the attached sheets are confirmed.

Vientiane Capital, March, 16th, 2011



Mr. Yoshiharu YONEYAMA

Leader

Preparatory Survey Team

Japan International Cooperation Agency

Japan



Mr. Hatsady SYSOULATH

Deputy Director General

Department of Electricity

Ministry of Energy and Mines

Lao People's Democratic Republic



Mr. Inthanousone SISONNH

Deputy Director General

Department of Civil Aviation

Ministry of Public Works and Transportation

Lao People's Democratic Republic

ATTACHMENT

1. Components of the Draft Final Report

Department of Electricity, Ministry of Energy and Mines (hereinafter referred to as “MEM”) and Department of Civil Aviation (hereinafter referred to as “DCA”), Ministry of Public Works and Transportation (hereinafter referred to as “MPWT”) 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

GoL understood the contents of the Minutes of Discussions signed by the Team and GoL on 12th January, 2010 (hereinafter referred to as “the previous M/D”), and agreed to take the necessary measures confirmed on the previous M/D for smooth implementation of the Program 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 system

The Team and GoL confirmed that project site is Wattay International Airport only as shown in **Annex-2**. The Team explained that the capacity of PV system can be increased up to 236kWp from 90 kWp in the previous M/D based on the result of outline design and cost estimation. The GoL accepted the change of PV capacity.

3.2. Implementing Agencies

The Team and GoL confirmed that Lao Airport Authority (hereinafter referred to as LAA) is the implementing agency for the Project on behalf of DCA.

4. Equipments to be procured

The Team explained that the list of equipment to be procured is as shown in **Annex-3** based on the result of the 2nd Preparatory Survey conducted in February 2010. After discussions, the Team and GoL agreed to procure the major equipment such as PV module, Power Conditioner and Transformer from Japan, while third country products are acceptable for other type of equipment and accessories.

5. Procurement Process for the Project

The Team and GoL reconfirmed that procurement process will be supervised by the Procurement Agent (hereinafter referred to as “the Agent”) through necessary consultations with the Consultative Committee (hereinafter referred to as “the Committee”). The Team and GoL also reconfirmed roles of the Agent as follows;

- (1) The Agent will render the services stipulated in the provisions of the Grand Agreement (hereinafter referred to as "the G/A") as well as the Exchange of Notes (hereinafter referred to as "the E/N") for the Project;
- (2) The Agent will undertake the procurement procedures necessary for the Program according to the provisions of the G/A and the E/N and any other relevant guidelines
- (3) JICA will provide a Final Report to the Agent; and
- (4) 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 the G/A and the E/N, quantity or/and items of the equipment would be reduced until the cost for the Project comes down to the amount agreed on the G/A and the E/N.

GoL agreed that if there is a remaining amount of the cost for the Project after tenders, additional items of equipment would be procured based on priorities which were set in the Final Report. Both sides confirmed that the parking lot in front of the domestic terminal building as shown in **Annex-2** would be the priority site in case of additional PV panel installation needed.

GoL also understood that decision on addition or reduction of the equipment to be procured would be made through necessary consultations with members of the Committee.

6. Project Cost

GoL agreed that the cost for the Program should not exceed the upper limit of amount agreed on in the E/N. The Team and GoL also agreed that the cost for the Project contains procurement cost of equipment, the cost for transportation up to the site for the Project, installation cost, the Consultant fee, the Agent fee, and the cost for soft component for the technical support of operation and maintenance of equipment.

7. Confidentiality of the Project

(1) Detailed specifications of the Facilities

The Team and GoL agreed 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 (i.e. outside of JICA, GoL and the Agent) before conclusion of all the contract(s) for the Project.

(2) Confidentiality of the Cost Estimation

The Team explained the cost estimation of the Project as described in **Annex-4**. The Team and GoL agreed that the cost for the Project estimates should never be duplicated or released to any outside parties (i.e. outside of JICA, GoL and the Agent) before tender for the Project. GoL understood that the cost for the Project Estimation attached as Annex-3 is not final and is subject to change as a result of examination through revision of the Outline Design Study.

8. The Consultative Committee

GoL agreed that MEM would chair the Committee in order to facilitate consultation and procurement process. The Terms of Reference of the Committee are outlined in Annex-8 of the previous M/D.

The members of the Committee are as follows:

- (1) Representative(s) of MEM (Chair)
- (2) Representative(s) of MPWT
- (3) Representative(s) of LAA
- (4) Representative(s) of JICA Laos Office

The first meeting of the Committee shall be held after the signing of the consultant contract between the Agent and the consultant. Further meetings shall be held upon request base of either GoL or the Japanese side. The Agent may advise JICA and GoL on the necessity to call for a meeting of the Committee.

9. Other Relevant Issues

9.1. Undertakings required by GoL

The Team requested GoL to abide by the following undertakings by GoL in addition to major undertakings described in the previous M/D and in **Annex-5** of this M/D. GoL agreed to do so.

(1) Land usage for PV system

MPWT is the owner of the land for the following equipment and materials for PV system. GoL has reconfirmed that there is no objection for the implementation of the Project.

- 1) for PV system
- 2) for Temporary stockyard

(2) Environmental and Social Considerations

GoL reconfirmed that EIA and IEE are not required for the project implementation of solar generation.

(3) Application of the Related Laws and Regulations

- 1) GoL agreed that the structural design for the installation of PV system should comply with the Architectural Regulation in Japan and Lao PDR.
- 2) Electrical design for Grid-connected PV system should be done in accordance with JIS/IEC, Grid Code in Lao PDR and Lao Electric Power Technical Standard (2004).

(4) Customs and Tax Exemption

GoL agreed that MEM should be responsible for the exemption of all customs, tax, levies and duties incurred in Laos for the implementation of the Project..

(5) Assignment of Counterpart Personnel

- 1) Overall project management

DCA and LAA will assign the following personnel for overall project management and

coordination for the implementation within one month after the signing of this M/D.

- A Project Director
- A Project Manager
- Necessary technical staff

2) Soft Component

GoL agreed to assign necessary personnel in accordance with the soft component plan proposed by the Team.

LAA will assign the focal Counterpart Personnel for the soft component.

Other personnel will be assigned from MEM and Electricite Du Laos as required at the time of implementation of the Soft Component.

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

GoL has reconfirmed that the MPWT is the final owner of Equipment and responsible for securing necessary budget and personnel for Operation and Maintenance (O&M) of Grid-connected PV system procured and installed under the Program. GoL confirmed that the Equipments procured under the Project shall be fully operated and maintained by LAA with assistance of Electricite Du Laos.

<List of Annex>

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

Annex-2 Location Map of the Project Site

Annex-3 List of Equipments

Annex-4 Project Cost Estimation (Confidential)

Annex-5 Major Undertakings to be taken by GoL

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 Program are examined in the course of Phase 1 of the Survey,

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Thirdly, the Government of Japan appraises the Program 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 Program, 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, will, however, 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.

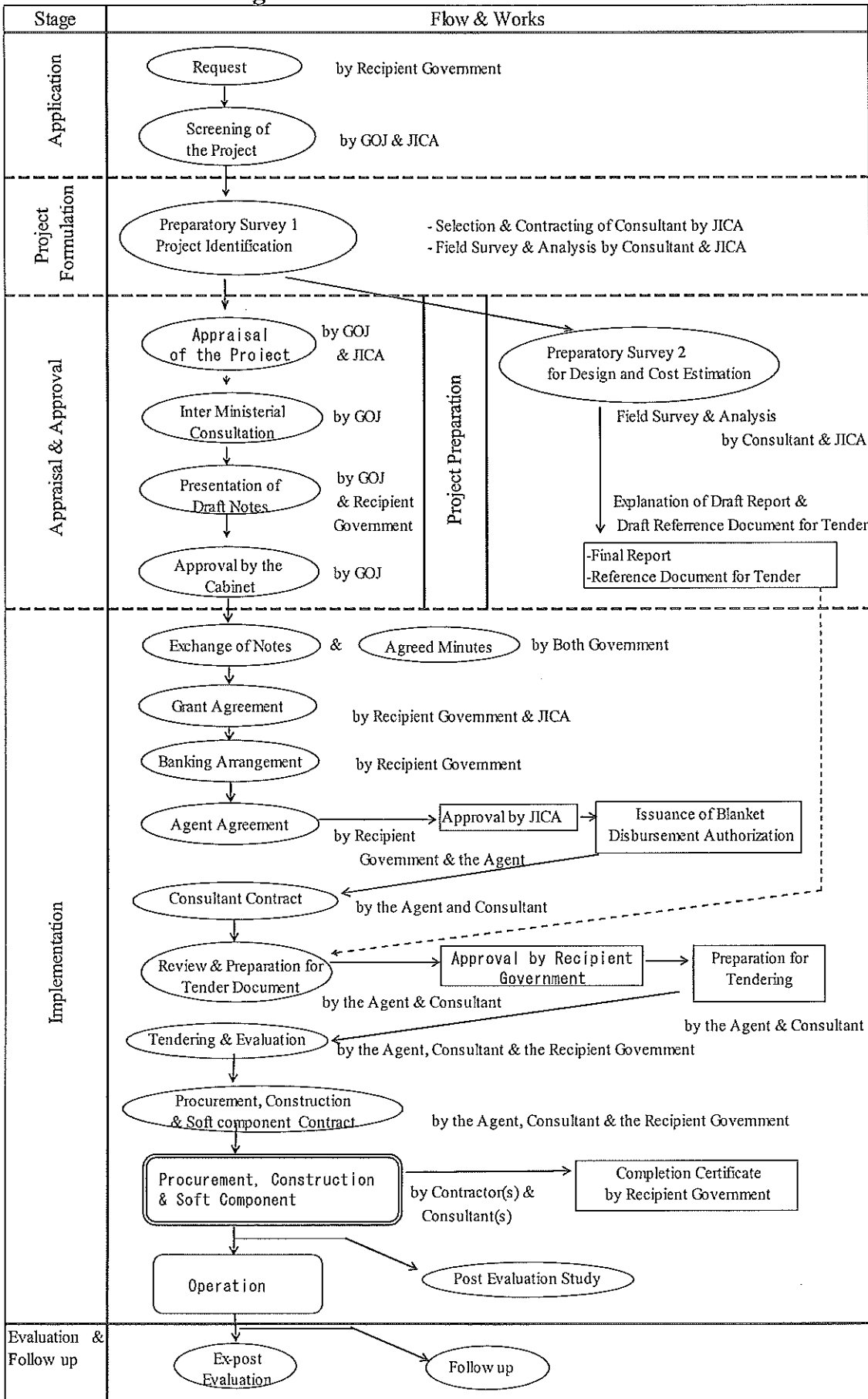
5) "Proper use of funds"

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

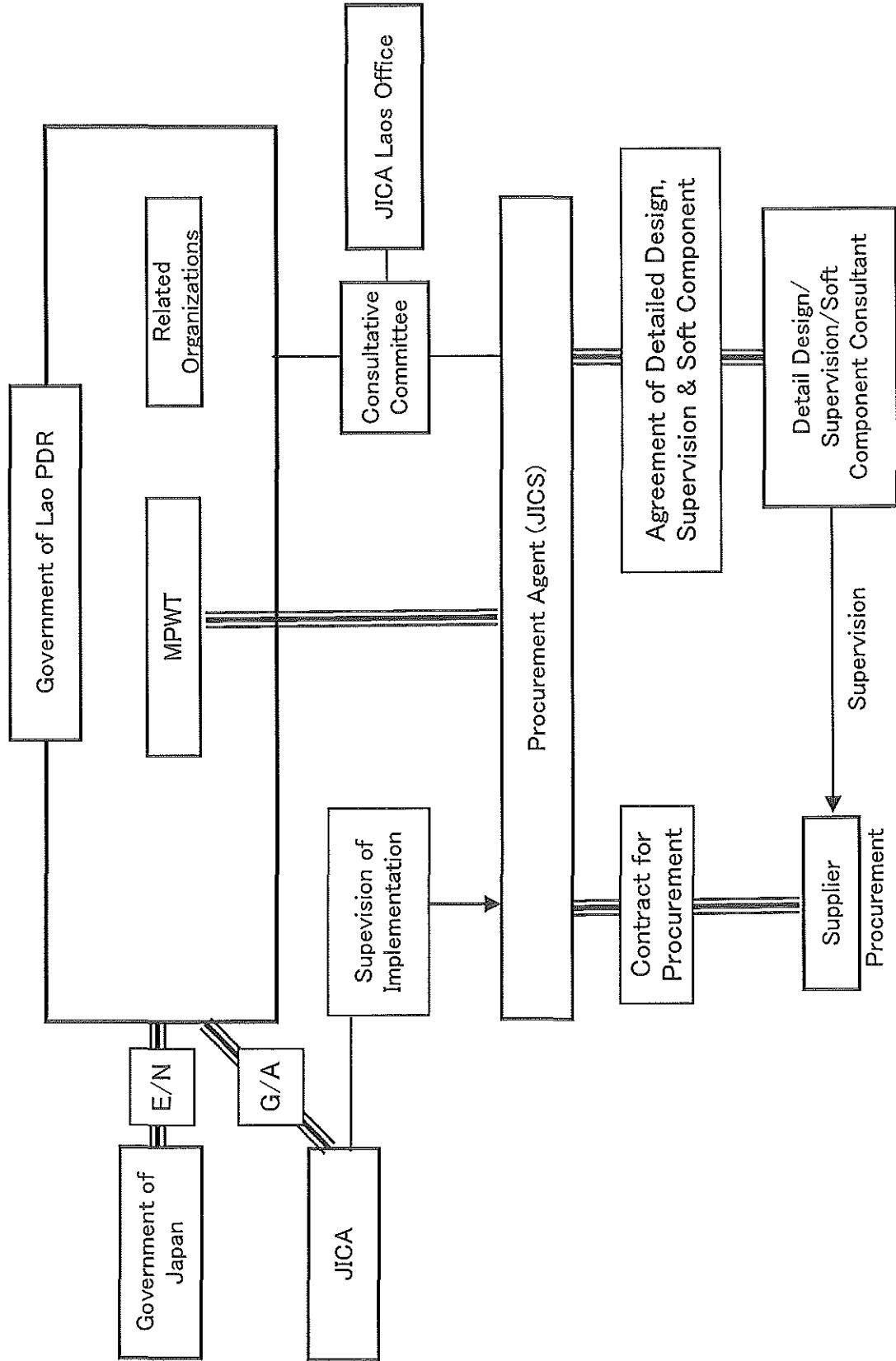
The products purchased under the Grant and its accrued interest will not be exported or re-exported from the Recipient.

General Flow of Program Grant Aid for Environment and Climate Change



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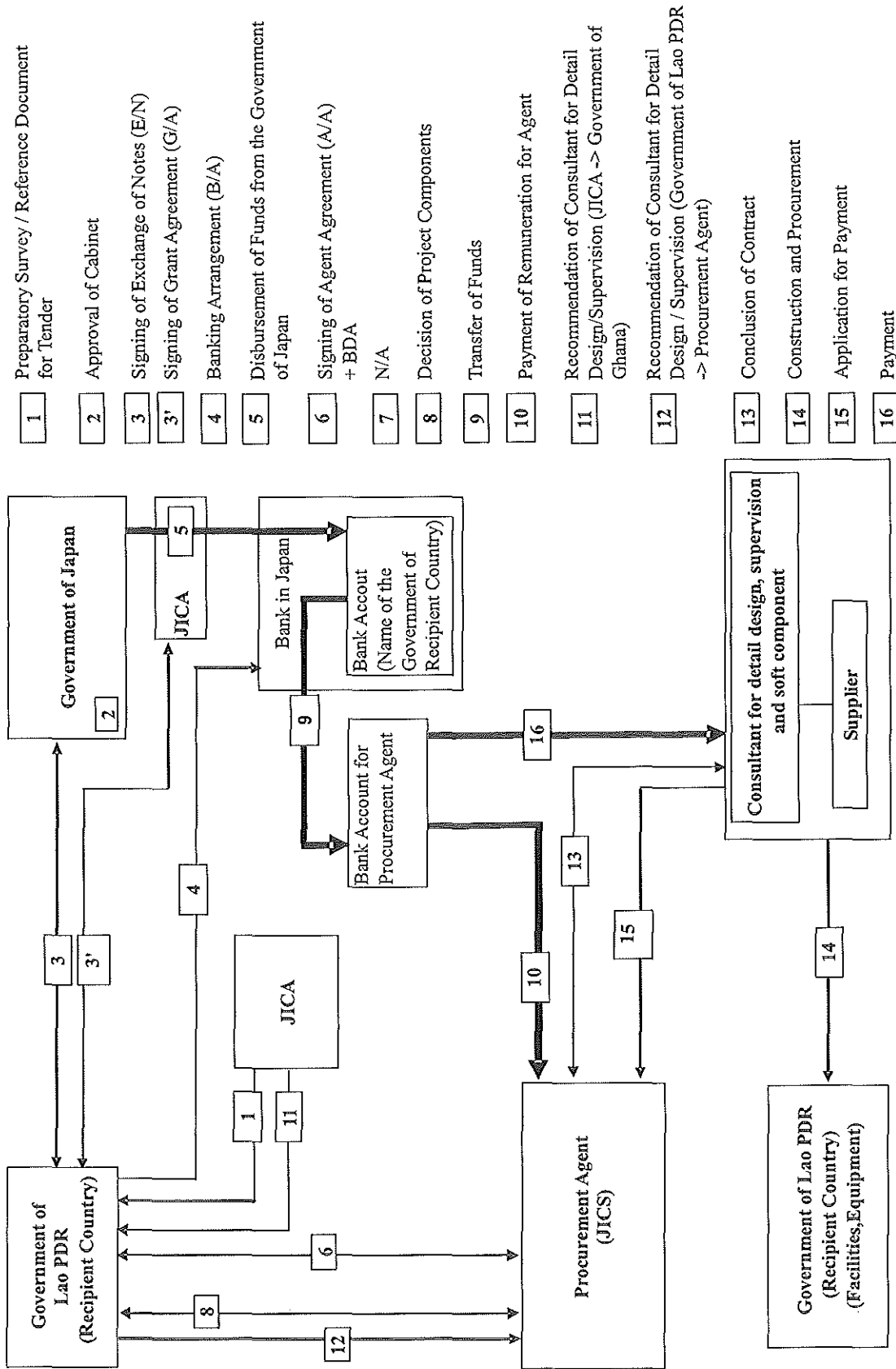
Project Implementation System



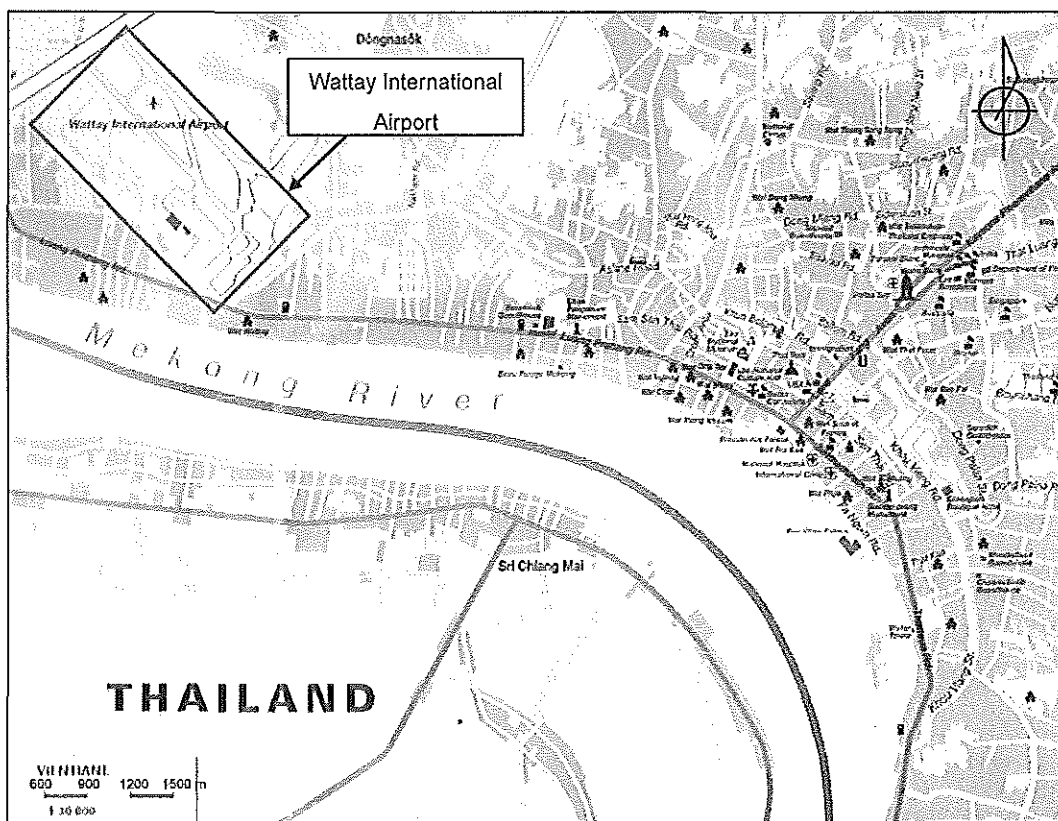
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Flow of Funds for Project Implementation

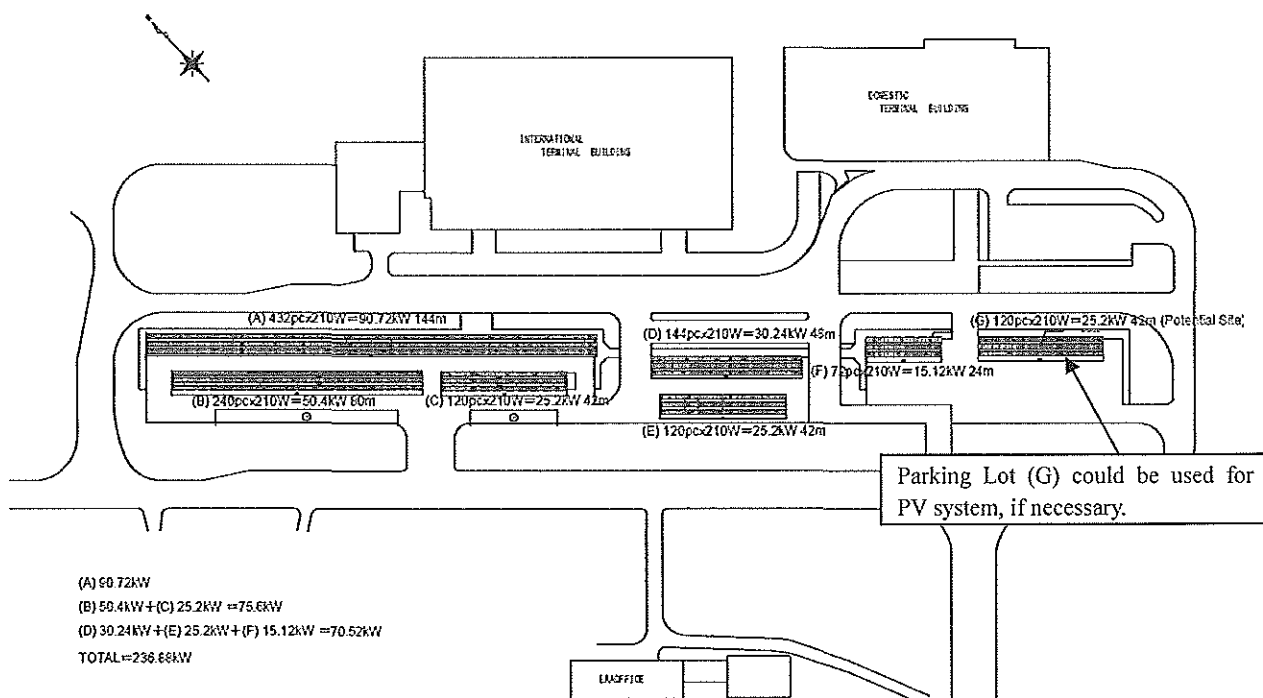
↑ Implementation Flow
 → Cash Flow



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Location Map of the Project Site



General Plan of Wattay International Airport

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Name of Device	Main Specification and/or Components	Qty	Purpose
	regulator (3) Grid Protection Device: OVR(225/230/235/240V), (410/420/430V), interval (0.5/1.0/2.0S), UVR(160/165/170/175/180V), (350/360/370V), interval (0.5/1.0/2.0S), OVF(50.5/51/51.5/52Hz), interval (0.5/1.0/2.0S), UVF(48.5/49/49.5Hz), interval (0.5/1.0/2.0S), Blocking time after restoration: (5/150/200/300S) (4) Islanding Operation Detector: Active method and passive method prevailed in Japan (5) External Communication; Transmitted information: malfunction & measuring information by RS485 (6) Internal Lightning Protection Device; DC SPD Class II and above, AC SPD gap type class II and above		
Transformer	(1) Rated output: 300 kVA (2) Primary voltage (output): AC380-220V, 3-phases and 4-wires (3) Secondary voltage (input): AC200V, 3-phases and 3-wires (4) Frequency: 50Hz (5) Insulating class: H-type and dry class (6) Other specification: Rating plate, primary terminal - 5 taps and more	1 Ls	One of the main components of the power conditioner and converting AC voltage into required voltage level.
External Lightning Protection	(1) Applicable Standard: JIS A 4201-2003 (2) Protection level: Level III (3) Receiving part: lightning rod, horizontal conductor, and mesh conductor by rotating sphere method (4) Grounding: Keeping the same electrical potential with that of supporting structure of PV panel	1 Ls	Protecting outdoor facilities from lightning strike, necessary device for PV system to be installed in countries, where there are many lightning in rainy season.
Cubicle	(1) Material: SPHC Steel plate (2) Devices to be stored: 100kW x 3 power conditioner, 300 kVA equivalent transformer, data transmittal device, I/O switch, and circuit breaker (3) Internal Lightning Protection : AC SPD Class II and above at output side (4) Ventilation: Forced cooling system (cooling fans)	1 Ls	Box containing electrical devices, such as power conditioner and transformer, and protecting those devices from direct light and rain. The box is necessary when those electrical devices are installed outside.
Data Monitoring System	(1) Data monitoring device Measuring method: Measuring interval: 6 second Collecting data: DC - voltage /current, AC - voltage/current/power/ frequency Monitoring device: Personal computer (Windows XP or equivalent), serial signal converter (from RS485 to RS232C), uninterruptible power supply system (UPS), rack for personal computer (2) Required Function: Displaying instantaneous value, graph, operation performance of power conditioner, malfunction information and storing setting values for grid protection device in power conditioner	1 Ls	Monitoring device for operation performance of the PV system. The data monitoring system is necessary in terms of operation and maintenance of the system.
Display Device	(1) Construction: Indoor hanging type, LED plane luminescence panel (brightness 85% and more, average luminance of panel 200 lux/ 600 cd and more) (2) Display items: Instantaneous value of power output and cumulative generation energy (3) Display panel: 5~15 cm/ number (4) Size: H 1000 mm x W 1500 mm approximately	1 Ls	Necessary device for enlightenment of the PV system.

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Name of Device	Main Specification and/or Components	Qty	Purpose
Weather Observation Device	(1) One thermometer (2) One pyranometer	1 Ls	Necessary to analyze the generation performance of the PV system
Supporting Structure for PV Module	(1) Material: JIS G3101, SS400 (2) Coating: Hot dip galvanized HDZ45 equivalent	1 Ls	Supporting and fixing PV modules

Note: The quantity and detailed specification in the table might be changed depending on the conclusion of the Bid Tender provided that the installed capacity of 236 kW shall be met.

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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 ¥ 467 million

Item	Amount (Million Japanese Yen)
1. Procurement cost of equipment and materials	417
2. Procurement Agent & Consulting Services Fee	50
3. Total (1+2)	467

2. Cost to be borne by the Laos side: Kip 0

Item	Amount
1. Clearing and leveling of the Site	Kip 0
2. Total (1.)	Kip 0

Note: Payment of Bank Commission is not included and issuing commission of the permission for the persons related to the Programme to enter the project sites and providing office space to the Consultant will be borne by the Laos side.

3. Cost to be borne by the Laos side for Operation and Maintenance (every year)

	LAA
Personnel expenses	-
Employment of temporary workers for the cleaning PV panel	Approx. Kip 6,000,000
Expendable and replacement parts cost in the short run (reserve fund)	Approx. Kip 5,000,000
Expendable and replacement parts cost in the long run (reserve fund)	Approx. Kip 164,000,000
Total (in the short run)	Approx. Kip 11,000,000
Total (in the long run)	Approx. Kip 170,000,000

The equipment to be procured in the Programme can be operated and maintained by the existing maintenance staff of the facility except employment of temporary workers for the cleaning PV panel.

At intervals the equipment will require replacement of worn out parts and consumables. In the short run, most of parts and consumables to be needed will be covered by those provided in the Programme, only minor, locally available items have to be purchased by the Laos side. After the provisions of the Programme have run out, necessary items that have to be purchased by the Laos side will increase.

4. Conditions for estimation

(1) Time of estimation: March 2010

(2) Foreign exchange rate: US\$ 1.00 = JP¥ 91.36, Kip 1.00 = JP¥ 0.01081

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

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Major undertakings to be taken by each Government

No.	Items	To be covered by Grant Aid	To be covered by Recipient Side	
			MEM	MPWT
1	To secure land			○
2	To clear, level and reclaim the site when needed urgently			○
3	To construct gates and fences in and around site			○
4	To construct a parking lot if necessary			○
5	To construct roads			
	1) Within site	○		
	2) Outside the site and Access road			○
6	To construct the facility and install 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.)	○		
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 all the expense and prompt execution of customs clearance at the port of disembarkation in the recipient country			
	1) Marine or air transportation of the products from Japan or third countries to the recipient	●		
	2) To ensure all the expense and prompt execution of tax exemption 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 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 Programme		●	

Note: ● means coming undertaking and ○ means already done or out of subject.

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5. 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

「ラオス国太陽光を活用したクリーンエネルギー導入計画」環境プログラム無償は、ラオス国ビエンチャン市内外れのワットタイ国際空港に定格容量 236 kW の太陽光発電設備を調達し、発生した電力により当施設の電力需要の一部を賄うものである。ラオス国においては、系統に連系しないオフグリッドの太陽光発電設備の実績はあるものの、200 kW 相当の規模の系統連系型太陽光発電設備の設置及び運用は初めてとなる。また、ワットタイ国際空港を運営・管理する LAA には、これまで太陽光発電設備を運用した経験が無い。従って、本事業の発現効果の持続性の観点からは、当該施設において設備の運転・維持管理を担当する人材に対し、運転・維持管理の方法を習得させるトレーニングプログラムを提供することが望ましい。

さらに、ラオス国政府は地方電化戦略¹の中で、系統接続による地方電化に加え、太陽光等のクリーンエネルギーを活用した地方電化の推進を掲げており、両者をあわせて 2020 年までに地方電化を 90% 達成することを目標²としている。この目標を支援する立場からも、今回の系統連系型の太陽光発電に係るトレーニングプログラムを電力公社やそれを統括するエネルギー鉱業省職員に提供することは有益である。

調達契約業者が実施する初期操作指導・運用指導は、運転、維持管理の現場における実践的な技術の取得を目的としている。一方で、本ソフトコンポーネントは、それらの実践技術の背景にある基礎知識、例えば太陽光発電設備の特徴と各機器の機能、系統連系に伴う系統保護機能等の技術的課題を伝達することにより、運転、維持管理のさまざまな局面におけるより確かな判断力、応用力の基礎づくりを行い、さらには今後の類似事業への適用という発展性も視野に入れて実施するものである。

2. ソフトコンポーネントの目標

上記の背景を踏まえ、プロジェクトの発現効果と持続可能性の観点から以下の目標を設定する。

- 設置した太陽光発電設備が計画通り運転され、発電が行われる
- 設置した太陽光発電設備が持続的に維持管理される

3. ソフトコンポーネントの成果

上記の目標が達成された場合の成果は以下の通り。

¹ 出典：「National Growth and Poverty Eradication Strategy (NGPES)”, 2004, page 104

² 出典：Government Plans and Policies ([www.poweringprogress.org/index.php?view=article&catid=90%3Agovernment....](http://www.poweringprogress.org/index.php?view=article&catid=90%3Agovernment...))

<LAA 等の現場の運転・維持管理人材について>

- 操作員が通常の運転・維持管理が行えるようになる。
- 操作員が事故・故障時に適切な対応ができるようになる。
- 操作員が自ら軽微な消耗品の交換や必要なスペアパーツや消耗品の調達等ができるようになる。

<MEM、EDL の人材について>

- 太陽光発電設備に係る基礎技術（技術的特性等）を理解し、同様の案件に知識を活かせるようになる。
- 系統連系に伴う電力会社との協定等について必要な技術的事項を理解し、協定書等を作成できるようになる。
- 新規太陽光発電設備導入に係る人材育成や指導を行うための知識を得、人材育成・指導に活用できるようになる。

4. 成果達成度の確認方法

ソフトコンポーネントは運転開始前後及び運転開始2.5ヶ月後の2回に分けて実施するため、成果達成度の確認は第2回目のソフトコンポーネント実施時期となる。

<LAA 等の現場の運転・維持管理人材について>

(1) 発電設備の運転

運転開始から2.5ヶ月間の運転記録シートをレビューし、以下について検証する。

- 毎日発電されているか
- 当初想定された月別発電量予測と実績との差が $\pm 20\%$ 以内か

毎日発電されており、月別発電量予測と実績との差が $\pm 20\%$ 以内であれば現場の運転・維持管理要員が適切に発電設備の運用を行っていると評価できる。月別発電量が下限管理値の20%を下回るか、もしくは、発電量が連続的に低下傾向を示している場合には、何らかの不具合が発生している可能性が高く、下記の維持管理と合わせて各運転・維持管理要員に考えられる原因とその根拠を提案させる（演習）ことで、習熟度を確認する。

表-1 月別発電量の管理値

	1月	2月	3月	4月	5月	6月	7月	8月	9月	10月	11月	12月
期待発電量(kWh/月)	22,227	21,644	25,668	26,910	27,032	25,290	23,777	22,754	22,500	25,203	22,860	22,382
上限管理値(kWh/月)	27,000	26,000	31,000	32,000	32,000	30,000	29,000	27,000	27,000	30,000	27,000	27,000
下限管理値(kWh/月)	18,000	17,000	21,000	22,000	22,000	20,000	19,000	18,000	18,000	20,000	18,000	18,000

(2) 発電設備の維持管理

同じく運転開始から 2.5 ヶ月間の日常管理チェックシート、定期点検チェックシート及び事故不具合発生記録シートをレビューし、以下について検証する。

- 不具合が発生していないか、発生していた場合はマニュアル通り適切に対応したか
- 消耗品の取替えがあった場合、正しく交換されているか（現場での確認も含む）
- 日常点検・定期点検が日常管理チェックシート、定期点検チェックシートに従って正しく行われているか

運転開始から 2.5 ヶ月以内であるため、通常であれば不具合は発生していないはずである。もし、不具合が発生した場合は、調達契約業者の 1 年間の瑕疵担保保証期間内であるため、LAA が保守・運転要員を介して調達契約業者に連絡し、必要な修理・対策が実施されているかどうかの評価の対象となる。

SPD（避雷器）やキュービクル内照明灯などの消耗品を取り替えていた場合、現場での取り付け状況を確認し、正しく設置されているかどうかの評価の対象となる。また、日常点検チェックシートや定期点検チェックシートの全項目がチェックされ、実施時期（日）も所定の時期（日）に行われているかどうかとも評価の対象となる。チェック項目が抜けていたり、所定の時期（日）に実施されていない場合には、その理由を運転・維持管理要員に考えさせ、実情にあったチェックシート（管理計画）を提案させることで、習熟度を確認する。また、運転・維持管理の習熟度に関するアンケート調査を最終日に実施し、ソフトコンポーネントの成果を評価する。

<MEM、EDL の人材について>

運転開始前後の技術トレーニングでは太陽光発電設備に係る基礎技術講義を行う。また、運転・維持管理に関する FAQ や事故不具合発生事例を紹介し、事故不具合発生時の対応を講義する。さらに、運転記録データの分析・活用方法についても講義する予定である。一部講義の中で実施される演習を通じて知識の習得度を確認するよう努める。

また、運転開始 2.5 ヶ月後に実施する技術トレーニングでは、上記の運転・維持管理要員と同じ方法で習熟度の確認に努める。

5. ソフトコンポーネントの活動(投入計画)

(1) 実施内容

ソフトコンポーネントは上記目標を達成するため、講義、OJT、演習等の一連の業務を

本邦コンサルタントへの委託で実施する計画とする。実施内容としては、太陽光発電設備の運転開始前後と運転開始 2.5 ヶ月後の 2 回を利用して、以下の事項とする。なお、本件無償資金協力事業の調達・工事契約の中には、設備の運転・維持管理指導が含まれているため、本件のソフトコンポーネントは、調達契約業者により実施される設備の運転・維持管理指導とタイミングを合わせ、必要な技術と知識が研修対象者に効率的に移転されるよう計画する必要がある。

運転開始前（約 2 週間前から）及び運転開始直後に実施する項目は以下の通りである。下記実施項目のうち◆印をつけた項目は、調達契約業者の実施する運転・維持管理指導に対し、ソフトコンポーネントでフォローアップを行う部分を示している。

<運転開始前(約 2 週間前から)>

太陽光発電設備に係る基礎技術講義として

- 系統連系の仕組み・考え方
- 逆潮流現象の理解
- 太陽光発電特性の理解（定格出力と実行出力の差等）
- 太陽光発電設備に要求される電気設備とその仕様の理解
- 太陽光発電設備の設置容量決定に係る支配要因（施設内電力需要、負荷等）の理解
- 系統事故時の太陽光発電設備の対応の理解
- 太陽光発電設備の停止と再起動

OJT として

- 配線接続工事立会い (OJT)
- 試運転前最終確認検査立会い (OJT)
- 試運転・調整立会い (OJT) ◆
- 起動、停止、再起動 ◆
- 竣工検査立会い (OJT)

<運転開始後>

調達契約業者の運転指導とそのフォロー

- 日常管理の実施指導（演習を含む）◆
- 定期点検時期と点検項目（演習を含む）◆
- 機器構成と消耗品、軽微な交換作業（演習を含む）◆
- 運転・維持管理への FAQ 紹介（演習を含む）◆
- 事故不具合発生事例の紹介と発生時の対応（演習を含む）◆

調達契約業者の運転指導を踏まえた運転・維持管理活動の計画

- 運転記録シート作成（演習を含む）
- 日常管理チェックシート・定期点検チェックシート作成（演習を含む）
- 事故不具合発生記録シート作成（演習を含む）

- 運転記録データの分析・活用方法（演習を含む）

運転開始 2.5 ヶ月後に実施する項目は以下の通りである。実際に設備を運転した経験を踏まえ、その中で発生した疑問を明らかにするとともに、設備固有の運用上の課題を抽出し、運用や点検チェックシート等への反映を行い、より現実に即した運用方法・維持管理方法を確立する。これにより、設備の持続的運転・維持管理を確実なものとするとともに、関係者の理解を深めることを目的としている。

<運転開始 2.5 ヶ月後>

- 2.5 ヶ月点検立会い ◆
- 約 2.5 ヶ月間の維持管理実績評価とトラブルシューティング（演習を含む）
- 運転記録データの分析による運転実績の評価及び今後の課題抽出とその対策（演習を含む）
- 記録・チェックシート見直し

(2) 実施対象者

図-1 に LAA の組織図を示す。今回調達する太陽光発電システムの運営・維持管理は、現在空港敷地内にあるパワーハウスの維持・管理を行っている空港運営センター(Airport Management Center)が行う。パワーハウスでは EDL から受電し、空港各施設に電力を供給している。空港運営センターには 4 名の電気技術者がおり、このスタッフが今回の太陽光発電システムの運営・維持管理を行う予定である。EDL によれば LAA の電気管理能力は高いとの評価であった。PV システムの運用・保守に要求される役割と資質を表 2 に示す。

上記 LAA の職員以外にもラオス国への系統連系型太陽光発電設備の導入支援を目的として、MEM で地方電化を担当している地方電化部門(Rural Electrification Division)及び系統連系の当事者である EDL の技術部門(Technical Department)の職員も実施対象者とする。

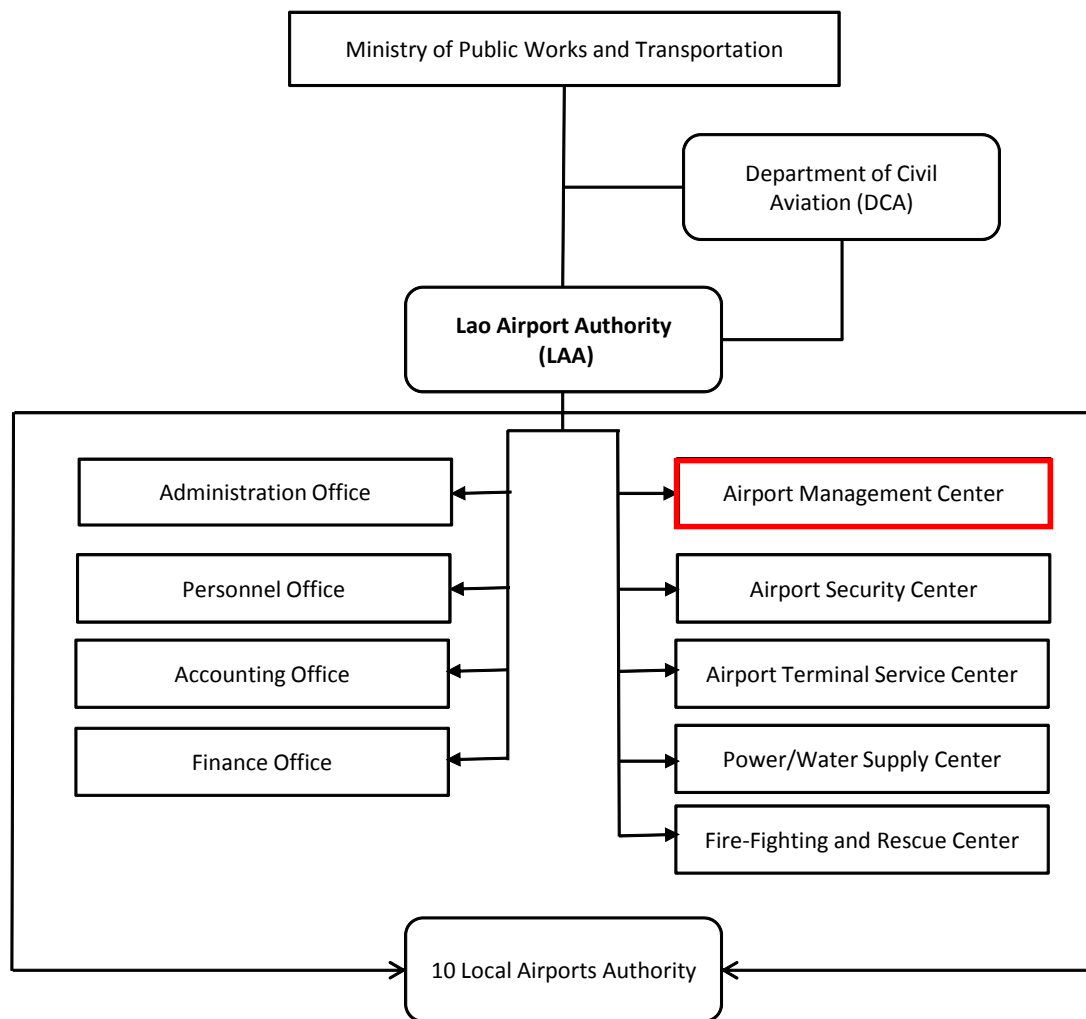


図-1 LAA 組織図

対象者は、以下のとおりとする。

表-2 参加対象者

実施対象者	実施対象部門	受講目的と要求される資質
LAA	空港運営センター	<ul style="list-style-type: none"> システムの運用・日常管理を目的とする 電気設備の維持管理経験者（5年以上）
MEM	地方電化部門	<ul style="list-style-type: none"> ラオス国における系統連系型太陽光発電設備導入計画策定を目的とする。 工学系（電気）の大学卒業生で実務経験（10年以上）
EDL	技術部門	<ul style="list-style-type: none"> 太陽光発電設備の系統連系に伴う技術的課題抽出とその対応整備を目的とする。 工学系（電気）の大学卒業生で実務経験者（10年以上）

上記対象者とその参加プログラムは、以下のとおりとなる。なお、参加者の異動等を考慮し、参加人数は原則として3～5名とする。

表-3 参加対象プログラム

実施項目	LAA	EDL	MEM
	空港マネージメント部門	技術部門	地方電化部門
	3～5名	3～5名	3～5名
運転開始前			
基礎技術講義		○	○
○JT(配線・据付工事)	○	○	
○JT(試運転・調整立会い)	○	○	
○JT(起動、停止、再起動)	○	○	
○JT(竣工検査立会い)	○	○	
運転開始後			
運転操作指導のフォロー	○	○	
運転維持管理活動計画	○	○	
運転開始2.5ヶ月後			
点検立会い	○	○	
維持管理実績評価	○	○	
運転実績の評価と課題抽出	○	○	○
記録チェックシートの見直し	○		

(3) 実施工程

以上の活動について、そのスケジュールは表-4、表-5の通り。

表 -4 ソフトコンポーネント1:運転開始前後の活動

活動		-2週	-1週	1週	2週
活動内容	準備作業	■			
	基礎技術講義		■		
	工事・試験立会い(○JT)	■	■		
	竣工検査立会い(○JT)			■	
	運転指導 ◆		■	■	
	運転・維持管理活動計画				■
対象者	LAA 空港マネージメント部門	■	■	■	
	EDL 技術部門	■	■	■	
	MEM 地方電化部門	■	■		
指導者	太陽光システム啓発・普及	■	■	■	■
	機材・電気担当	■	■	■	■
	通訳	■	■	■	■

注：破線は終日では無く、時間単位での活動を示す。

表 -5 ソフトコンポーネント2:運転開始 4.5 ヶ月後の活動

	活動	1週	2週
活動内容	2.5ヶ月点検 ◆	■	
	維持管理実績評価とトラブルシューティング	■	
	運転実績評価・課題抽出と対策	■	■
	記録・チェックシート見直し		■
対象者	LAA 空港マネージメント部門	■	■
	EDL 技術部門	■	■
	MEM 地方電化部門	■	■
指導者	太陽光システム啓発・普及	■	■
	機材・電気担当	■	■
	通訳	■	■

(4) ソフトコンポーネントの実施リソースの調達方法

前述のとおり、系統連系型太陽光設備についてはラオス国内に実績がないため、ソフトコンポーネントの実施は、本邦コンサルタントへの委託が想定される。コンサルタントは、系統連系型の太陽光設備の計画、実施について実績を持つものが望ましい。

指導に当たる本邦コンサルタントについては、運転開始前後及び運転開始 2.5 か月後の実施時は、責任者と補助者の2名体制とする。

一方、参加者の中には、施設の設備管理技術者等、必ずしも英語に堪能でないものが含まれることが予想されるため、できる限り現地語に通訳をすることがソフトコンポーネントの効果を高める観点から必要になる。この通訳は、現地雇用を基本として考えるが、それが困難な場合は日本での委託・派遣も視野に入れることになる。

さらに、本計画の主要機材は多種多様な部品から構成されるパワーコンディショナも含め、日本で調達される予定であるため、各種参考資料が日本語又は英語の可能性が高い。ソフトコンポーネントで配布する講習テキスト及び技術参考資料は英語版とするが、特に重要と思われる配布資料は英語から現地語に翻訳し、受講生に配布することで、ソフトコンポーネントの更なる発現効果を図る。

プログラムの各実施項目に係るコンサルタントの作業人日の計画は表-6の通り。現地への往復移動日数(2日)を含めて運転開始前後のプログラムで週日稼働日30日、運転開始2.5ヵ月後プログラムで同15日とする。

表-6 ソフトコンポーネントの作業内容とリソース

実施項目	作業内容	必要人日
準備作業 計 3 日	<ul style="list-style-type: none"> ・ LAA と実施内容と参加者について協議・確認 ・ MEM、EDL と実施内容と参加者について確認 ・ 調達契約業者と実施内容について確認 ・ 資料準備等 	1 日 0.5 日 0.5 日 1 日
運転開始前 計 11 日 (OJT は同時期に実施)		
基礎技術講義 計 6 日	<ul style="list-style-type: none"> ・ 太陽光発電の理論的基礎 ・ 太陽光発電の利用方法 ・ 系統連系の仕組みと計画 ・ 余剰の発生と逆潮流の理解 ・ 施設への系統からの電力供給 ・ 施設内電力需要、負荷の理解(演習含む) ・ 配電線停電時の太陽光設備の対応 ・ 発電設備の計画(演習含む) ・ 発電設備設置者の電力会社との取り決め 	↓ 1 日 ↓ 1 日 ↓ ↓ 1 日 2 日 1 日
OJT(検査等立ち会い) 計 5 日	<ul style="list-style-type: none"> ・ 調達契約業者の検査に、各日数時間ずつ立ち会い 	5 日
運転開始後 計 14 日		
運転操作指導のフォロー 計 7 日	<ul style="list-style-type: none"> ・ 各日数時間の運転操作指導の後に次項を実施 ・ 各指導項目につき、マニュアルと基礎技術講義の資料を使用し、PV システム及び施設内電力設備全体との関連において説明。ディスカッション形式 	7 日
運転・維持管理活動の計画 計 7 日	<ul style="list-style-type: none"> ・ これまでの内容を踏まえ、日常的な運転・維持管理活動を列挙、活動について、チェックシートを作成 ・ 定期的な点検項目について列挙 ・ 各点検につき作業項目を抽出、チェックシートを作成 ・ 長期的な維持管理・点検活動のスケジュール作成 	左記を 7 日間で実施
運転開始 2.5 ヶ月後 計 13 日		
2.5 ヶ月点検 計 2 日	<ul style="list-style-type: none"> ・ 現場目視点検 ・ 運転操作の確認 	1 日 1 日
維持管理実績評価とトラブルシューティング 計 2 日	<ul style="list-style-type: none"> ・ 日常管理、事故時等の記録の検証による2.5 ヶ月間の運転・維持管理実績の評価・検証 ・ トラブルシューティング(アンケート、質疑等により、現実の課題を抽出、解決策を議論) 	1 日 1 日
運転実績評価と課題抽出 計 8 日	<ul style="list-style-type: none"> ・ 実発電量と想定値との比較評価(ディスカッション形式) ・ 記録ログの活用方法について(ディスカッション形式) ・ 記録ログの活用方法提案及び評価(各自)(プレゼン形式) ・ 発電量向上への課題と対応策の提案(各自)(プレゼン形式) 	2 日 2 日 2 日 2 日
記録・チェックシートの見直し 計 1 日	<ul style="list-style-type: none"> ・ 運転維持管理計画書のアップデートと記録表のアップデート 	1 日

(5) ソフトコンポーネントの実施工程

2011 年 11 月に、調達代理機関と調達契約業者の間の契約が調印されると想定した場合、以降のスケジュールにおいて次のようなソフトコンポーネント実施を計画する。

資料：概算事業費内訳

設計監理(コンサルタント)ソフトコンポーネント

項目	単位	数量	日本円		現地貨(ラオキップ)		米ドル		備考
			単価	合計	単価	合計	単価	合計	
ソフトコンポーネント費				8,375,160		2,568,966		2,880.00	
(1) 直接人件費	式	1.00		2,334,000		0		0.00	
1) 現地	式	1.00		2,334,000		0		0.00	
(2) 直接経費	式	1.00		3,053,640		2,568,966		2,880.00	
1) 現地備人費	式	1.00		0		0		1,500.00	
2) 旅費・日当・宿泊費	式	1.00		3,053,640		0		0.00	
3) 交通費	式	1.00		0		2,568,966		1,380.00	
(3) 間接費	式	1.00		2,987,520		0		0.00	

(1) 直接人件費						2,334,000		0		0.00	
1) 現地											
1 太陽光システム啓発・普及 3号 1.5MM	人月	1.50	778,000	1,167,000							JICA単価 778,000
2 機材・電気設備担当 3号 1.5MM	人月	1.50	778,000	1,167,000							JICA単価 778,000
(2) 直接経費						3,053,640		2,568,966		2,880.00	
1) 現地備人費						0		0		1,500.00	
1 通訳	人月	1.50						1,000.00	1,500.00		ビエンチャン採用 技-17
2) 旅費・日当・宿泊費						3,053,640		0		0.00	
① 旅費											
1 日本人技術者 航空運賃											
成田-ビエンチャン 正規エコノミークラス	往復	4	424,370	1,697,480							往復料金(正規Y2エコノミー運賃) 航-4
2 日本人技術者 国内交通費											
東京-成田空港	往復	4	4,140	16,560							京成スカイライナー
② 日当											
1 太陽光システム啓発・普及 3号 1回目 30日	日	30.00	3,800	114,000							JICA単価 3,800円
3号 2回目 15日	日	15.00	3,800	57,000							JICA単価 3,800円
2 機材・電気設備担当 3号 1回目 30日	日	30.00	3,800	114,000							JICA単価 3,800円
3号 2回目 15日	日	15.00	3,800	57,000							JICA単価 3,800円
③ 宿泊費											
1 太陽光システム啓発・普及 3号 1回目 29泊	泊	29.00	11,600	336,400							JICA単価 11,600円
3号 2回目 14泊	泊	14.00	11,600	162,400							JICA単価 11,600円
2 機材・電気設備担当 3号 1回目 29泊	泊	29.00	11,600	336,400							JICA単価 11,600円
3号 2回目 14泊	泊	14.00	11,600	162,400							JICA単価 11,600円
3) 交通費						0		2,568,966		1,380.00	
① 車輦費											
1 普通自動車 1回目	月	1.00						900.00	900.00		車-2
2 普通自動車 2回目	日	12.00						40.00	480.00		日曜日のぞく 車-1
② 燃料費											
1 普通自動車 1回目	月	1.00				1,751,262	1,751,262				車-3
2 普通自動車 2回目	日	12.00				68,142	817,704				日曜日のぞく 車-3
(3) 間接費						2,987,520		0		0.00	
1) 諸経費											
(直接人件費) × 90%	式	1.0	-	2,100,600							JICAガイドライン機材編 P76
直接人件費:				2,334,000							
諸経费率:				90%							
2) 技術経費											
(直接人件費+諸経費) × 20%	式	1.0	-	886,920							JICAガイドライン機材編 P76
直接人件費+諸経費:				4,434,600							
技術経费率:				20%							

6. 收集資料

収集資料リスト〈ラオス〉

調査名 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（カンボジア国、ラオス国）
（ファスト・トラック制度適用案件）

(1/2)

番号	資料の名称	形態 (図書・ビデオ 地図・写真等)	オリジナル・ コピーの別	発行機関	発行年
1	Lao People's Democratic Republic, Peace Independence Democracy Unity Prosperity, Lao PDR Climate Change Strategy	プリント (16頁)	コピー	-	2009.12
2	Electricity Statistics Year Book 2007 of Lao PDR	図書 (58頁)	オリジナル	DOE, MEM	2006.06.23
3	Electricite du Laos, Annual Report 2008	図書 電子データ (47頁)	オリジナル	EDL	-
4	Supplemental Information to the request application from on Grid-Connected Photovoltaic Power Generation System for Wattay International Airport, Department of Civil Aviation (DCA), Ministry of Public Works and Transportation (写し)	プリント	コピー	JICAラオス 事務所	2009.9.22
5	Organization Chart of Prime Minister's Office	プリント (1頁)	コピー	PMO	2009.6.4
6	EDLからMEM及びNo.100 ビルへの月別電気料金請求書(2008年、ラオス語)	プリント (3頁)	コピー	EDL	2009.12.21
7	首相府合同庁舎敷地再開発計画図(ラオス語)	プリント (A3)	コピー	PMO	-
8	Organization Chart of L-JATS	プリント (1頁)	コピー	L-JATS	2009.12.1
9	L-JATS Balance Sheet, Income Statement, Breakdown of Expenses (for 2006, 2007 and 2008)	プリント (10頁)	コピー	L-JATS	2009.3.10
10	Vientiane Monthly Rainfall, number of rainy day and temperature (from January to December 2009)	プリント (3頁)	コピー	DMH	-
11	Daily Rainfall for 2007, 2008 and 2009	エクセル 電子データ	コピー	DMH	-
12	Organization Chart of Lao Airports Authority	プリント (1枚)	コピー	DCA	-
13	LAA Budget and Disbursement for 2008, 2009 (ラオス語)	プリント (4枚)	コピー	LAA	-
14	Lao Grid Code	電子データ	コピー	EDL	-
15	Lao Electric Power Technical Standard	プリント (165枚)	コピー	MIH	2004.02.12
16	Inter National Passenger Terminal Building Boring Log (1)	プリント (1枚)	コピー	LAA	1998.07

収集資料リスト〈ラオス〉

調査名 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（カンボジア国、ラオス国）
（ファスト・トラック制度適用案件）

(2/2)

番号	資料の名称	形態 (図書・ビデオ 地図・写真等)	オリジナル・ コピーの別	発行機関	発行年
17	Law on Electricity	電子データ (19頁)	コピー	首相	1997.04.12

DOE	Department of Electricity	電力局
MEM	Ministry of Energy and Mines	エネルギー鉱業省
PMO	Prime Minister's Office	総務庁
EDL	Electricite du Lao	ラオス電力公社
L-JATS	Lao-Japan Airport Terminal Services Co. Ltd.	空港ターミナルサービス会社
DMH	Department of Meteorology and Hydrology	気象・水文局
DCA	Department of Civil Aviation	民間航空局
LAA	Lao Airports Authority	ラオ空港公団
MPWT	Ministry of Public Works and Transport	公共事業運輸省
MIH	Ministry of Industry and Handicrafts	手工業省

7. その他資料・情報

The Preparatory Survey on the Project for Introduction of Clean Energy by Solar Electricity
Generation System

Attendance List

Subject : Mutual understanding for the PV System Installation at PMO and Airport
Date : February 11, 2010
Place : DOE 2F Conference Room

No.	Name	Organization / Department	Signature
1.	Norihiko Takasawa	Newjtec Inc / International Operation	
2.	Vitaphanh Viravong	DOE	
3.	Dr. Somphone PHANOUSITH	National Science Council, PMO.	
4.	Anousak Phongsavath (m)	DOE / MEM	
5.	Mr. Vilai Saek	PM	
6.	MR Vongphachanh Sithivongy	National science council, PMO	
7.	MR Vankholy Vilai Saek	EDL	
8.	Mr. Xanaphone Phonekeo	EDL	
9.	Mr. Bay Siy Songkay	LAA	
10.	Mr. Khanphonue Pii	LAA	
11.	Ms. Kiyoko VORARATH	L-SATS <small>Lao-Taiwan Airport Research</small>	
12.	Mr. YOSHITAKA TAKEMURA	L-SATS	
13.	Mr. Nobuo HASHIMOTO	JICA Expert	
14.	Mr. Khamso Kouphoxham	Dep of Electricity, MEM	
15.	Mr. Khanthara S.	Dep of Electricity MEM	
16.	MR SOMPHONH	Dept of CIVIL AVIATION	
17.	IGNAVONE TORU IMAI	NEWJEC	
18.	Takumi MARUOKA	NEWJEC	

19.	TAKASHI NAKAZAWA	NEW JEC	中沢 尚志
20.	Toko Hattoni	JICA	服部 泰子
21.	KEOTA PHETSAKHONG	P. M. O	U. W. S
22.	Mr. Boualem	DOE	blouz
23.	Y. MATSUDA y. Matsuda	NEW JEC	y. Matsuda
24.			
25.			

The Preparatory Survey on the Project for Introduction of Clean Energy by Solar Electricity
Generation System

Attendance List

Subject : Detailed Explanation of the PV System at PMO and Airport
Date : February 25, 2010
Place : DOE 2F Conference Room

No.	Name	Organization / Department	Signature
1.	Yasuharu MATSUDA	NEWJEC	
2.	Ms. Kanykao KORARATH	L-JATS	
3.	MR Boumkeuang SANKHASEUM	L-JATS	
4.	MR Bay SIV VONGKANY	LAA	
5.	Mr Vanpheng Chanthaphone	DCA	
6.	Mr Khomphonue + HONGRATHA	LAA	
7.	Dr. Daorong PHONGKEO	DOE	
8.	Ir. Somphone PHANOUSITH	National Science Council Prime Minister's Office	
9.	Mr Keo Ta Phetsavathone	P. M. O	
10.	Mr. Khanthara S.	DOE	
11.	Mr. Viengkay C	DOE	
12.	Mr Thavone K	EDL	
13.	Takumi MARUOKA	NEWJEC, JICA Team	
14.	Ms.oudomsine	DOE	
15.	MR vanchaly V	EDL	
16.	Joji ISHIBASHI	Newjec Inc JICA Team	
17.	TAKASHI NAKAZAWA	Newjec	
18.	Yoko HATTORI	JICA, Representative	

19.	Yoshiharu Yoneyama	JICA, Senior Representative	
20.	TETSUO WADA	Newjec	和田 哲郎
21.	TORA IMAI	NEWJEE	Toru Imai
22.	Yukihiko MIKUMI	Newjec	三雲 是良
23.			
24.			
25.			
26.			
27.			
28.			
29.			
30.			

Meeting on Draft Outline Design Study Report at DOE

Date/Time: September 8, 2010.

(1/1)

No	Name & Surname	Title	Organization	Email/ Phone	Signature
1	NAKASHI NAJAKAZAWA	ENGINEER	NEWJEC	nakazawa@yaho.co.jp	
2	TORU IMAI	Engineer	NEWJEC	imaia@ccs98@yaho.co.jp	
3	TOMOKAZU KIMURA	Project Coordinator	NEWJEC	kimuratm@newjec.co.jp	
4	YASUHARU MATSUDA	Engineer	NEWJEC	haruhito2826@yahoo.co.jp	
5	Shinji HISOYA	Assistant Project Manager	JICS (Japan International Superconducting System)	hisoya-shinji@jics.or.jp	
6	Arunwath PHONGSAWATH	Head of Rural Electr. Div. DOE/MEM	MEM	arunwath.phongsa@doe.gov.th	
7	Phan HACHIMOLS	DOA Director	JICA	hachimols@jica.go.jp	
8	Viraphak Viravong	Director General	DOE	viraphak123@yahoo.com	
9	Vayhdy Vilay Savath	Deputy Director	DOE		
10	Vithasak	Technical department		vayhdy_vilay@yahoo.com	
11	Viraphak Viravong	Technical	NSE (PMO)	554444	
12	MR. Veengphachanh Siththivong	Technical staff	NSE (PMO)	55620291	
13	Mr. Bounkeuth VILAYNOK	Technical - office	EDL	2407077	
14	Dr. SUTHAMMALA	Deputy Director LAA	LAA	55814644	
15	SOMPONT SYGINAVONG	DIRECTOR DIV	DEPT. CIVIL AVIATION	55521987	
16				phongsa@yaho.com	
17	Mr. Khamsi Koupsuekham	Director of Division	Dept. of Electricity	khamsi.koupsuek@epd.com	
18	Mr. Khamsi Koupsuekham	Technical Staff	Dept. of Electricity	khamsi.koupsuek@epd.com	
19	Dr. Sompone PHANOUSITH	Permanent Secretary	National Science Council	phanousith@nsc.gov.la	

Attention : Mr. Vanpheng Chanthapone
 Deputy Director General, Department of Civil Aviation,
 Ministry of Public Works and Transport

Date : January 18, 2011

Project : Introduction of Clean Energy by Solar Electricity Generation System in the
 Lao People's Democratic Republic

Subject : Permission for New Arrangement of PV module at Wattay International Airport

Dear Sir,

We would like to express our gratitude for your kind cooperation during our third visit in Vientiane from September 5 to September 10, 2010.

In accordance with PMO's withdrawal from the project, PMO's installed capacity of 75 kW is likely to be integrated with the Airport.

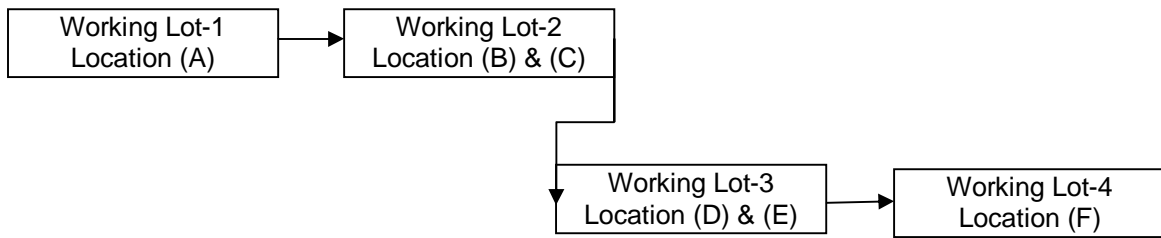
Under the above situation, we would like to get DCA's permission concerning new installed capacity and new PV modules arrangement in preparation for the final conclusion, so that we can commence the preparation of designing and cost estimation smoothly.

The comparison between the existing plan and new plan at the Airport is as follows;

Location	Existing Plan	New Plan
(A)	90.72 kW	90.72 kW
(B)	40.32 kW	50.40 kW
(C)	-	25.20 kW
(D)	-	30.24 kW
(E)	-	25.20 kW
(F)	-	15.12 kW
Total	131.04 kW	236.88 kW

The new installed capacity of 236 kW has been increased by 31 kW from the existing plan of 205 kW (130 kW at the Airport + 75 kW at PMO) considering the latest results of Tender Prices for the similar projects.

Addition to the above 236 kW proposal, we would like to propose the four working lots (construction procedure) as shown below to minimize inconvenience of parking users and secure the safety of common people.

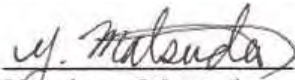


In this connection, we much appreciate if you, DCA permit the above new installed capacity of 236 kW and the PV modules arrangement as shown in the drawing attached hereto including the potential site (G), and the construction procedure.

The potential site (G) means the potential additional installation site of PV module if Project Cost cannot meet the E/N amount of 480 Million Japanese Yen after resulting of Tender Price.

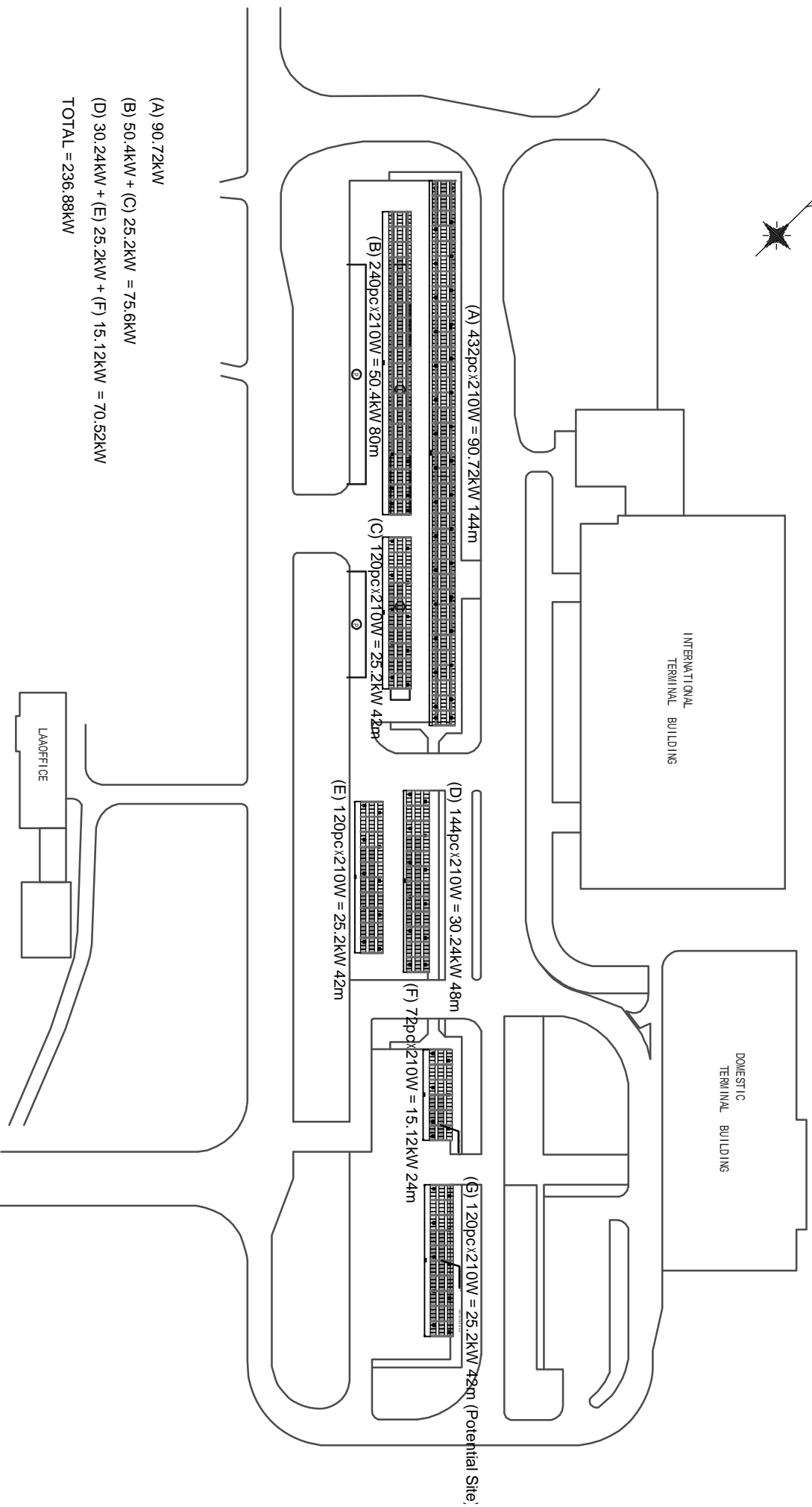
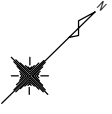
Your earliest possible response will be highly appreciated.

Sincerely Yours,


Yasuharu Matsuda
Team Leader

NEWJEC Inc.

C.C. Mr. Somphonh Sygnavong, Director of Aerodrome Division, DCA
C.C. Mr. Donh Sithammala, Deputy Director General, LAA
C.C. Mr. Anousak Phongsavath, Head of Division, DOE
C.C. Mr. Viraphonh VIRAVONG, Director General, MEM
C.C. Engr. Somphone Phanousith, PMO
C.C. Mr. Sumiyoshi, JICA Head Office
C.C. Mr. Yoneyama, JICA Laos Office



- (A) 90.72kW
- (B) 50.4kW + (C) 25.2kW = 75.6kW
- (D) 30.24kW + (E) 25.2kW + (F) 15.12kW = 70.52kW
- TOTAL = 236.88kW

Official Approval by Department of Civil Aviation

Date:	Mon, 31 Jan 2011 18:52:08 -0800 (PST)
From:	"vanpheng chanthaphone" <vanhphengc64@yahoo.com>
Subject:	Re: JICA PV system in Lao PDR (Approval of new installed capacity, arrangement at the Airport)
To:	"Matsuda" <haruhiro2826@yahoo.co.jp>
CC:	phone98@yahoo.com

Dear Matsuda

If you are officially withdrawal the project with PMO's, we have no objection to install the new PV module arrangement and number of working lots by your request on January 18, 2011 by e-mail. You can start the designing and cost estimation based on your planning accordingly. When your next visit to Lao ?

Rqards,
Vanpheng C.
Lao DCA

From: Matsuda <haruhiro2826@yahoo.co.jp>
To: DCA Mr. Vanpheng <vanhphengc64@yahoo.com>
Cc: DCA Mr. Somphonh <phonh98@yahoo.com>; DOE Mr. Anousak <anousak_pv@yahoo.com>; DOE Mr. Khanthara <ktlssm@yahoo.com>; JICA Mr. Matsuzaki <matsuzaki.mizuki@jica.go.jp>; JICA Mr. Yoneyama <Yoneyama.Yoshiharu@jica.go.jp>; MEM Mr. Viraphonh <Viraphonh123@yahoo.com>; PMO Mr. Somphone <phanusith@yahoo.com>; JICA Mr. Sumiyoshi <Sumiyoshi.Hiroshi@jica.go.jp>; JICA 福田様 <Fukuda.Hidemasa@jica.go.jp>; JICA 江原様 <Ehara.Yoshiki@jica.go.jp>
Sent: Mon, January 31, 2011 1:38:40 PM
Subject: JICA PV system in Lao PDR (Approval of new installed capacity, arrangement at the Airport)

Dear Mr. Vanpheng CHANTHAPONE

I sent you the requesting letter for your approval concerning the new installed capacity, new PV module arrangement and number of working lots on January 18, 2011by e-mail.

Unfortunately, we have not received your reply up to now.

Can we start the designing and cost estimation based on our letter dated January 18, 2011?

I attaches my letter hereto for your reference.

Your quick response will be highly appreciated.

Best Regards,

Yasuharu Matsuda, NEWJEC

