Appendix

Appendices

Appendix 1 Member List of the Study Team

Member List of
The Project for Introduction of Clean Energy by Solar Electricity Generation System
in Georgia

Preparatory Survey 1 (Sep. 26-Oct.9, 2009)

1.	Eiji ASAMI	Team Leader	Central Asia and the Caucasus Division East and Central Asia and the Caucasus Department Japan International Cooperation Agency (JICA)
2.	Tomoki KANENAWA	Planning Management	Office for Design and Cost Examination Financing Facilitation and Procurement Supervision Department Japan International Cooperation Agency(JICA)
3.	Masayuki OIKAWA	Procurement management Plan	Crown Agents Japan
4.	Hirotsugu KATO	Chief Consultant/ Photovoltaic System Planner	Oriental Consultants co., ltd
5.	Keiji YAMAZAKI	Interconnection/Photovoltaic System Specialist	Oriental Consultants co., ltd
6.	Hiroshi OMURA	Equipment Specialist	Oriental Consultants co., ltd
7.	Sumio MORITA	Procurement Planning and Cost Estimation	Oriental Consultants co., ltd
8.	Yoshikazu TUKIDATE	Regulations/Environment-Social Consideration Specialist	Oriental Consultants co., ltd
9.	Masatoshi YOZA	Grid Connected System Operating Specialist	Oriental Consultants co., ltd
10.	Masako YORITA	Architectural Planning	Oriental Consultants co., ltd
11.	Yuki KATO	Coordinator	Oriental Consultants co., ltd

Preparatory Survey 2 (Nov. 25-Dec. 22, 2009)

1.	Hirotsugu KATO	Chief Consultant/ Photovoltaic System Planner	Oriental Consultants co., ltd
2.	Keiji YAMAZAKI	Interconnection/Photovoltaic System Specialist	Oriental Consultants co., ltd
3.	Hiroshi OMURA	Equipment Specialist	Oriental Consultants co., ltd
4.	Sumio MORITA	Procurement Planning and Cost Estimation	Oriental Consultants co., ltd
5.	Yoshikazu TUKIDATE	Regulations/Environment-Social Consideration Specialist	Oriental Consultants co., ltd
6.	Masatoshi YOZA	Grid Connected System Operating Specialist	Oriental Consultants co., ltd
7.	Masako YORITA	Architectural Planning	Oriental Consultants co., ltd
8.	Yuki KATO	Coordinator	Oriental Consultants co., ltd

Additional Survey 1 (Aug. 28-Sep. 5, 2010)

1.	Hiroshi SUMIYOSHI	Director	Energy and Mining Division Natural Resources and Energy Group Industrial Development Department Japan International Cooperation Agency(JICA)
2.	Hirotsugu KATO	Chief Consultant/ Photovoltaic System Planner	Oriental Consultants co., ltd

Additional Survey 2（Nov. 6-Nov. 12, 2010）

1.	Minoru YOSHIDA	Civil Planning	Oriental Consultants co., ltd

Additional Survey 3（Jan. 31-Feb. 17, 2011）

1.	Masakazu FUKUWAKA	Senior Advisor	Infrastructure/Construction Japan International Cooperation Agency(JICA)
2.	Hiroyuki MATSUDA	Planning Management	Energy and Mining Division Natural Resources and Energy Group Industrial Development Department Japan International Cooperation Agency(JICA)
3.	Hirotsugu KATO	Chief Consultant/ Photovoltaic System Planner	Oriental Consultants co., ltd
4.	Keiji YAMAZAKI	Interconnection/Photovoltaic System Specialist	Oriental Consultants co., ltd
5.	Sumio MORITA	Procurement Planning and Cost Estimation	Oriental Consultants co., ltd
6.	Masako YORITA	Architectural Planning	Oriental Consultants co., ltd
7.	Yujirou IMAZAWA	Civil Planning	Oriental Consultants co., ltd

Additional Survey 4 (Sep. 5-Sep. 30, 2011)

1.	Oki SUGIMOTO	JICA Uzbekistan Officer	Uzbekistan Office Japan International Cooperation Agency (JICA)
2.	Shinji TOTSUKA	Senior Representative	Uzbekistan Office Japan International Cooperation Agency (JICA)
3.	Hirotsugu KATO	Chief Consultant/ Photovoltaic System Planner	Oriental Consultants co., ltd
4.	Keiji YAMAZAKI	Interconnection/Photovoltaic System Specialist	Oriental Consultants co., ltd
5.	Hiroshi OMURA	Equipment Specialist	Oriental Consultants co., ltd
6.	Masako YORITA	Architectural Planning	Oriental Consultants co., ltd

Explanation of Draft Final Report (Feb. 26-Mar. 5, 2012)

1.	Hiroshi SUMIYOSHI	Director	Energy and Mining Division Natural Resources and Energy Group Industrial Development Department Japan International Cooperation Agency(JICA)
2.	Hirotsugu KATO	Chief Consultant/ Photovoltaic System Planner	Oriental Consultants co., ltd
3.	Keiji YAMAZAKI	Interconnection/Photovoltaic System Specialist	Oriental Consultants co., ltd
4.	Hiroshi OMURA	Equipment Specialist	Oriental Consultants co., ltd

Appendix 2 Study Schedule

Preparatory Survey 1 (Sep. 26-Oct. 9, 2009)

Date		Officials			Consultants							
		Team Leader	Planning Manegement	Procurement Manegement Plan	Chief Consultant/ Photovoltaic System Planner	Interconnection /Photovoltaic System Specialist	Equipment Specialist	Procurement Planning and Cost Estimation	Regulations/ Environment-Social Consideration Specialist	Grid Connected System Operating Specialist	Architectural Planning	Coordinator
		Eiji ASAMI	Tomoki KANENAWA	Masayuki OIKAWA	Hirotsugu KATO	Keiji YAMASAKI	Hiroshi OMURA	Sumio MORITA	Yoshikazu TSUKIDATE	Masatoshi YOZA	Masako YORITA	Yuki KATO
26-Sep	Sat	Narita(12:20)-Munich(17:35) LH715 Munich(21:15)-										
27-Sep	Sun	Tbilisi(03:00) LH3214			Narita(12:20)-Munich(17:35) LH715 Munich(21:15)-							with Cheif Consultant
28-Sep	Mon	Meeting with EOJ			Tbilisi(03:00) LH3214 Meeting with JICA、Meeting with EOJ、Briefing with EOJ、 Meeting with Foreign Ministry、Meeting with MoEPNR							Ditto
29-Sep	Tue	Meeting with MoEPNR, Explanation and Discussion on Inception Report, Discussion about the Project and components Field Survey at MoEPNR Site, Meeting with Ministry of Finance, Meeting with Ministry of Energy					Meeting with MoEPNR, Field Survey at MoEPNR Site, Meeting with Relevant Authorities		with Cheif Consultant	Meeting with MoEPNR, Field Survey at MoEPNR Site, Meeting with Relevant Authorities		Ditto
30-Sep	Wed	Field Survey at Tserovani Refugee Camp, Field Survey at Ilia State University and Tbilisi No.199 school, Meeting with Relevant Authorities										Ditto
1-Oct	Thu	Discussion with MoEPNR about M/M					Survey for Equipment, Site Survey	Survey for Procurement, Site Survey	Regulations Survey, Site Survey	System Operating Survey, Site Survey	Facility Planning, Site Survey	Ditto
2-Oct	Fri	Signing of M/M Report to EOJ					Survey for Equipment	Survey for Procurement	Environment-Social Consideration Survey	System Operating Survey	Facility Planning, Site Survey	Ditto
3-Oct	Sat	Tbilisi(04:00)ー Munich(05:55) LH3215 Munich(15:40)ー			Meeting with Relevant Authorities, Survry for Insolation		Survey for Equipment	Survey for Procurement	Regulations Survey	Survry for Insolation	Facility Planning, Site Survey	Ditto
4-Oct	Sun	Narita(10:25) LH714			Review of Field Survey							Ditto
5-Oct	Mon				Meeting with Relevant Authorities, Survry for Insolation		Survey for Equipment	Survey for Procurement	Regulations Survey	Survry for Insolation	Facility Planning, Site Survey	Ditto
6-Oct	Tue				Meeting with Relevant Authorities Meeting with Other Donor's Projects		Survey for Equipment	Survey for Procurement	Environment-Social Consideration Survey	System Operating Survey	Survey for Construction/Installation	Ditto
7-Oct	Wed				Survey on C/P's work programme, action plan, past projects, organization, budget, etc.		Survey for Equipment	Survey for Procurement	Environment-Social Consideration Survey	System Operating Survey	Survey for Construction/Installation	Ditto
8-Oct	Thu				Study of Equipment Specification and its Justification		Survey for Equipment	Survey for Procurement	Environment-Social Consideration Survey	System Operating Survey	Survey for Construction/Installation	Ditto
9-Oct	Fri				Study on Basic Concept of Grant Aid Study on Project Evaluation and Recommendations (Moving to Egypt)							Ditto

Preparatory Survey 2 (Nov. 25-Dec. 22, 2009)

Date		Officials	Consultants							
		JICA Officer	Chief Consultant/ Photovoltaic System Planner	Interconnection/Photovoltaic System Specialist	Equipment Specialist	Grid Connected System Operating Specialist	Procurement Planning and Cost Estimation	Architectural Planning	Regulations/ Environment-Social Consideration Specialist	Coordinator
			Hirotsugu KATO	Keiji YAMAZAKI	Hiroshi OMURA	Masatoshi YOZA	Sumio MORITA	Masako YORITA	Yoshikazu TUKIDATE	Yuki KATO
25-Nov	Wed		Narita(12:05)-Vienna(16:00) OS52 Vienna(22:25)-							
26-Nov	Thu	Meeting with EOJ	Tbilisi(05:00) OS653 Meeting with EOJ		Site Survey		Cost estimation survey	Site Survey	Environmental & Social Consideration	with Chief consultant
27-Nov	Fri	Meeting with MoEPNR, Ministry of Energy, Ilia State University and Discussion about M/M			Site Survey		Cost estimation survey	Site Survey	Environmental & Social Consideration	Ditto
28-Nov	Sat	Meeting on Minutes			Site Survey		Cost estimation survey	Basic design	Environmental & Social Consideration	Ditto
29-Nov	Sun		Preparing materials							Ditto
30-Nov	Mon		Photovoltaic System, Capacity Study		Preparing specifications		Cost estimation survey	Basic design	Environmental & Social Consideration, Meeting with Ministry of Energy	Ditto
1-Dec	Tue	Meeting with MoEPNR and Ilia State University	Meeting with MoEPNR and Ilia State University, Photovoltaic System, Capacity Study		Preparing specifications		Cost estimation survey	Basic design	Environmental & Social Consideration, Meeting with Relevant Authorities	Ditto
2-Dec	Wed	Meeting with MoEPNR and Ilia State University	Meeting with MoEPNR and Ilia State University	Preparing specifications			Cost estimation survey	Meeting with MoEPNR and Ilia Chavchawadze University	Environmental & Social Consideration, Meeting with Relevant Authorities	Ditto
3-Dec	Thu		Photovoltaic System, Capacity Study				Construction planning	Basic design	Environmental & Social Consideration	Ditto
4-Dec	Fri		Photovoltaic System, Capacity Study				Construction planning	Basic design	Environmental & Social Consideration	Ditto
5-Dec	Sat		Calculation of annual photovoltaic electricity power				Construction planning	Basic design	Environmental & Social Consideration	Ditto
6-Dec	Sun		Preparing materials							
7-Dec	Mon		Meeting with MoEPNR				Cost estimation (Architecture)	Technical spec Study	Regulations Survey	Ditto
8-Dec	Tue		Meeting with Ilia State University and Electricity distribution company				Cost estimation (Architecture), Meeting with Boring Campanies	Technical spec Study	Regulations Survey	Ditto
9-Dec	Wed		Photovoltaic System, Capacity Study				Cost estimation (Architecture), Boring Management Work	Preparing drawings	Regulations Survey	Ditto
10-Dec	Thu		Photovoltaic System, Capacity Study, Preparing specifications				Cost estimation (Architecture), Boring Management Work	Preparing drawings	Regulations Survey	Ditto
11-Dec	Fri		Photovoltaic System, Capacity Study, Preparing specifications, Meeting with Ilia State University				Cost estimation (Architecture), Meeting with Shipping companies	Preparing drawings	Regulations Survey	Ditto
12-Dec	Sat		Photovoltaic System, Capacity Study, Preparing specifications, Market Research equipment pricing				Cost estimation (Architecture)	Preparing drawings	Tbilisi(05:45)- Vienna(06:30) OS654/D	Ditto
13-Dec	Sun		Preparing materials						Vienna(14:10)-	Ditto
14-Dec	Mon	Meeting on Minutes	Meeting with Ilia State University, Photovoltaic System, Preparing specifications,				Cost estimation (Equipment)	Preparing drawings	Narita(09:30) OS51/D	Ditto
15-Dec	Tue	Signing of Minutes	Meeting with Ilia State University, Photovoltaic System, Preparing specifications,				Cost estimation (Equipment)	Preparing drawings		Ditto
16-Dec	Wed	Meeting with Ilia State University	Meeting with Ilia State University, Photovoltaic System, Preparing specifications,				Cost estimation (Equipment)	Preparing image figures		Ditto
17-Dec	Thu		Technical memorandam, Report writing				Cost estimation (Equipment)	Preparing image figures		Ditto
18-Dec	Fri		Meeting with MoEPNR and Ilia State University				Cost estimation (Equipment)	Meeting with MoEPNR		Ditto
19-Dec	Sat		Wrap-up MTG							Ditto
20-Dec	Sun		Preparing materials							Ditto
21-Dec	Mon		Tbilisi(05:45)－Vienna(06:30) OS654 Vienna(14:10)-							Ditto
22-Dec	Tue		Narita(09:30) LH585 OS51							Ditto

Additional Survey 1 (Aug. 28-Sep. 5, 2010)

Date		Officials	Consulatants
		Team Leader	Chief Consultant/Photovoltaic System Planner
		Hiroshi SUMIYOSHI	Hirotsugu KATO
28-Aug	Sat		Narita(13:25)→Munich(17:35) LH715 Munich(21:10)→
29-Aug	Sun		→Tbilisi(03:55) LH 2556
30-Aug	Mon	Narita→Vienna Vienna→	Meeting with Relevant Authorities
31-Aug	Tue	→Tbilisi Meeting with Ministry of Energy Meeting with EOJ Site Survey Team Meeting	Meeting with Relevant Authorities 17:00 Team Meeting
1-Sep	Wed	Meeting with MoEPNER	
2-Sep	Thu	Meeting with MoEPNER	
3-Sep	Fri	Meeting with MoEPNER Report to EOJ	
4-Sep	Sat	Tbilisi→Vienna Vienna→	Tbilisi(04:55)→Vienna(05:55) LH 2557 Vienna(15:35)→
5-Sep	Sun	→Narita	→Narita(11:20) LH 714

Additional Survey 2 (Nov. 6-Nov. 12, 2010)

Date		Civil Planning
		Minoru YOSHIDA
6-Nov	Sat	Narita(13:25)→Munich(17:35) LH715 Munich(21:10)→
7-Nov	Sun	Tbilisi(03:55) LH 2556
8-Nov	Mon	Meeting with MoEPNR Site Survery
9-Nov	Tue	Meeting with MoEPNR Site Survery
10-Nov	Wed	Site Survey Report to MoEPNR
11-Nov	Thu	Tbilisi(04:55)→Munich(05:55) LH 2557 Munich(15:35)→
12-Nov	Fri	Narita(11:20) LH 714

Additional Survey 3 (Jun. 31-Feb. 17, 2011)

Date		Officials		Consultants				
		Senior Adviser	Planning Management	Chief Consultant／Photovoltaic System	Civil Planning	Architectural Planning	Interconnected Photovoltaic System Specialist	Procurement Planning and Cost Estimation
		Masakazu HUKUWAKA	Hiroyuki MATSUDA	Hirotsugu KATO	Yujirou IMAZAWA	Masako YORITA	Keiji YAMAZAKI	Sumio MORITA
31-Jan	Mon			Narita(14:25)→Istanbul(20:05) TK51 Istanbul(23:25)→				
1-Feb	Tue			→Tbilisi(3:40) TK386 Meeting with MoEPNR, Site Survey				
2-Feb	Wed			Civil Survey, Site Survey				
3-Feb	Thu			Civil Survey, Site Survey				
4-Feb	Fri			Civil Survey, Site Survey				
5-Feb	Sat	Narita(13:25)→Munich(17:35) LH715 Munich(21:10)		Consideration of Site Survey Result				
6-Feb	Sun	→Tbilisi(03:55) LH2556 Site Survey(MoEPNR) Site Survey(IC State University) Team Meeting		Site Survey(MoEPNR) Site Survey(IC State University) Team Meeting				
7-Feb	Mon	Consideration of Site Survey Result, Team Meeting Discussion on Minutes of Meeting(M/M)				Consideration of PV system and layout Plan		Narita(14:25)→ Istanbul(20:05) TK051 Istanbul(23:25)→
8-Feb	Tue	Discussion on M/M Meeting with EOJ				Consideration of PV system and layout Plan		→Tbilisi(03:40) TK386
9-Feb	Wed	Tbilisi(04:55)→Munich(05:55) LH2557 Munich(15:35)→		Consideration of PV system and layout Plan	Consideration of Civil Engineering Planning	Consideration of PV system and layout Plan		Survey for construction material and equipment
10-Feb	Thu	Narita(11:20) LH714		Consideration of PV system and layout Plan	Consideration of Civil Engineering Planning	Consideration of PV system and layout Plan		Survey for construction material and equipment
11-Feb	Fri			12:00 Meeting with MoEPNR and Electricity Distribution Company				Survey for construction material and equipment
12-Feb	Sat			Consideration of PV system and layout Plan	Consideration of Civil Engineering Planning	Consideration of PV system and layout Plan		Tbilisi(05:15)→ Istanbul(05:45) TK387 Istanbul(17:50)→
13-Feb	Sun			Consideration of PV system and layout Plan	Consideration of Civil Engineering Planning	Consideration of PV system and layout Plan		→Narita(12:25) TK050
14-Feb	Mon			Preparation for Wrap-up Meeting				
15-Feb	Tue			Wrap-up Meeting with MoEPNR				
16-Feb	Wed			Tbilisi(18:25)→Istanbul(18:55) TK383 Istanbul(23:55)→				
17-Feb	Thu			→Kansai International Airport(17:55) TK46 Kansai International Airport(19:45)→Haneda(21:00) NH148				

Additional Survey 4 (Sep. 5-Sep. 30, 2011)

Date			JICA	Chief Consultant／Photovoltaic System Planner	Interconnected Photovoltaic Power System Engineer	Equipment Specialist	Architectural Planning
			Oki SUGIMOTO	Hirotsugu KATO	Keiji YAMAZAKI	Hiroshi OMURA	Masako YORITA
1	5-Sep	Mon		NRT(12:00)-Istanbul(18:05) TK051 Istanbul（23:30)-			
2	6-Sep	Tue		Tbilisi(02:45) TK386			
			Uzbekistan → Tbilisi	Courtesy call to UAG, Site Survey			
3	7-Sep	Wed	12:00 Courtesy call to Ministry of Economy and Sustainable Development Discussion on Minutes of Discussions with UAG		Site Survey, Meeting with UAG		
4	8-Sep	Thu	Discussion on Minutes of Discussions with UAG		Site Survey, Meeting with UAG and relevant agencies		
5	9-Sep	Fri	Signing of Minutes of Discussions, Report to Embassy of Japan		Site Survey, Meeting with UAG and relevant agencies		
6	10-Sep	Sat	Tbilisi → Uzbekistan	Site Survey at Ilia Chavchawadze University			
7	11-Sep	Sun		Team meeting and analysis of collected data and information			
8	12-Sep	Mon		Consideration of solar PV system and layout		Equipment and facilities planning	Basic design work for frame structure
9	13-Sep	Tue		Consideration of solar PV system and layout		Equipment and facilities planning	Basic design work for frame structure
10	14-Sep	Wed		Consideration of solar PV system and layout		Equipment and facilities planning	Basic design work for frame structure
11	15-Sep	Thu		Consideration of solar PV system and layout		Equipment and facilities planning	Basic design work for frame structure Preparation of architectural drawings
12	16-Sep	Fri		Solar PV system design work			
13	17-Sep	Sat		Solar PV system design work			
14	18-Sep	Sun		Team meeting and analysis of collected data and information			
15	19-Sep	Mon		Meeting with UAG and relevant agencies			
16	20-Sep	Tue		Consideration of solar PV system and layout		Equipment and facilities planning	Preparation of architectural drawings
17	21-Sep	Wed		Consideration of solar PV system and layout		Equipment and facilities planning	Preparation of architectural drawings
18	22-Sep	Thu		Meeting with UAG and relevant agencies			
19	23-Sep	Fri		Preparation of drawings for solar PV system, system diagram and equipment specification etc.			Preparation of perspective image
20	24-Sep	Sat		Preparation of drawings for solar PV system, system diagram and equipment specification etc.			Preparation of perspective image
21	25-Sep	Sun		Team meeting and analysis of collected data and information			
22	26-Sep	Mon		Preparation of drawings for solar PV system, system diagram and equipment specification etc.			Preparation of perspective image
23	27-Sep	Tue		Preparation of technical memorandum and report			
24	28-Sep	Wed		Wrap-up meeting with UAG and relevant agencies			
25	29-Sep	Thu		Tbilisi (04:05－Istanbul (05:35) TK 387 Istanbul (16:55) TK50			
26	30-Sep	Fri		NRT(10:10)			

Explanation of Draft Final Report (Feb. 26-Mar. 5, 2012)

Date			Officials	Consultants		
			JICA	Chief Consultant／Photovoltaic System Planner	Interconnected Photovoltaic Power System Engineer	Equipment Specialist
			Hiroshi SUMIYOSHI	Hirotsugu KATO	Keiji YAMAZAKI	Hiroshi OMURA
1	26-Feb	Sun		Narita(14:40)TK051→ Istanbul(20:00) Istanbul(23:25)TK386→		
2	27-Feb	Mon		Tbilisi(03:40) Meeting at JICA office		Field Survey
3	28-Feb	Tue	Narita(12:50)LH7203→ Munich(17:05) Munich(21:15)LH2556→	Field Survey Meeting with UAG and Ilia State University		Field Survey
4	29-Feb	Wed	Tbilisi(03:59) Meeting about M/M with Ministry of Economy and Sustainable Development of Georgia	Meeting about M/M with Ministry of Economy and Sustainable Development of Georgia		Field Survey
5	1-Mar	Thu	Meeting about M/M with UAG and Ilia State University			Field Survey
6	2-Mar	Fri	M/M signing Courtesy call and reporting to the Embassy	M/M signing Courtesy call and reporting to the Embassy		Field Survey
7	3-Mar	Sat	Tbilisi(04:55)LH2557→ Munich(06:00) Munich(15:35)LH714→	Reporting		
8	4-Mar	Sun	Narita(11:15)	Tbilisi(05:20)TK387→ Istanbul(05:50) Istanbul(18:40)TK050→		
9	5-Mar	Mon		Narita(13:10)		

Appendix 3 List of Parties Concerned in the Recipient Country

List of Parties Concerned in the Recipient Country

Preparatory Survey 1 (Sep. 26-Oct. 9, 2009)
Preparatory Survey 2 (Nov. 25-Dec. 22, 2009)
Additional Survey 1 (Aug. 28-Sep. 5, 2010)
Additional Survey 2 (Nov. 6-Nov.12, 2010)
Additional Survey 3 (Jan. 31-Feb. 17, 2011)
Additional Survey 4 (Sep. 5-Sep. 30, 2011)
Explanation of Draft Final Report (Feb. 26-Mar. 5, 2012)

1. Embassy of Japan

Mr. Isamu Azechi	Counselor
Mr. Masumi Takaragawa	Expert investigators

2. JICA Georgia Office

Ms. Yoshiko Yamanaka	Project Formulation Advisor in Caucasus Region
Mr. David Mgaloblishvili	Coodinator

3. JICA Uzbekistan Office

Mr. Shinji Totsuka	Senior Representative
Mr. Oki Sugimoto	Office staff

4. Ministry of Economy and Sustainable Development

Vera Kobalia	Minister
George Karbelashvili	Deputy Minister

5. Ministry of Environment Protection and Natural Resources of Georgia

Mr. Giorgi Khachidze	Minister
Mr. Alex Machavariani	First Deputy Minister
Mr. Gocha Mamatsashvili	First Deputy Minister
Mr. Tushishvili	Deputy Head of Department of Integrated Environmental Management
Mr. Giorgi Putkaradze	Head of Administrative Department
Mr. Paata Chipashvili	Head of Department of Integrated Environmental Management
Mr. Tornike Phulariani	Head of Environmental Policy Division
Ms. Nino Sharashidze	International Department
Mr. Grigol Lazriev	Department of Sustainable Development
Ms. Medea Inashvi	Department of Sustainable Development

6. Ministry of Foreign Affair of Georgia

Mr. M. Tsikhelashvili	Head of Department of International Economic, Cultural and Humanitarian Relations
Ms. Nana Gaprindashvili	Counselor, Department of Asia, Africa, Australia and Pacific Rim

7. Ministry of Finance of Georgia

Mr. Dimitri Gvindadze	Deputy Minister

8. Ministry of Energy and Natural Resources of Georgia

Mr. Archil Nikolaishvili	Deputy Minister
Mr. David Shazikadze	Deputy Head of Energy Department
Ms. Marita Arabidze	Senior Experts, International Relations and Investment Projects Department
Mr. Givi Sekania	Chief Specialist, International Relations Division
Mr. Ucha Uchaneishvili	

9. Tserovani Refugee Camp

Mr. Goska Kolbaia	Ministry of Refugees and Accommodation of Georgia
Mr. Giorgi Skehgelaia	Ministry of Refugees and Accommodation of Georgia
Mr. Avtandil Lhochishvili	Akhalgori Municipality Parliament, Head of Parliament

10. Ilia State University

Mr. Gigi Tevzadze	Professor, Rector
Mr. Kakha Karchkhadze	Head of Commercialisation Department

11. Tbilisi Electricity Network：TELASI

Mr. Tariel Kandelaki	Head of Distribution Network Department
Mr. Temur Gamrekelashvili	Head of L/V Maintenance department
Ms. Rusudan Dochviri	Head of New Customers service office

12. United Airports Georgia Ltd. (UAG)

Ms. Keti Aleksidze	Director
Mr. Nodar Lominadze	Deputy Director
Ms. Ketivan Vardosanidze	Staff

13. TAV

Mr. Mete Erkal	General Manager
Ms. Tea Zakaradze	HR & Administration Manager
Mr. Candemir Akyildiz	Terminal Operation Manager
Mr. Tamaz Andguladze	Deputy General Manager
Mr. Giorgi Gozalishvili	External Relations Manager
Mr. Levent Akdag	Information Technology Manager
Mr. Bahadir Ataloy	Technical Chief
Mr. Teimusaz Jvassheishvil	Technical Maintenance assistant
Mr. Samushia Tamaz	Electrical System Sheff
Mr. Mdevadze Mikheil	Electrical Engineer

Appendix 4 Minutes of Discussions

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

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

JICA sent to Georgia the Preparatory Survey Team (hereinafter referred to as "the Team"), headed by Mr. Eiji ASAMI, Advisor, Central Asia and the Caucasus Division, East and Central Asia and the Caucasus Department, JICA, and is scheduled to stay in the country from September 27 to October 3.

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

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

Tbilisi, October 2, 2009

Eiji ASAMI
Leader
Preparatory Survey Team
Japan International Cooperation Agency
JAPAN

George KHACHIDZE
Minister
Ministry of Environment Protection and
Natural Resources
GEORGIA

Archil NIKOLAISHVILI
Deputy Minister
Ministry of Energy
GEORGIA

ATTACHMENT

1. Current Situation

The Government of Georgia recognizes the threat of the Climate Change to the economy and natural ecosystems and therefore considers development and implementation of the Climate Change-related policy and measures as one of its priorities.

The policy of the Government of Georgia on mitigating the Climate Change defines the measures on reducing Green House Gas emissions in various sectors including the energy sector. In this situation, both sides confirm that the Project, which introduces photovoltaic (PV) power generation systems connected with the national power grid, is one of the pilot systems to enhance the possibility of applying renewable energy.

2. Objective of the Project

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

3. Responsible Organization and Implementing Agency

The responsible and implementing organization is the Ministry of Environment Protection and Natural Resources of Georgia. (hereinafter referred to as the "MOEPNR," whose organization chart is shown in Annex-1.)

The Ministry of Energy of Georgia shall be responsible for technical assistance to the Project.

4. Items Requested by the Government of Georgia

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

(1) Solar module (panel)
(2) Junction Box
(3) Power Conditioner
(4) Transformer
(5) Data collecting and display device

4-2. The Georgian side had originally requested seven project sites. After consultation between the Team and MOEPNR, the Georgian side identified four priority candidate sites/facilities for installation of the PV system: Head office building of the Ministry of Environment Protection and Natural Resources of Georgia, Refugee camp in Tserovani, Ilia Chavchavadze State University and School #199 with school pension (Komorovi). The requested project sites are shown in Annex-2. The Team recommended the Georgian side to put the priority order of the requested sites. The priority was confirmed as the following table. The Georgian side understood that the Japan's Program Grant Aid for Environment and Climate Change might not be able to cover all the requested sites and also understood the need to select the sites from the viewpoint of necessity, technical and financial viability, sustainability and cost-effectiveness. The Team understood that Ministry of Energy of Georgia considers it

necessary to carry out the study of candidate allocation places on the next stage of survey in regard of connection to the electricity grid.

Project site	Location	Priority
Head office building of the Ministry of Environment Protection and Natural Resources of Georgia	6 Gulua str, 0114,Tbilisi, Georgia	1
Refugee camp	The village Tserovani (Mtskheta District) 20-25 km from the capital of Georgia	2
Ilia Chavchavadze State University	3/5, Kakutsa Cholokashvili Ave., 0162, Tbilisi, Georgia	3
School #199 with school pension (Komorovi)	49 Vaja Pshavela str. Tbilisi, Georgia	4

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

4-4. The Georgian side has understood that the final component and the design of the Project shall be determined(confirmed) at the timing of 2nd phase of the Preparatory Survey.

4-5. The Team will report the findings and items requested by the Georgian side to JICA Headquarters and the GoJ.

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

The Georgian side understood the Japan's Program Grant Aid for Environment and Climate Change scheme explained by the Team, as described in Annex-3, 4, 5 and 6.

6. Schedule of the Study

6-1. The Team will proceed to further survey in Georgia until October 9 as the 1st phase of the Preparatory Survey. Additional survey might be conducted as the 1st phase of the Preparatory Survey, if necessary.

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

6-3. If the Cabinet approves the Project based on the results of the 1st phase of the Preparatory Survey, JICA will conduct the 2nd phase of the Preparatory Survey.

7. Other Relevant Issues

7-1 Major Undertakings to be taken by the Georgian side

The Georgian side confirmed that major undertakings as shown in Annex-7 should be taken by the Georgian side at its own expense. In addition, the Georgian side should be responsible for the following issues;

(1) Securing necessary site

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

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

(3) Tables and PCs, if necessary

7-2 Preparation of the site

The Georgian side agreed that the site to be installed the product shall be allocated by the responsible organization and all necessary arrangement shall be completed by the time of the 2nd phase of the Preparatory Survey.

7-3 Procurement of Equipment

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

7-4 Coordination with Relevant Organizations

The responsible Organization for the Project shall be the focal point for the Team, and responsible for the coordination with relevant organizations. The Georgian side agreed to establish a consultative committee in order to coordinate with the Japanese side which consists of the Embassy of Japan, JICA Project Formulation Advisor in Caucasus Region and the procurement agency. Terms of Reference of the Consultative Committee is referred to Annex-8.

7-5 Application of the Related Laws and Regulations

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

7-6 Applying JICA Environmental and Social Considerations Guideline

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

7-7 Operation and Maintenance

The Responsible Organization agreed to secure and allocate the necessary budget and personnel for the operation and maintenance of grid-connected PV system procured and installed under the Project.

7-8 Customs and Tax exemption

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

7-9. The Georgian side shall ensure the security of all concerned Japanese nationals working for the Project, if deemed necessary.

7-10. The Georgian side shall provide necessary numbers of counterpart personnel to the Team during the period of their studies in Georgia.

7-11 The Georgian side shall submit all the answers to the Questionnaire, which the Team handed to the Georgian side.

<List of Annex>

Annex-1 Organization Chart of Ministry of Environment Protection and Natural Resources of Georgia
Annex-2 Project site / Candidate site of the Project
Annex-3 Program Grant Aid for Environment and Climate Change (Provisional)
Annex-4 General Flow of Program Grant Aid for Environment and Climate Change
Annex-5 Flow of Funds for Project Implementation
Annex-6 Project Implementation System
Annex-7 Major Undertakings to be taken by each Government (Provisional)
Annex-8 Terms of References of the Consultative Committee (Provisional)

Annex – 1

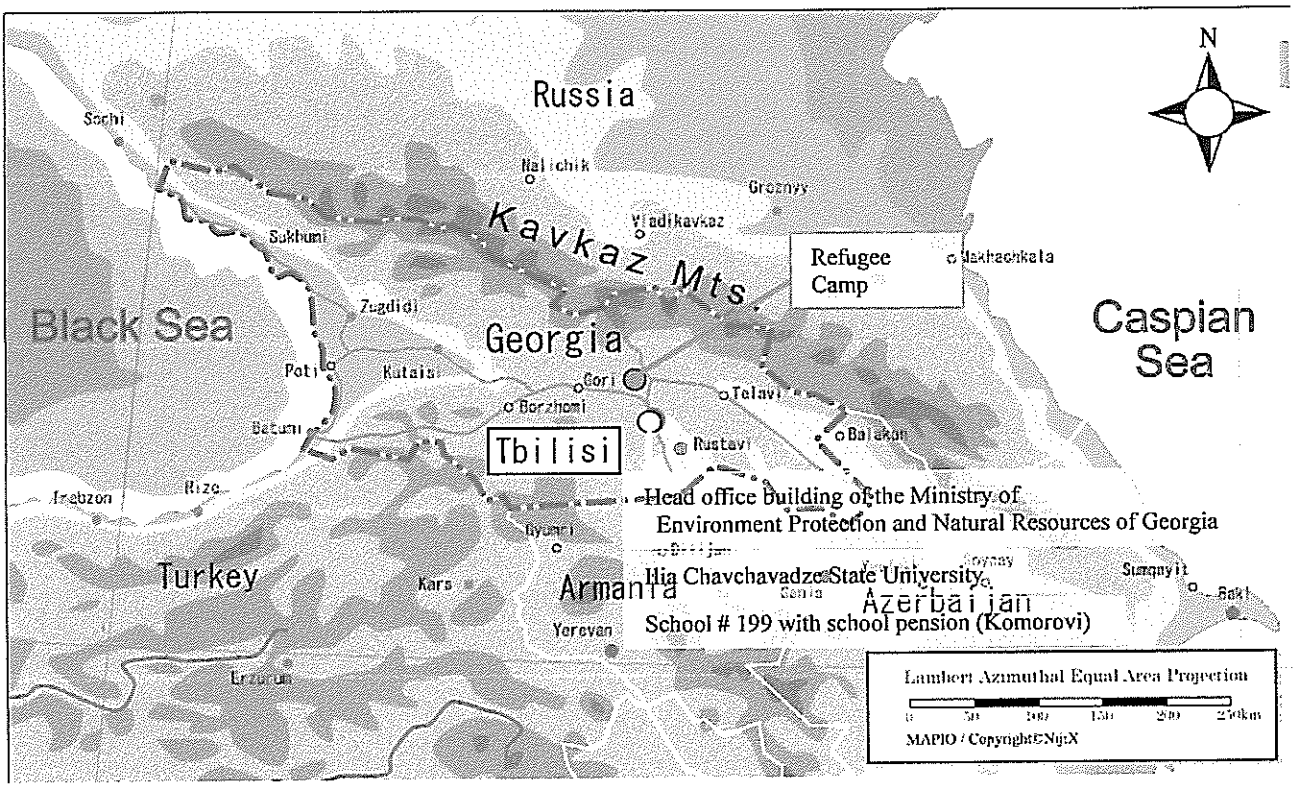
Organization Chart of Ministry of Environment Protection and Natural Resources of Georgia

Minister

	First Deputy Minister	Deputy Minister	Deputy Minister	Deputy Minister
Executive Personnel of Ministry	Service of Public Relations	Legal Department	Forestry Department	Service of Biodiversity
Administrative Department	Inspection of Environmental Protection	Service of Licenses and Permits	Territorial Bodies	Service of Nuclear and Radiation Safety
Department of Investigation	Department of Environmental Policy and International Relations	Department of Integrated Environmental Management	LEPL-National Environmental Agency	Service of Geodesy and Cartography
General Inspectorate	LEPL-Sustainable Development Projects Implementation Agency		LEPL-Basic Sapling Forestry	LEPL-Agency of Protected Areas

Annex – 2

Project site / Candidate site of the Project



Candidate Site	Address
Head office building of the Ministry of Environment Protection and Natural Resources of Georgia	6 Gulua Str., 0114, Tbilisi, Georgia
Refugee camp	The village Tserovani (Mtskheta District) 20-25km from the capital of Georgia
Ilia Chavchavadze State University	5, Kakutsa Cholokashvili Ave., Tbilisi, 0162, Georgia
School # 199 with school pension (Komorovi)	49Vaja Pshavela Str., Tbilisi, Georgia

Annex – 3

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 reffered to as the "G/A")	Agreement concluded between JICA and the Recipient
Preparatory Survey 2	Preparatory Survey for design conducted by JICA
Implementation	Procurement through the Procurement Agency by the Recipient

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

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

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

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

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

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

2 Preparatory Survey

1) Contents of the Survey

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

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

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

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

2) Selection of consulting firms

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

3. Implementation of GAEC after the E/N

1) Exchange of Notes (E/N)

The content of GAEC will be determined in accordance with the Notes exchanged by the two

Governments concerned, in which items including, objectives of the project, period of execution, conditions and amount of the Grant Aid are confirmed.

2) Details of Procedures

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

Essential points to be agreed are outlined as follows:

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

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

a) The Agent

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

b) Agent Agreement

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

c) Approval of the Agent Agreement

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

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

d) Payment Methods

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

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

e) Products and Services Eligible for Procurement

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

f) Selection of firms

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

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

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

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

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

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

i) Pre-qualification Examination of Tenderers
The Agent may conduct a pre-qualification examination of tenderers in advance of the tender so that the invitation to the tender can be extended only to eligible firms. The pre-qualification examination should be performed only with respect to whether the prospective tenderers have the capability of concluding the contracts.

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

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

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

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

k) Additional procurement
If there is any remaining balance after the competitive and/or selective tendering and/or direct negotiation for a contract, and if the Recipient would like to procure additional items, the Agent is allowed to conduct this additional procurement, following the points mentioned below:
(1) Procurement of same products and services

When the products and services to be additionally procured are identical with the initial tender and a competitive tendering is judged not efficient, additional procurement can be conducted by a negotiated contract with the successful tenderer of the initial tender.

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

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

m) Terms of Payment
The contract will clearly state the terms of payment. The Agent will make payment from the "advances," against the submission of the necessary documents from the firm on the basis of the conditions specified in the contract. When the services are the object of procurement, the Agent may pay certain portion of the contract amount in advance to the firms on the conditions that such firms submit the advance payment guarantee worth the amount of the advance payment to the Agent.

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

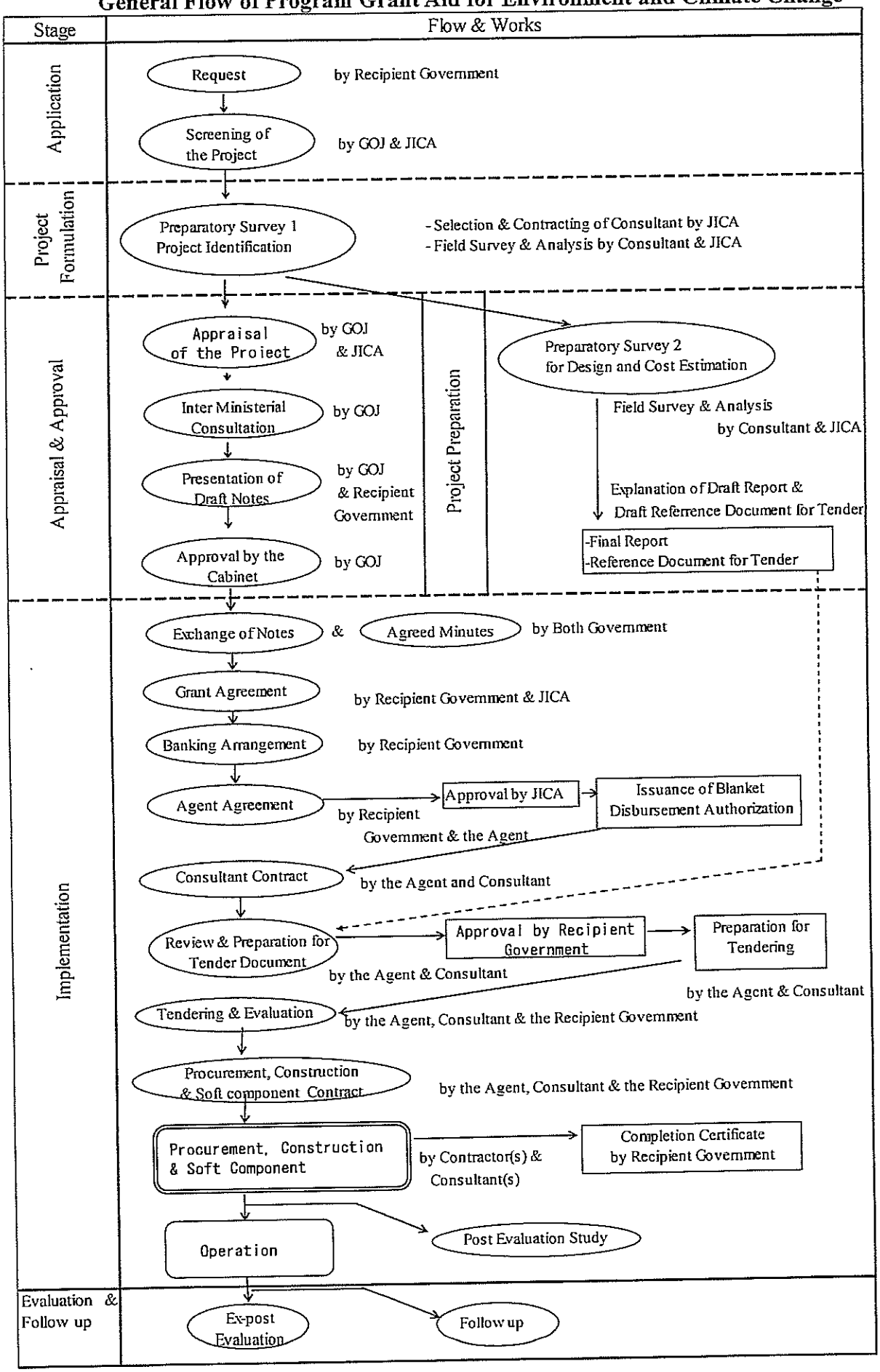
a) To secure land necessary for the sites of the Project and to clear, level and reclaim the land prior to commencement of the Project.
b) To provide facilities for distributing electricity, water supply and drainage and other incidental facilities in and around the sites.
c) To ensure all the expense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

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

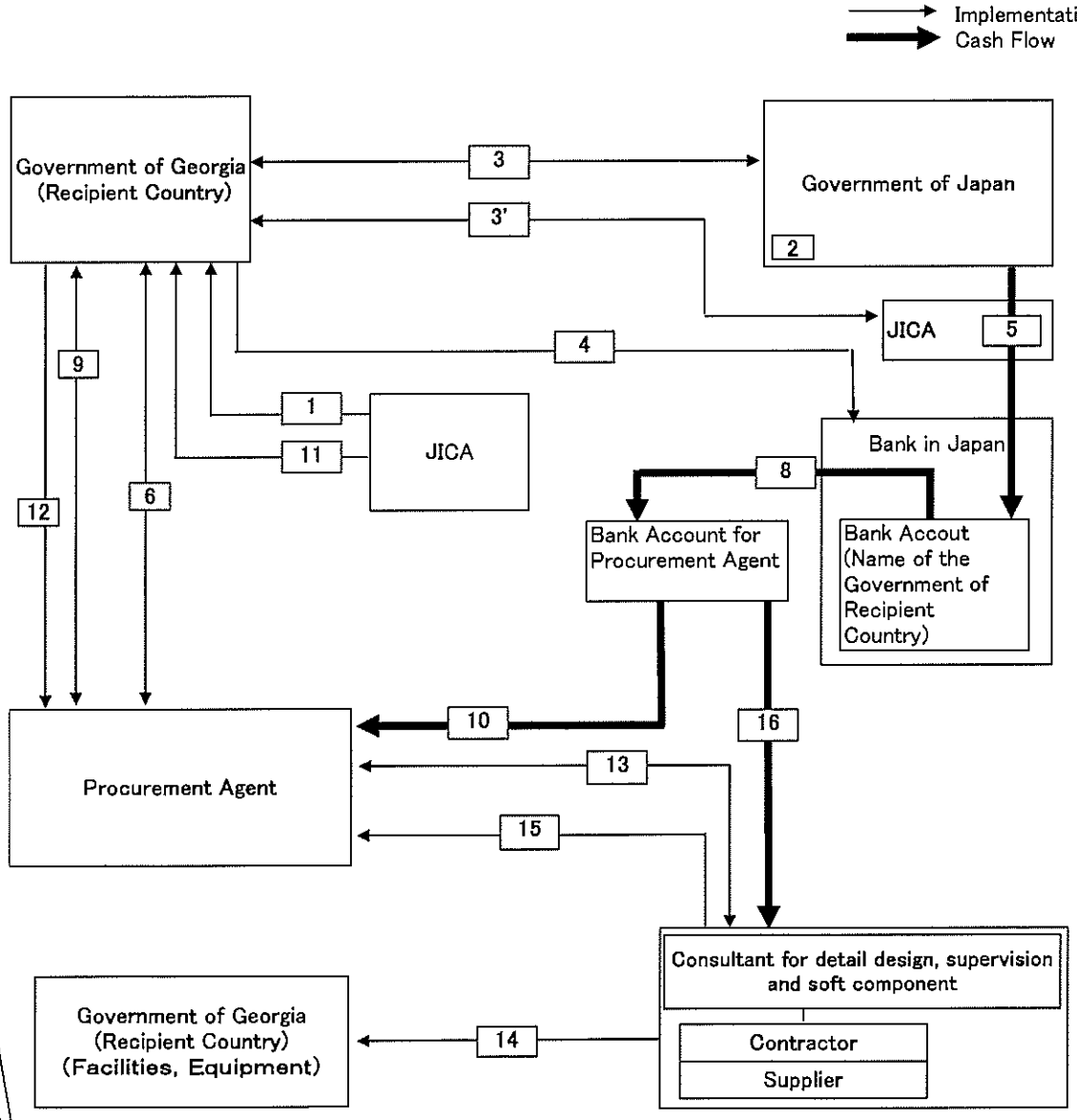
6) "Export and Re-export" of products
The products purchased under the Grant and its accrued interest will not be exported or re-exported from the Recipient.

Annex-4

General Flow of Program Grant Aid for Environment and Climate Change



Flow of Funds for Project Implementation



1 Preparatory Survey / Reference Document for Tender

2 Approval of Cabinet

3 Signing of Exchange of Notes (E/N)

3' Signing of Grant Agreement (G/A)

4 Banking Arrangement (B/A)

5 Disbursement of Funds from the Government of Japan

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

7 N/A

8 Transfer of Funds

9 Decision of Project Components

10 Payment of Remuneration for Agent

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

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

13 Conclusion of Contract

14 Construction and Procurement

15 Application for Payment

16 Payment

Annex-6

Project Implementation System

Annex-7

Major undertakings to be taken by each Government (Provisional)

No.	Items	To be covered by Grant Aid	To be covered by Recipient Side
1	To secure site		●
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 roads		
	1) Within the site	●	
	2) Outside the site and Access road		●
5	To construct the facility and install the equipment	●	
6	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	●	
7	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		●
8	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	●	
9	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.		●
10	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		●
11	To maintain and use properly and effectively the facilities that are constructed and the equipment that is provided under the Grant.		●
12	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.		●
13	To ensure environmental and social consideration for the Programme.		●

Annex- 8

Terms of Reference of the Consultative Committee (Provisional)

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

2. To discuss the modifications of the Programme, 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.

Minutes of Discussions
on the 2nd Preparatory Survey
on the Project for Clean Energy Promotion Using Solar Photovoltaic System in Georgia

In October 2009, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the 1st Preparatory Survey Team on the Project for Clean Energy Promotion Using Solar Photovoltaic System (hereinafter referred to as "the Project") in Georgia, and through discussion and technical examination of the results of the survey in Japan, JICA selected the two implementation sites.

In order to explain and reconfirm project sites and design of the Project, JICA sent Georgia the 2nd Preparatory Survey Team (hereinafter referred to as "the Team"), which is headed by Mr. Shinji TOTSUKA, Deputy Resident Representative in JICA Uzbekistan office, from 26th November, 2009 to 21st December, 2009.

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

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

Tbilisi, December 15, 2009

for

Yukihiko EJIRI
Chief Representative
Japan International Cooperation Agency
Uzbekistan Office
JAPAN

Gocha MAMATSASHVILI
Deputy Minister
Ministry of Environment Protection and
Natural Resources
GEORGIA

Gigi TEVZADZE
Rector
Ilia Chavchavadze State University
GEORGIA

Archil NIKOLAISHVILI
Deputy Minister
Ministry of Energy
GEORGIA

ATTACHMENT

1. Result of selection of implementation sites

The Japanese side explained that the four candidate sites confirmed in the 1st Preparatory Survey were examined based on the following considerations, and two implementation sites were selected as below.

- Financial viability and cost effectiveness, considering the amount of budget available for the Project.
- Potential for project sustainability, which is a requirement of JICA Grant Aid Projects
- Technical feasibility to install solar photovoltaic system.

Project site	Location	PV capacity
Head office building of the Ministry of Environment Protection and Natural Resources of Georgia	6 Gulua str, 0114,Tbilisi, Georgia	Approximately 80 kW
Ilia Chavchavadze State University	3/5, Kakutsa Cholokashvili Ave., 0162, Tbilisi, Georgia	Approximately 40kW

The capacity and layout PV system will be finalized by the Team based on the result of technical examination which will be conducted until December 20, 2009. The final capacity and layout of PV system is the subject to the approval of the Government of Japan.

The Georgian side understood the result and agreed to implement the Project in the above two sites.

2. Confirmation of Responsible Organization and Implementing Agency

With regard to the implementing agency, in addition to the MOEPNR, Ilia Chavchavadze State University (hereinafter referred to as "the University," whose organization chart is shown in Annex-1.) becomes implementing agency.

As recorded in the Minutes of Discussions dated October 2, 2009, the responsible organization is the Ministry of Environment Protection and Natural Resources of Georgia (hereinafter referred to as the "MOEPNR," whose organization chart is shown in Annex-2.) , and the Ministry of Energy of Georgia shall be responsible for technical assistance to the Project.

3. Preparation of the site

The Georgian side agreed that the site to install solar photovoltaic system shall be allocated by the responsible organization and all necessary arrangement shall be completed by January 31, 2010.

4. Reconfirmation of Minutes of Discussion on the 1st Preparatory Survey

Georgian side reconfirmed the contents of the Minutes of Discussions on the Preparatory Survey on the Project for Clean Energy Promotion Using Solar Photovoltaic System in Georgia signed on October 2, 2009.

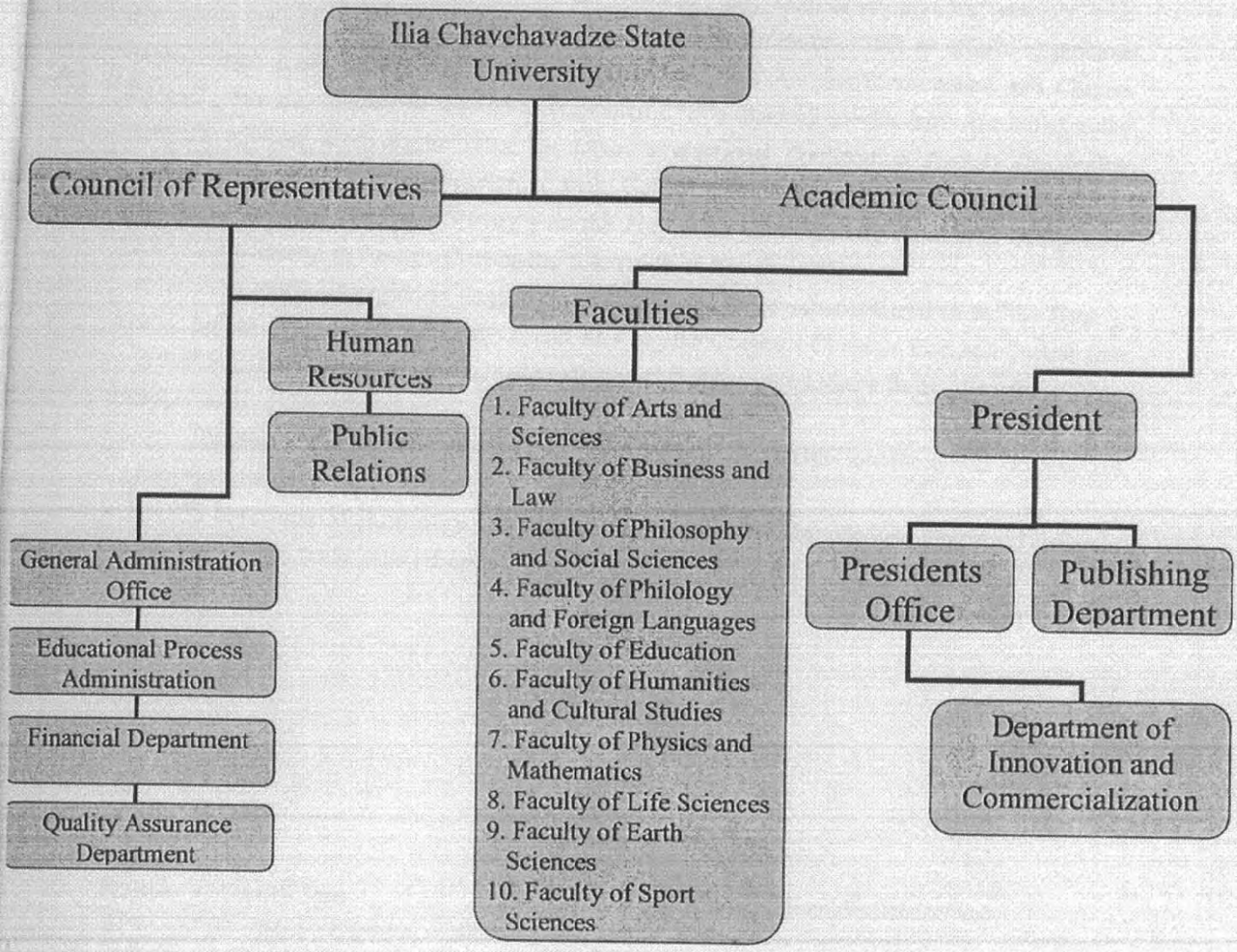
<List of Annex>

Annex-1 Organization Chart of Ilia Chavchavadze State University.

Annex-2 Minutes of Discussions on the Preparatory Survey on the Project for Clean Energy Promotion Using Solar Photovoltaic System in Georgia, October 2, 2009.

(Annex-1)

Organization Chart of Ilia Chavchavadze State University



Minutes of Discussions
on the 3rd Preparatory Survey
on the Project for Clean Energy Promotion Using Solar Photovoltaic System in Georgia

In October and December of 2009, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the 1st and 2nd Preparatory Survey Team on the Project for Clean Energy Promotion Using Solar Photovoltaic System in Georgia (hereinafter referred to as "the Project"). Through discussion and technical examination of the results of the survey in Japan, JICA selected the two implementation sites. After the 2nd Preparatory Survey, JICA Team got acquainted with an existing basement at the one of the site at the Head Office building of the Ministry of Environment Protection and Natural Resources (hereinafter referred to as "MoEPNR").

In order to explain and confirm a design and layout of the project, JICA sent Georgia the 3rd Preparatory Survey Team (hereinafter referred to as "the Team"), which is headed by Mr. Hiroshi Sumiyoshi, Advisor, Energy and Mining Division, Industrial Development Department, JICA, from 30 August to September 03, 2010.

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

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

Tbilisi, October 13, 2010

Hiroshi Sumiyoshi
Leader
Preparatory Survey Team
Japan International Cooperation Agency
JAPAN

George Zedginidze
Deputy Minister
Ministry of Environment Protection and
Natural Resources
GEORGIA

ATTACHMENT

1. Background

After the 2nd Preparatory Survey, JICA Team got acquainted with an existing basement at the one of the site, the Head Office building of the MoEPNR. This basement will influence the design and layout of the construction of PV system which was proposed in the last Preparatory Survey. Therefore, the Team proposed Georgian side to arrange an additional survey (hereinafter referred to as the "additional survey"), or to look for an alternative site.

2. Alternative site

A new project site was proposed, which was an open space (hereinafter referred to as the "New Site") adjacent to the main building of the MoEPNR, between the MoEPNR and Ministry of Interior. The Georgian side also explained that the Ministry of Interior had the title of the New Site, and the MoEPNR would be able to get the title of the New Site for this project after the JICA selects this New Site as the project site.

Both the Team and the Georgian side (hereinafter referred to as the "Both Side") agreed that this New Site would be one option as project site, and would be surveyed its condition by JICA. JICA will inform to the Georgian side the final decision of the Project site. In the case that the New Site could be used for this project, the Team would request the MoEPNR to send the official permission letter to JICA for the New Site as the Project implementation site after the negotiation between the MoEPNR and the Ministry of Interior. The Georgian side agreed to arrange the official permission letter to JICA, and send it through the Embassy of Japan in Georgia. The Georgian side agreed that the Georgian side would clear and level the New Site until the project procurement process in Japan starts. The Team agreed to arrange the drainage system and the substructure for the Solar System in the New Site based on the result of the additional survey.

3. Additional Survey

In the case that the New Site could not be used for this project from any reason, JICA Team explained that it is necessary to reexamine the original plan discussed on December 15, 2009, and an additional survey of the basement would be needed. The Georgian side understood the needs of the additional survey and agreed to implement this survey.

<List of Annex>

Annex-1 Minutes of Discussions on the 1st Preparatory Survey on the Project for Clean Energy Promotion Using Solar Photovoltaic System in Georgia, October 2, 2009.

Annex-2 Minutes of Discussions on the 2nd Preparatory Survey on the Project for Clean Energy Promotion Using Solar Photovoltaic System in Georgia, December 15, 2009.

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

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

JICA sent to Georgia the Preparatory Survey Team (hereinafter referred to as "the Team") from September 06 to September 29, 2011.

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

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

Tbilisi, September 10, 2011

Hiroshi Sumiyoshi
Director,
Energy and Mining Division,
Industrial Development and Public Policy Department,Japan International Cooperation Agency
JAPAN

Vera Kobalia
Ministry of Economy and Sustainable Development of Georgia

K. Aleksidze
United Airports of Georgia

ATTACHMENT

1. Current Situation

The Government of Georgia recognizes the threat of the Climate Change to the economy and natural ecosystems and therefore considers development and implementation of the Climate Change-related policy and measures as one of its priorities.

The policy of the Government of Georgia on mitigating the Climate Change defines the measures on reducing Green House Gas emissions in various sectors including the energy sector. In this situation, both sides confirm that the Project, which introduces photovoltaic (PV) power generation systems connected with the national power grid, is one of the pilot systems to enhance the possibility of applying renewable energy.

2. Objective of the Project

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

3. Responsible Organization and Implementing Agency

The responsible organization is the Ministry of Economy Development and implementing organization is the United Airports of Georgia (hereinafter referred to as the "UAG," whose organization chart is shown in Annex-1.) and Ilia University.

4. Items Requested by the Government of Georgia

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

(1) Solar module (panel)
(2) Junction Box
(3) Power Conditioner
(4) Transformer
(5) Data collecting and display device

4-2. The Georgian side and the Team agreed that project site is a parking area which is in front of the main terminal of the Tbilisi International Airport and campus of Ilia University.

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

4-4. The Georgian side has understood that the final component and the design of the Project shall be determined (confirmed) at the timing of 2nd phase of the Preparatory Survey.

4-5. The Team will report the findings and items requested by the Georgian side to JICA Headquarters and the GoJ.

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

The Georgian side understood the Japan's Program Grant Aid for Environment and Climate Change scheme explained by the Team, as described in Annex-3, 4, 5 and 6.

6. Schedule of the Study

6-1. The Team will proceed to further survey in Georgia until the end of September as the 1st phase of the Preparatory Survey. Additional survey might be conducted as the 1st phase of the Preparatory Survey, if necessary.

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

7. Other Relevant Issues

7-1 Major Undertakings to be taken by the Georgian side

The Georgian side confirmed that major undertakings as shown in Annex-7 should be taken by the Georgian side at its own expense. In addition, the Georgian side should be responsible for the following issues;

(1) Securing necessary site

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

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

(3) Tables and PCs, if necessary

7-2 Preparation of the site

The Georgian side agreed that the site to be installed the product shall be allocated by the responsible organization and all necessary arrangement shall be completed by the time of the 2nd phase of the Preparatory Survey.

7-3 Procurement of Equipment

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

7-4 Coordination with Relevant Organizations

The responsible Organization for the Project shall be the focal point for the Team, and responsible for the coordination with relevant organizations. The Georgian side agreed to establish a consultative committee in order to coordinate with the Japanese side which consists of the Embassy of Japan, JICA Programme Coordinator (or JICA representative) in Georgia and the procurement agency. The terms of Reference of the Consultative Committee is referred to Annex-8.

7-5 Application of the Related Laws and Regulations

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

7-6 Applying JICA Environmental and Social Considerations Guideline

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

7-7 Operation and Maintenance

The Responsible Organization agreed to secure and allocate the necessary budget and personnel for the operation and maintenance of grid-connected PV system procured and installed under the Project.

7-8 Customs and Tax exemption

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

7-9. The Georgian side shall ensure the security of all concerned Japanese nationals working for the Project, if deemed necessary.

7-10. The Georgian side shall provide necessary numbers of counterpart personnel to the Team during the period of their studies in Georgia.

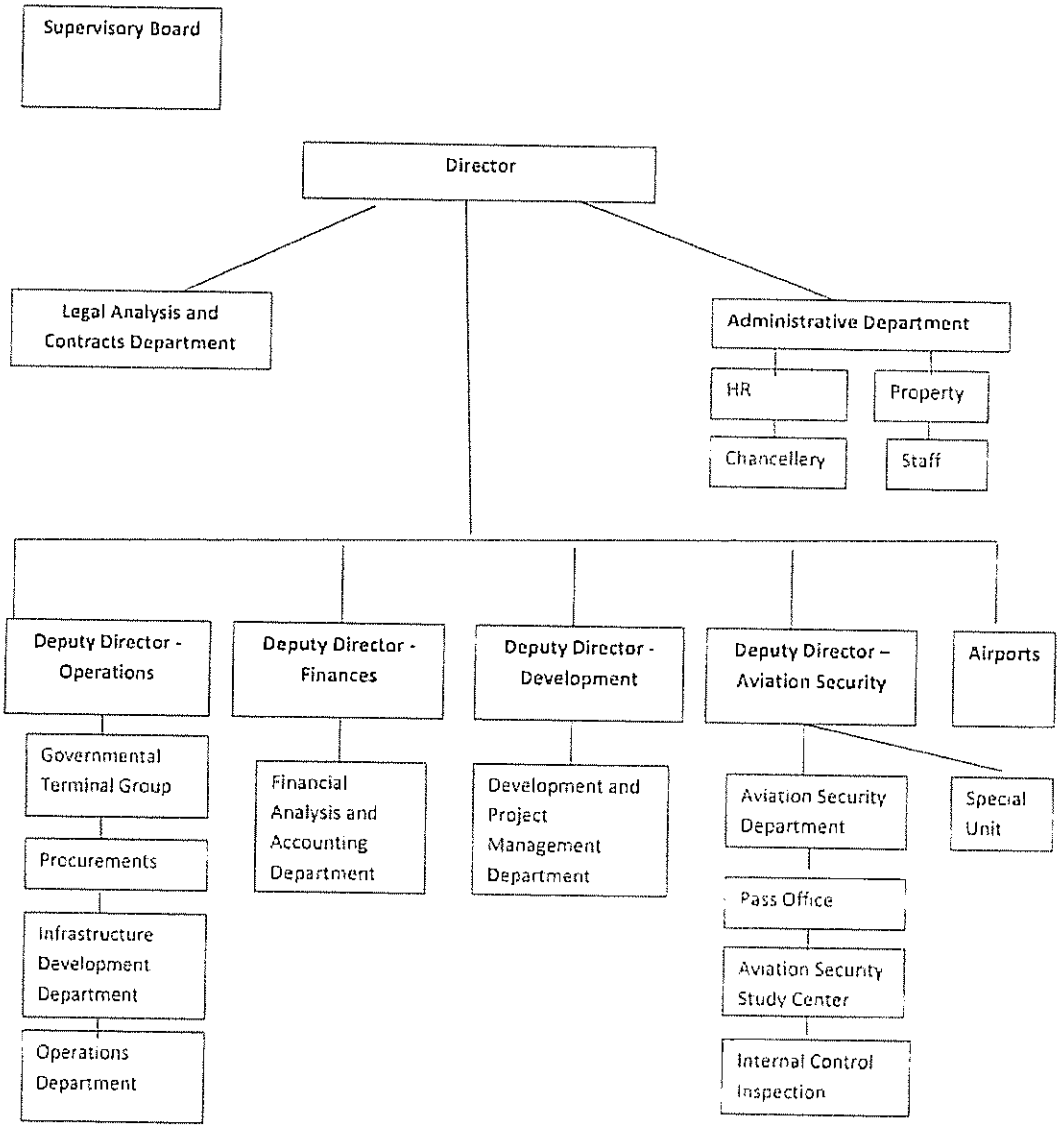
7-11 The Georgian side shall submit all the answers to the Questionnaire, which the Team handed to the Georgian side.

<List of Annex>

Annex-1 Organization Chart of United Airports of Georgia
Annex-2 Project site / Candidate site of the Project
Annex-3 Program Grant Aid for Environment and Climate Change (Provisional)
Annex-4 General Flow of Program Grant Aid for Environment and Climate Change
Annex-5 Flow of Funds for Project Implementation
Annex-6 Project Implementation System
Annex-7 Major Undertakings to be taken by each Government (Provisional)
Annex-8 Terms of References of the Consultative Committee (Provisional)

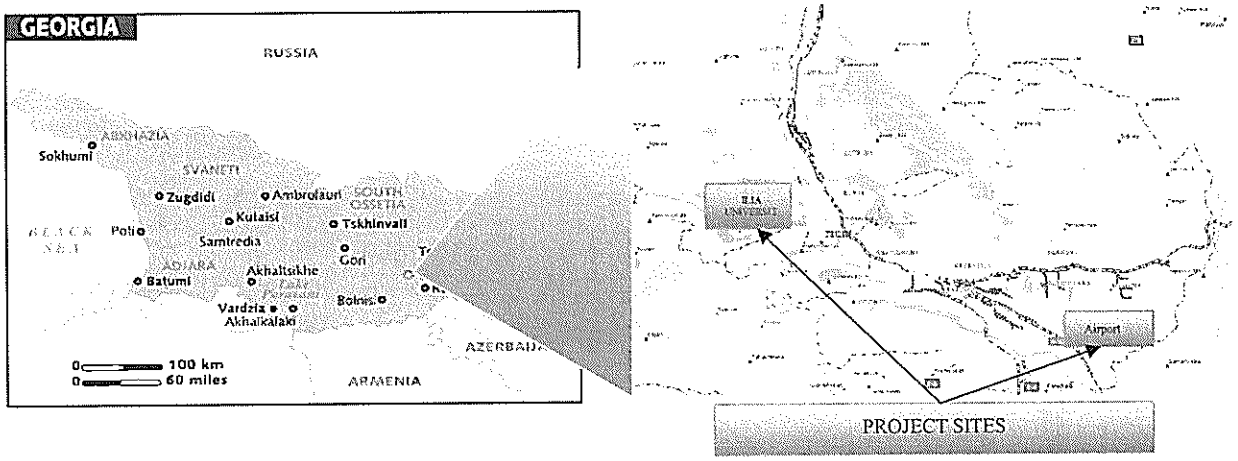
Annex – 1

Organization Structure of United Airports of Georgia LTD.



Annex-2

Project site / Candidate site of the Project



Candidate site	Address
United Airports of Georgia	Chanturia st. 12, Tbilisi, Georgia
Ilia Chavchavadze State University	5, Kakutsa Cholokashvili Ave., Tbilisi 0162, Georgia

Annex – 3

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 reffered to as the "G/A")	Agreement concluded between JICA and the Recipient
Preparatory Survey 2	Preparatory Survey for design conducted by JICA
Implementation	Procurement through the Procurement Agency by the Recipient

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

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

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

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

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

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

2 Preparatory Survey

1) Contents of the Survey

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

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

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

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

2) Selection of consulting firms

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

3. Implementation of GAEC after the E/N

1) Exchange of Notes (E/N)

The content of GAEC will be determined in accordance with the Notes exchanged by the two

Governments concerned, in which items including, objectives of the project, period of execution, conditions and amount of the Grant Aid are confirmed.

2) Details of Procedures

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

Essential points to be agreed are outlined as follows:

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

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

a) The Agent

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

b) Agent Agreement

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

c) Approval of the Agent Agreement

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

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

d) Payment Methods

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

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

e) Products and Services Eligible for Procurement

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

f) Selection of firms

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

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

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

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

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

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

i) Pre-qualification Examination of Tenderers
The Agent may conduct a pre-qualification examination of tenderers in advance of the tender so that the invitation to the tender can be extended only to eligible firms. The pre-qualification examination should be performed only with respect to whether the prospective tenderers have the capability of concluding the contracts.

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

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

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

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

k) Additional procurement
If there is any remaining balance after the competitive and/or selective tendering and/or direct negotiation for a contract, and if the Recipient would like to procure additional items, the Agent is allowed to conduct this additional procurement, following the points mentioned below:
(1) Procurement of same products and services

When the products and services to be additionally procured are identical with the initial tender and a competitive tendering is judged not efficient, additional procurement can be conducted by a negotiated contract with the successful tenderer of the initial tender.

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

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

m) Terms of Payment
The contract will clearly state the terms of payment. The Agent will make payment from the "advances," against the submission of the necessary documents from the firm on the basis of the conditions specified in the contract. When the services are the object of procurement, the Agent may pay certain portion of the contract amount in advance to the firms on the conditions that such firms submit the advance payment guarantee worth the amount of the advance payment to the Agent.

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

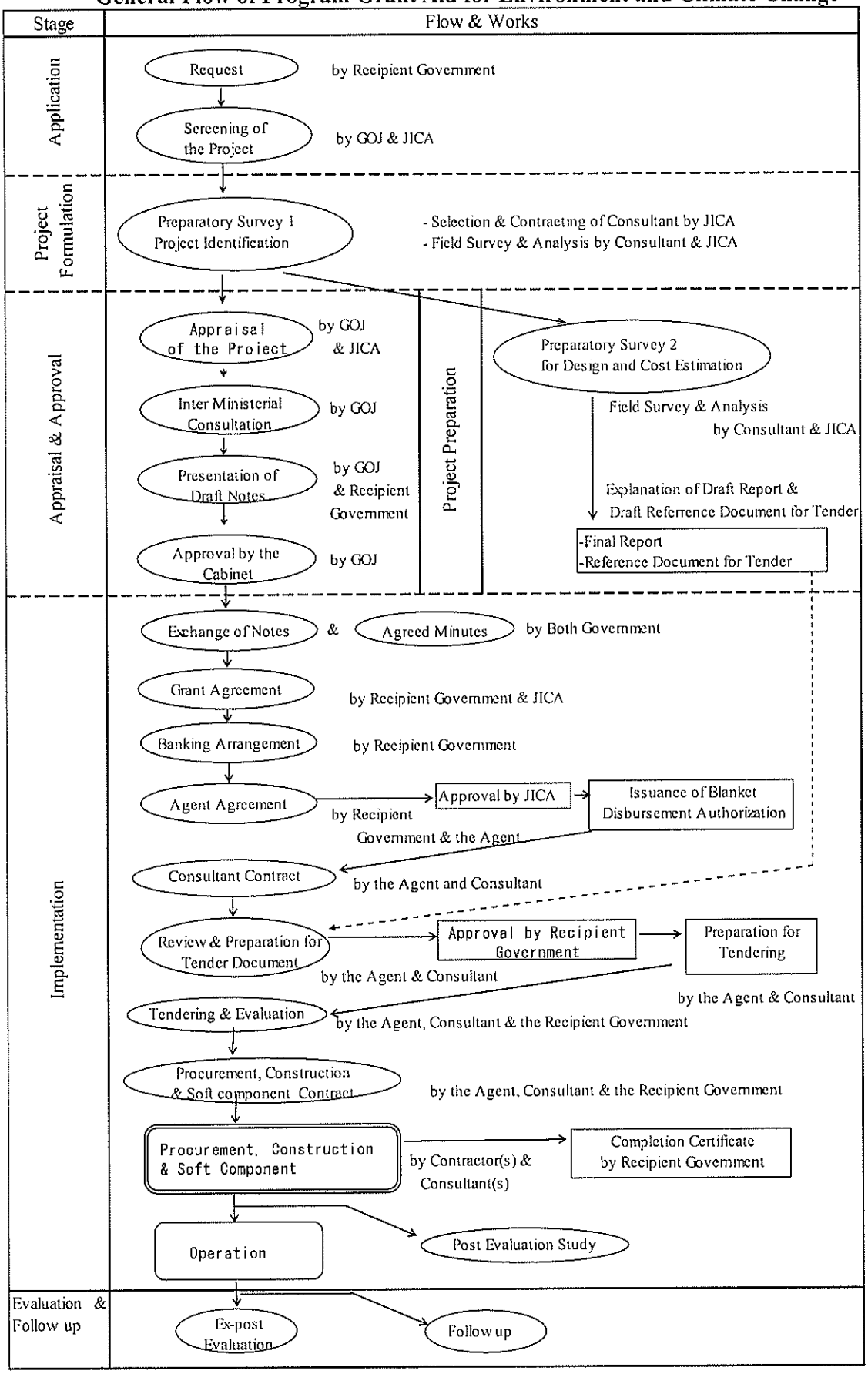
a) To secure land necessary for the sites of the Project and to clear, level and reclaim the land prior to commencement of the Project.
b) To provide facilities for distributing electricity, water supply and drainage and other incidental facilities in and around the sites.
c) To ensure all the expense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

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

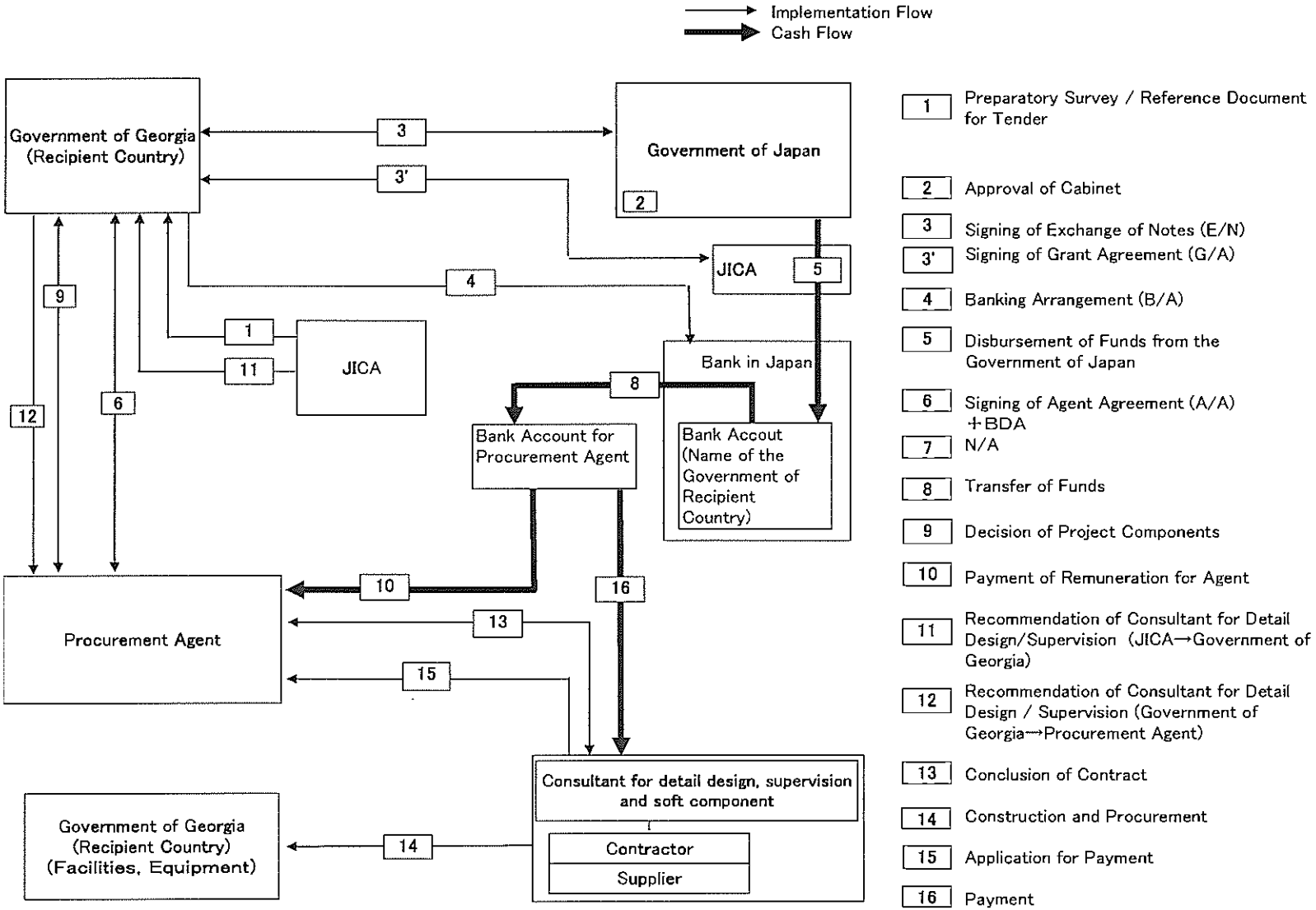
6) "Export and Re-export" of products
The products purchased under the Grant and its accrued interest will not be exported or re-exported from the Recipient.

Annex-4

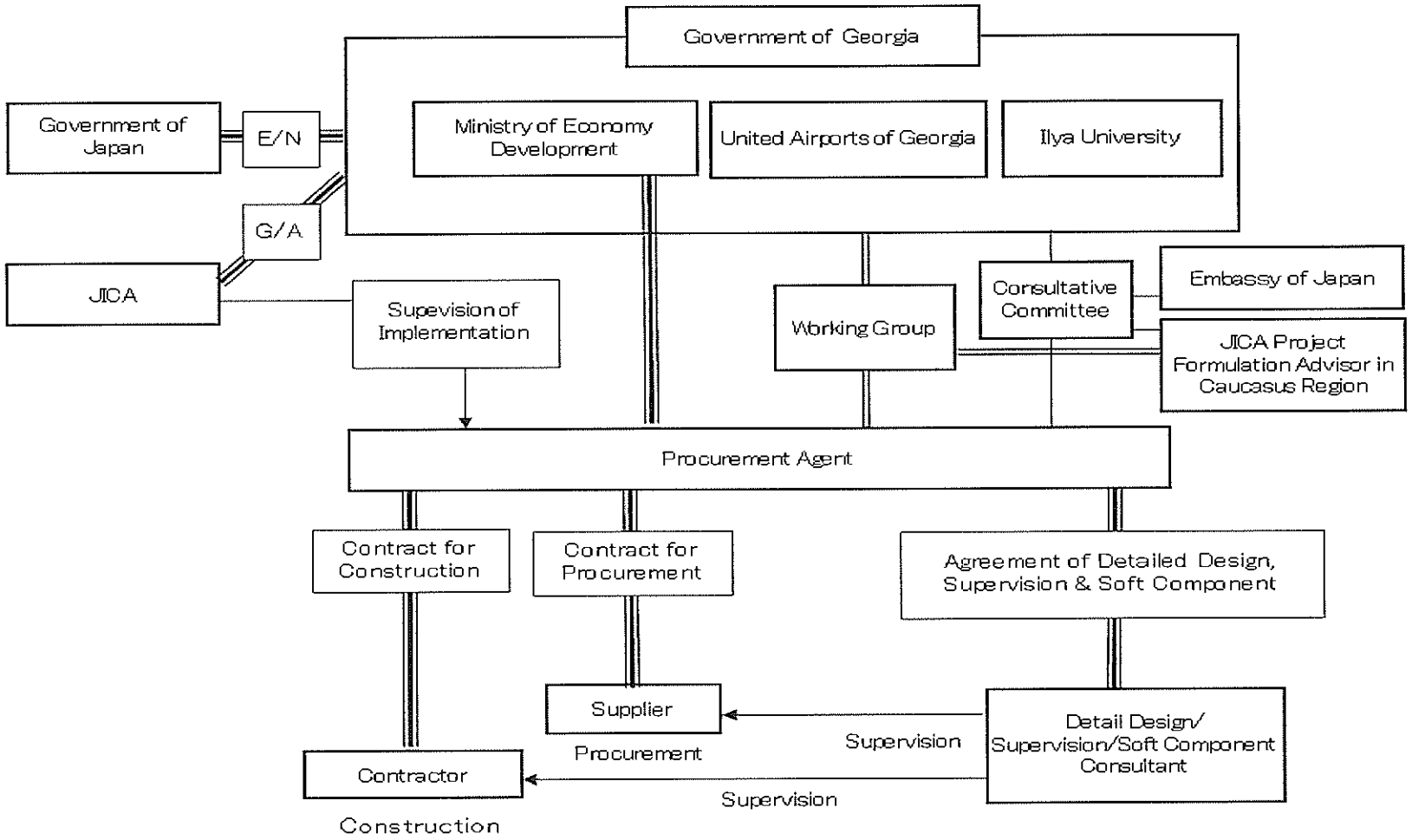
General Flow of Program Grant Aid for Environment and Climate Change



Flow of Funds for Project Implementation



Project Implementation System



Annex-7

Major undertakings to be taken by each Government (Provisional)

No.	Items	To be covered by Grant Aid	To be covered by Recipient Side
1	To secure site		●
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 roads		
	1) Within the site	●	
	2) Outside the site and Access road		●
5	To construct the facility and install the equipment	●	
6	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	●	
7	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		●
8	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	●	
9	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.		●
10	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		●
11	To maintain and use properly and effectively the facilities that are constructed and the equipment that is provided under the Grant.		●
12	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.		●
13	To ensure environmental and social consideration for the Programme.		●

Annex- 8

Terms of Reference of the Consultative Committee (Provisional)

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

2. To discuss the modifications of the Programme, 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.

Minutes of Discussions
ou the Preparatory Survey
on the Project for Cleau Energy Promotion Using Solar Photovoltaic System
in Georgia
(Explanation on Draft Final Report)

From September 2009 to September 2011, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Preparatory Survey Teams on the Project for Clean Energy Promotion Using Solar Photovoltaic System in Georgia (hereinafter referred to as "the Project"), and through discussions, field surveys and technical examination of the results of the surveys in Japan, JICA prepared a Draft Final Report of the Outline Design.

In order to explain and to consult with the concerned officials of the Government of Georgia on the component of the Draft Final Report, JICA dispatched to Georgia the Preparatory Survey Team for Draft Final Report Explanation (hereinafter referred to as "the Team"), which is headed by Mr. Hiroshi Sumiyoshi, Director of JICA Headquarters Office, from February 27th to March 3rd, 2012.

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

Tbilisi, March 1st, 2012

Hiroshi Sumiyoshi
Director,
Energy and Mining Division,
Industrial Development and Public Policy Department,
Japan International Cooperation Agency

Vera Kobalia
Minister,
Ministry of Economic and Sustainable Development of Georgia

K. Aleksidze
Director,
United Airports of Georgia

Gigi Tevzadze
Rector
Ilia State University

ATTACHMENT

1. Components of the Draft Final Report

The Georgian side agreed and accepted in principle the components of the Draft Final Report explained by the Team.

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

The Georgian side understood components of the Minutes of Discussion signed by both sides on October 2nd, 2009 and 10th September, 2011 (hereinafter referred to as "the previous M/D"), and would take the necessary measures confirmed on the previous M/D for smooth implementation of the Project following procedures of the Program Grant Aid for Environment and Climate Change of the Government of Japan as described in Annex-3, 4, 5, 6 and 7.

3. Schedule of the Study

JICA will complete the final report in accordance with the confirmed items and send it to Ministry of Economic and Sustainable Development of Georgia (hereinafter referred to as "MOE"), United Airport of Georgia (hereinafter referred to as "UAG"), and Ilia State University (hereinafter referred to as "ISU") by August 2012.

4. Confirmation of progress made from the previous M/D

4.1. Project site and capacity of Solar Photovoltaic system

Both sides confirmed that project sites are Tbilisi International Airport and Ilia State University. The Team explained that the design capacity of Solar Photovoltaic (PV) systems (hereinafter referred to as " PV system") to be procured and installed in Tbilisi International Airport would be 310kW and in Ilia State University 37kW based on the result of outline design and cost estimation.

4.2. Application of the Related Laws and Regulations

Based on the previous M/D, the Team reconfirmed that the Georgian side agreed to obtain the permission to install the PV system and to have it connected to the national grid. It was also confirmed by both sides that UAG and ISU shall obtain the permission of the TELASI for the installation and operation of the PV system to be connected to the national grid by September 2012.

5. Items of Equipment to be procured

The Team explained that the items of equipment to be procured as shown in Annex-1 based on the results of the Preparatory Surveys conducted From September 2009 to September 2011. After discussion, both side confirmed that the major equipment such as PV modules consist of PV cells and Power Conditioners should be produced and purchased in Japan, while products of third country could be acceptable for other type of equipment as a part of components.

6. Soft Component

The Team explained that the following items are included in the soft component of the Project.

(1) Technical guidance on operation and maintenance of the PV system
(2) Technical guidance on operation and maintenance of the interconnection system to the grid
(3) Technical guidance on PC programs of utilization of power generating and meteorological data from the PV system

7. Ownership and Responsibilities for Operation and Maintenance

The Georgian side has reconfirmed that UAG and ISU are respectively the owner of the each equipment for the PV system to be procured by the Project, and UAG and ISU are responsible for Operation and Maintenance (O&M) of these equipment.

The Georgian side confirmed that the estimated cost for O&M described in Annex 2 and agreed that UAG and ISU will respectively secure necessary budget and assign necessary personnel for the O&M of the PV system procured and installed under the Project.

8. Procurement Process of the Project

Both sides reconfirmed that procurement process would be supervised by the Procurement Agent (hereinafter referred to as "the Agent") who is recommended by the government of Japan through necessary consultation with the Consultative Committee (hereinafter referred to as "the Committee"). Both sides also reconfirmed the roles of the Agent as follows;

(1) The Agent will render the services stipulated in the provisions of the Grand Agreement (G/A) as well as the Exchange of Notes (E/N) for the Project;
(2) The Agent will undertake the procurement procedure necessary for the Project according to the provisions of the G/A and E/N and any other concerned guidelines;
(3) JICA will provide the Draft Final Report and Final Report to the Agent; and
(4) The Agent will undertake the procurement according to the contents of the Final Report of the Outline Design.

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

The Georgian side 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 an equipment lists which will be set in the Final Report.

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

9. Project Cost

The Georgian side agreed that the Project cost of grant part should not exceed the upper limit of grant amount agreed on in E/N and G/A. Both sides confirmed that the Project cost contains procurement cost of equipment, the cost for transportation up to the Project Site, installation cost,

the Procurement Agent fee, and the consultant fee that includes the cost for soft component for the technical assistance of operation and maintenance of the equipment and PV system as a whole.

The Georgian side understood that the Project Cost Estimation attached as Annex-2 is not final and is subject to change by the result of examination through revision of the Outline Design Study.

10. Confidentiality of the Project

1) Detailed specifications of the Facilities and Equipment

Both sides confirmed that all the information related to the Project should not be released to any outside parties before conclusion of all the contract(s) for the Project because they are confidential document that contains information related to the tender.

Such information includes the followings:

a) detailed drawings, specifications of the facilities and equipment, and other technical information of the facilities and equipment;

b) the Draft Final Report;

c) the Final Report

2) Confidentiality of the Cost estimation

The Team explained the estimated cost of the project as described in Annex 2. The Georgian side agreed that the estimated cost of the Project should never duplicated or disclosed to any outside parties (i.e. outside of JICA, the Georgian side and the Agent) before tender for the project. The Georgian side understood that the estimated cost for the Project attached as Annex 2 is not final and is subject to change as a result of examination through revision of the Outline Design Study.

11. The Consultative Committee

The Georgian side agreed that the MOE would chair the Committee in order to facilitate consultation and procurement process. The Terms of Reference of the Committee was settled in Annex-8.

The members of the Committee are as follows:

(1) Representative of MOE (Chair)
(2) Representative of Ministry of Foreign Affairs of Georgia
(3) Representative of UAG
(4) Representative of ISU
(5) Representative of TELASI
(6) Representative of TAV
(7) Representative of the Embassy of Japan
(8) Representative of JICA Uzbekistan Office

The meeting of the Committee shall be held immediately after the signing of the consulting service contract between the Agent and the Consultant.

Further meetings shall be held upon request of either the Georgian side or the Japanese side. The Agent may advise JICA and the Georgian side on the necessity to call a meeting of the Committee.

12. Undertakings required by the Recipient Country

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

(1) Allocation of land/space for installation of PV system

The owners of the land where the following equipment and materials for PV system will be installed are respectively UAG and ISU. UAG and ISU had already agreed to offer their lands for the installation of the system. for PV Modules

1) for Cables between Equipment
2) for Power Conditioners
3) for Electric Substation
4) for Data Management and Monitoring System
5) for Temporary Stockyard

(2) Preparation for the Site

UAG and ISU shall clear and level the space for PV system installation as the preparation of the site by September 2012.

(3) Construction permissions

Both sides confirmed that UAG and ISU should obtain building permission of the Municipality for the supporting structure of the PV system by November 2012.

(4) Assignment of Counterpart Personnel

1) Overall project management

The Georgian side assigned following personnel for overall project management and coordination in each organization.

UAG: Mr. Nodar Lominadze, Deputy Director of United Airports of Georgia

ISU: Mr. Kakha Karchkhadze, Department Chair, Department of Innovation and Commercialization

2) Soft Component

The Georgian side agreed to assign necessary personnel in accordance with the soft component implementation plan proposed by the Team.

The Georgian side shall inform the name of the focal Counterpart Personnel for the soft component from the following organizations to JICA at the first Consultative Committee meeting.

- UAG
- ISU
- TELASI
- TAV

Other personnel will be assigned from each organization as required at the time of installation.

(5) Customs and Tax Exemption

Based on the previous M/D, the Georgian side agreed that Georgian side shall be responsible for the exemption of all customs, tax, levies and duties incurred in Georgia for implementation of the project.

(6) Environmental and Social Considerations

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

The Georgian side shall obtain an official statement from the Ministry of Environment Protection of Georgia that EIA and IEE are not required for the project.

<List of Annex>

Annex-1 List of Major Equipment

Annex-2 Project Cost Estimation (Confidential)

Annex-3 Program Grant Aid for Environment and Climate Change of the Government of Japan (Provisional)

Annex-4 General Flow of Program Grant Aid for Environment and Climate Change

Annex-5 Flow of Funds for Project Implementation

Annex-6 Project Implementation System

Annex-7 Major Undertakings to be taken by each Government (Provisional)

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

Annex-1

List of Major Equipment

List of Major Equipment (Tbilisi International Airport)

Equipment		Quantity
Grid-connected Photovoltaic System		1 system
	1-1. Photovoltaic (PV) Module	310 kW
	1-2. Supporting structure for PV modules	1 set
	1-3. Power Conditioners	1 set
	1-4. Junction box	1 set
	1-5. Grid connecting board	1 set
	1-6. Power factor improvement static capacitor board	1 set
	1-7. Data management and monitoring system	1 set
	1-8. Meteorological observation instruments	1 set
	1-9.Large display	1 set
	1-10 Maintenance equipment	1 set

List of Major Equipment (Ilia State University)

Equipment		Quantity
Grid-connected Photovoltaic System		1 system
	1-1. Photovoltaic (PV) Module	37 kW
	1-2. Supporting structure for PV modules	1 set
	1-3. Power Conditioners	1 set
	1-4. Junction box	1 set
	1-5. Grid connecting board	1 set
	1-6. Electric substation	1 set
	1-7. Data management and monitoring system	1 set
	1-8. Data management and monitoring system for education	1 set
	1-9. Meteorological observation instruments	1 set
	1-10.Large display	1 set
	1-11 Maintenance equipment	1 set

Annex-2

CONFIDENTIAL

CONFIDENTIAL

Annex – 3

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

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

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

1. Procedures for GAEC

GAEC is executed through the following procedures.

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

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

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

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

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

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

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

2 Preparatory Survey

1) Contents of the Survey

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

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

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

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

2) Selection of consulting firms

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

3. Implementation of GAEC after the E/N

1) Exchange of Notes (E/N)

The content of GAEC will be determined in accordance with the Notes exchanged by the two

Governments concerned, in which items including, objectives of the project, period of execution, conditions and amount of the Grant Aid are confirmed.

2) Details of Procedures

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

Essential points to be agreed are outlined as follows:

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

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

a) The Agent

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

b) Agent Agreement

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

c) Approval of the Agent Agreement

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

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

d) Payment Methods

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

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

e) Products and Services Eligible for Procurement

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

f) Selection of firms

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

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

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

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

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

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

i) Pre-qualification Examination of Tenderers
The Agent may conduct a pre-qualification examination of tenderers in advance of the tender so that the invitation to the tender can be extended only to eligible firms. The pre-qualification examination should be performed only with respect to whether the prospective tenderers have the capability of concluding the contracts.

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

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

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

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

k) Additional procurement
If there is any remaining balance after the competitive and/or selective tendering and/or direct negotiation for a contract, and if the Recipient would like to procure additional items, the Agent is allowed to conduct this additional procurement, following the points mentioned below:
(1) Procurement of same products and services

When the products and services to be additionally procured are identical with the initial tender and a competitive tendering is judged not efficient, additional procurement can be conducted by a negotiated contract with the successful tenderer of the initial tender.

(2) Other procurements

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

l) Conclusion of the Contracts

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

m) Terms of Payment

The contract will clearly state the terms of payment. The Agent will make payment from the "advances," against the submission of the necessary documents from the firm on the basis of the conditions specified in the contract. When the services are the object of procurement, the Agent may pay certain portion of the contract amount in advance to the firms on the conditions that such firms submit the advance payment guarantee worth the amount of the advance payment to the Agent.

4) Undertakings required by the Government of the Recipient Country

In the implementation of the Grant Aid Project, the Recipient is required to undertake necessary measures as the following:

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

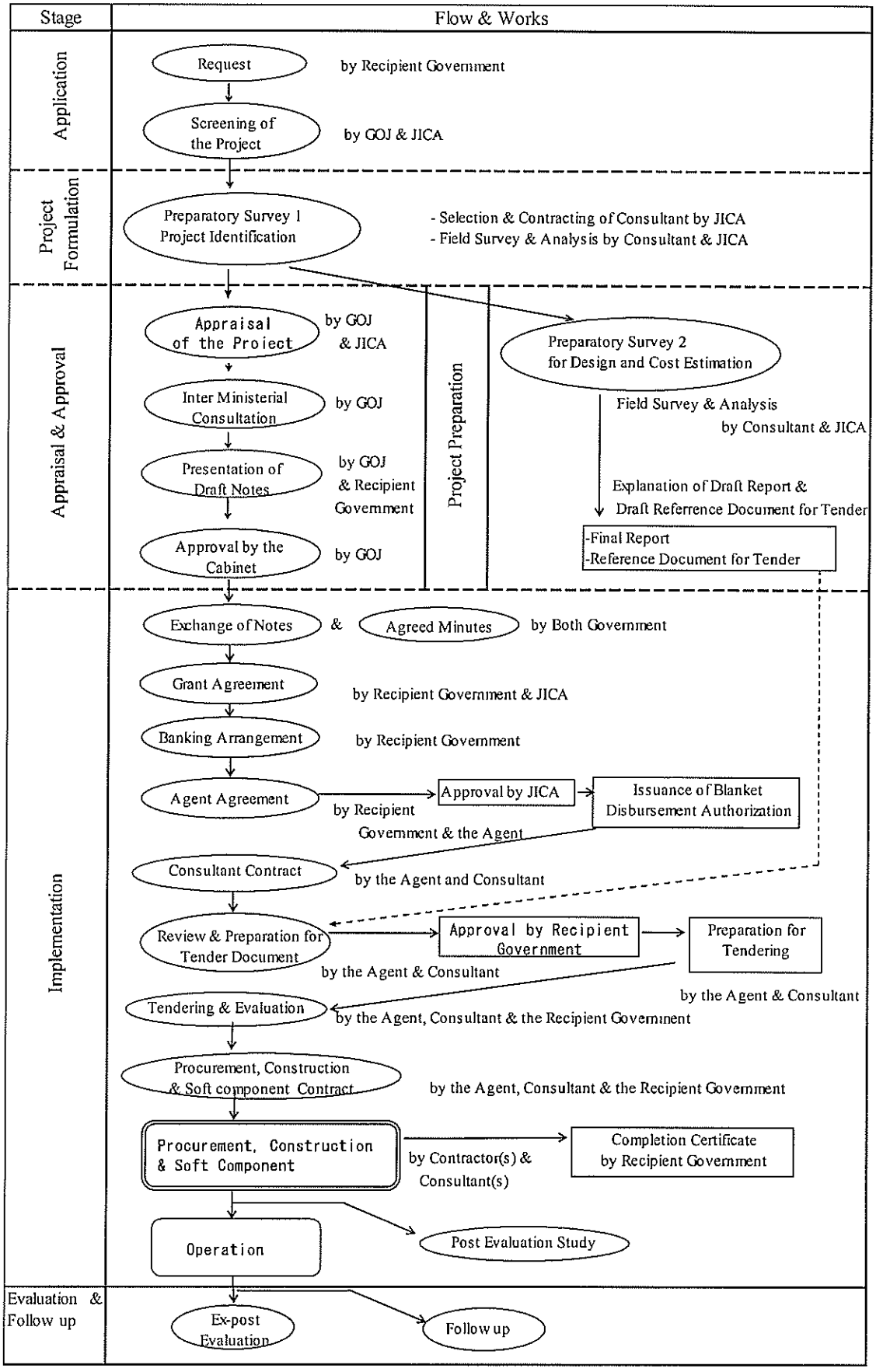
5) "Proper use of funds"

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

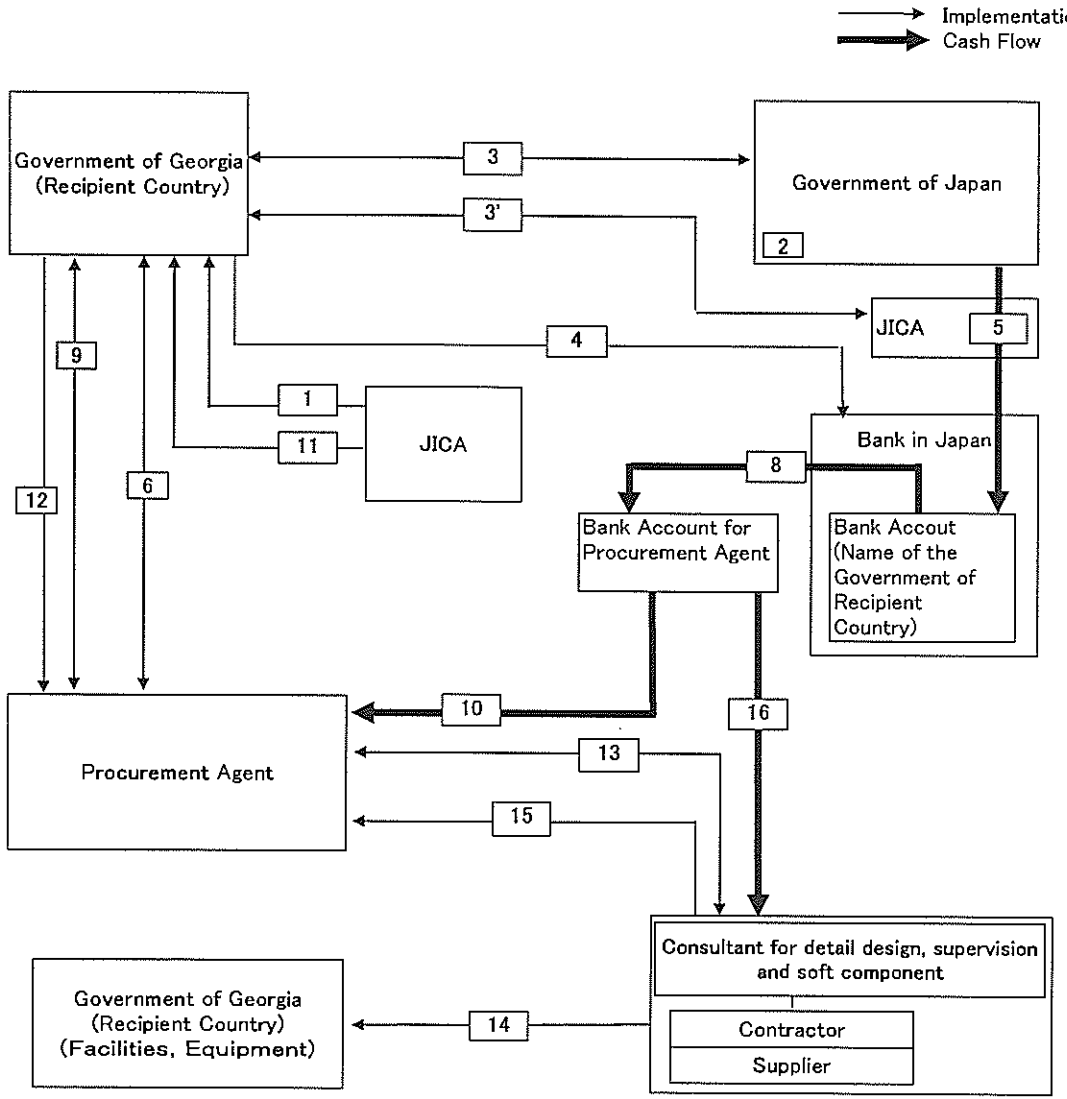
6) "Export and Re-export" of products

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

Annex-4 **General Flow of Program Grant Aid for Environment and Climate Change**



Flow of Funds for Project Implementation



1 Preparatory Survey / Reference Document for Tender

2 Approval of Cabinet

3 Signing of Exchange of Notes (E/N)

3' Signing of Grant Agreement (G/A)

4 Banking Arrangement (B/A)

5 Disbursement of Funds from the Government of Japan

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

7 N/A

8 Transfer of Funds

9 Decision of Project Components

10 Payment of Remuneration for Agent

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

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

13 Conclusion of Contract

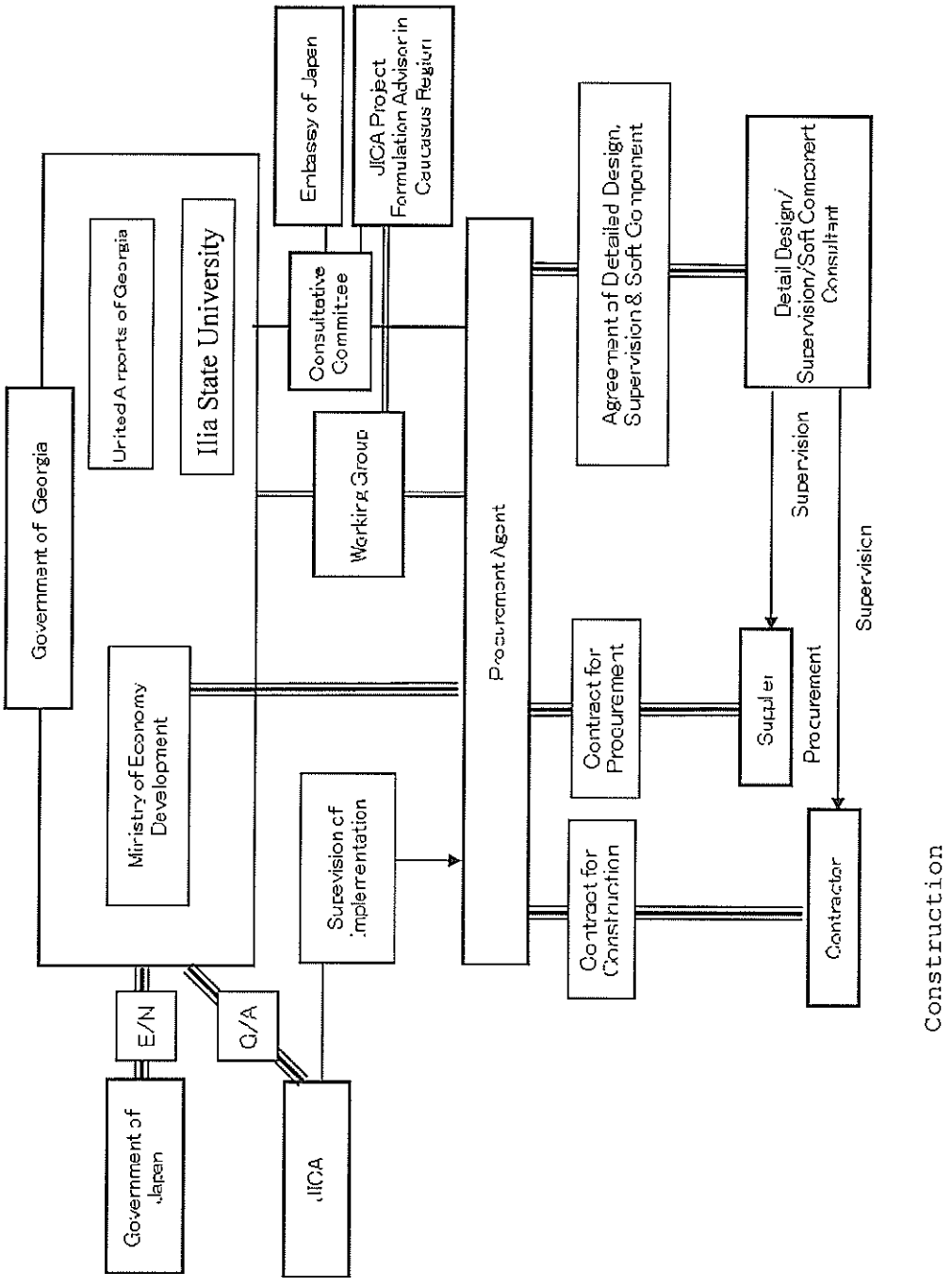
14 Construction and Procurement

15 Application for Payment

16 Payment

Annex-6

Project Implementation System



Annex-7

Major undertakings to be taken by each Government (Provisional)

No.	Items	To be covered by Grant Aid	To be covered by Recipient Side
1	To secure site		●
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 roads		
	1) Within the site	●	
	2) Outside the site and Access road		●
5	To construct the facility and install the equipment	●	
6	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	●	
7	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		●
8	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	●	
9	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.		●
10	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		●
11	To maintain and use properly and effectively the facilities that are constructed and the equipment that is provided under the Grant.		●
12	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.		●
13	To ensure environmental and social consideration for the Programme.		●

Annex- 8

Terms of Reference of the Consultative Committee (Provisional)

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

2. To discuss the modifications of the Programme, 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.

Appendix 5 Soft Component (Technical Assistance) Plan

JAPAN INTERNATIONAL COOPERATION AGENCY

THE PROJECT FOR

INTRODUCTION OF CLEAN ENERGY

BY SOLAR ELECTRICITY GENERATION SYSTEM

IN

GEORGIA

SOFT COMPONENT
(TECHNICAL ASSISTANCE)
PLAN

FEBRUARY 2012

ORIENTAL CONSULTANTS CO.,LTD.

Table of Contents

1 Background of Implementing Soft Component

1.1 Project Background

Recognizing that physical, human, and social sufferings brought by ecosystem destruction and meteorological disasters due to climate change, Georgia puts measures against climate change at one of its top priority lists. Georgia ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1994, Kyoto Protocol as one of Non-Annex I countries in 1999, established the National Research Center to start policies on the climate change in 1996. In January, 2003, National Agency on Climate Change (NACC) under the Ministry of Environment was designated as a Designated National Authority (DNA) Georgia which transacts clean development mechanism (CDM). Therefore, the Ministry of Environment Protection and Natural Resources of Georgia (currently the Ministry of Environmental Protection of Georgia) became a new DNA in January 2005.

Regarding climate change countermeasure, three policies of 1) Taking effort against climate change, 2) Utilizing CDM scheme and 3) Improvement of public awareness to the climate change, were formulated in the National Adaptation Plan (NAPA, 2009). As for the energy section, it's aimed to pursue utilizing renewable energies (hydro power, wind power, solar power, geothermal power and biomass).

Meanwhile, Japan has established new financial mechanism of "Cool Earth Partnership" in order to help developing countries both in reduction of green house gases and economic development. As a part of this mechanism, Grant Aid for Environment Program was introduced to provide financial support and capacity development.

With this background, Japan conducted study for introduction of photovoltaic (PV) system by Grant Aid for Environment Program in Georgia. As a result of the study, the project sites of Tbilisi International Airport (hereinafter referred to as TIA) and Ilia State University were chosen upon a request of introducing grid connected PV system.

This project aims to contribute to promotion of renewable energy usage and reduction of greenhouse gas emission

In order to achieve above objectives, technical assistance for operation and maintenance called "soft component" will be provided along with installation of grid connected PV system equipment. The technical assistance and equipment also cover reverse power flow, because Georgia intends to implement it when relevant institutions conditions are formulated after completion of this project.

Table 1 Soft Component Plan of this project

Equipment procurement for PV system		
Equipment	Use of power generated	Needs
Grid-connected PV system	PV system has interconnection with existing distribution network. The power generated by sunlight is supplied to facilities.	Promotion of renewable energy is needed out of concern about ecosystem disruption due to climate change and increasing physical, human and social damage.
Technical Assistance for grid-connected PV system (Soft Component)		
Technical assistance	Training on basic technical knowledge of grid connected PV system and on the operation and maintenance thereof including inspection and troubleshooting.	To address the lack technical knowledge for operation and management of grid connected PV system, because it has hardly been introduced in Georgia up to now.

Table 2 Basic Information of Tbilisi International Airport

Responsible agency	Ministry of Economy and Sustainable Development of Georgia
Implementing agency	United Airports of Georgia
Location	Tbilisi International Airport Parking and Open Space
Location environment	20 km east of capital city of Tbilisi in Georgia
Owner of the land	United Airports of Georgia
Licensing	United Airports of Georgia
Power-generating capacity	Approximately 310kW
Estimated amount of annual power generation	Approximately 329,000kWh
Area of installation	Approximately 4,100 ㎡
Use of power generated	General electric power in the terminal building
Reduction of CO2 emission	182.594t/year

Table 3 Basic Information of Ilia State University

Responsible agency	Ministry of Economy and Sustainable Development of Georgia
Implementing agency	Ilia State University
Location	Ilia State Universities premises
Location environment	Center of the capital city of Tbilisi in Georgia
Owner of the land	Ilia State University
Licensing	Ilia State University
Power-generating capacity	Approximately 37kW
Estimated amount of annual power generation	Approximately 32,000kWh
Area of installation	Approximately 420 ㎡

Use of power generated	General electric power in university campus
Reduction of CO2 emission	17.76t/year

1.2 Necessity of implementing the Soft Component

United Airports Georgia (UAG), TAV, Ilia State University and TELASI have never experienced to operate a grid connected PV system. Therefore, it is necessary for the operation and management staff to understand the basic principles and operation procedures of the PV system. Furthermore, the work flow consisting of collection, compilation, analysis and recording with respect to power generating and meteorological data must be formulated.

It is necessary to communicate and collaborate with TELASI in order to ensure secure, stable and safe operation of the PV system connected to the grid owned by TELASI. TELASI has been supplying power to Tbilisi area and owns enough knowledge and technical understanding in power distribution, operation and maintenance. Meanwhile, because TELASI has been inexperienced in grid connection of PV systems, this has to be covered for TELASI by the technical assistance of this project. In this sense, the soft component program is essential.

Accordingly, the JICA study team proposed implementation of a soft component covering all aspects of above items, aiming at smooth and sustainable operation of the PV system.

1.3 Organization for Operation and Maintenance

United Airports Georgia (UAG):

Operationse department of UAG will be in charge of operation and maintenance of the PV system. Three staff from the department will engage in operation and maintenance.

TAV:

TAV operates Tbilisi international Airport and will maintain the PV system. Existing five electrical engineers will engage in operation and maintenance of the PV system.

Ilia State University (ILIA STATE UNIVERSITY)：

Innovation Commercialization Department will newly be established and in charge of operation and maintenance of the PV system. Five staff from the department including manager(s) will engage in operation and maintenance.

TELASI：

The PV system will be connected to the grid of TELASI which is in charge of power distribution

around Tbilisi and its vicinity. 10 operation and maintenance staff will engage in operation and maintenance of interconnection of the PV system

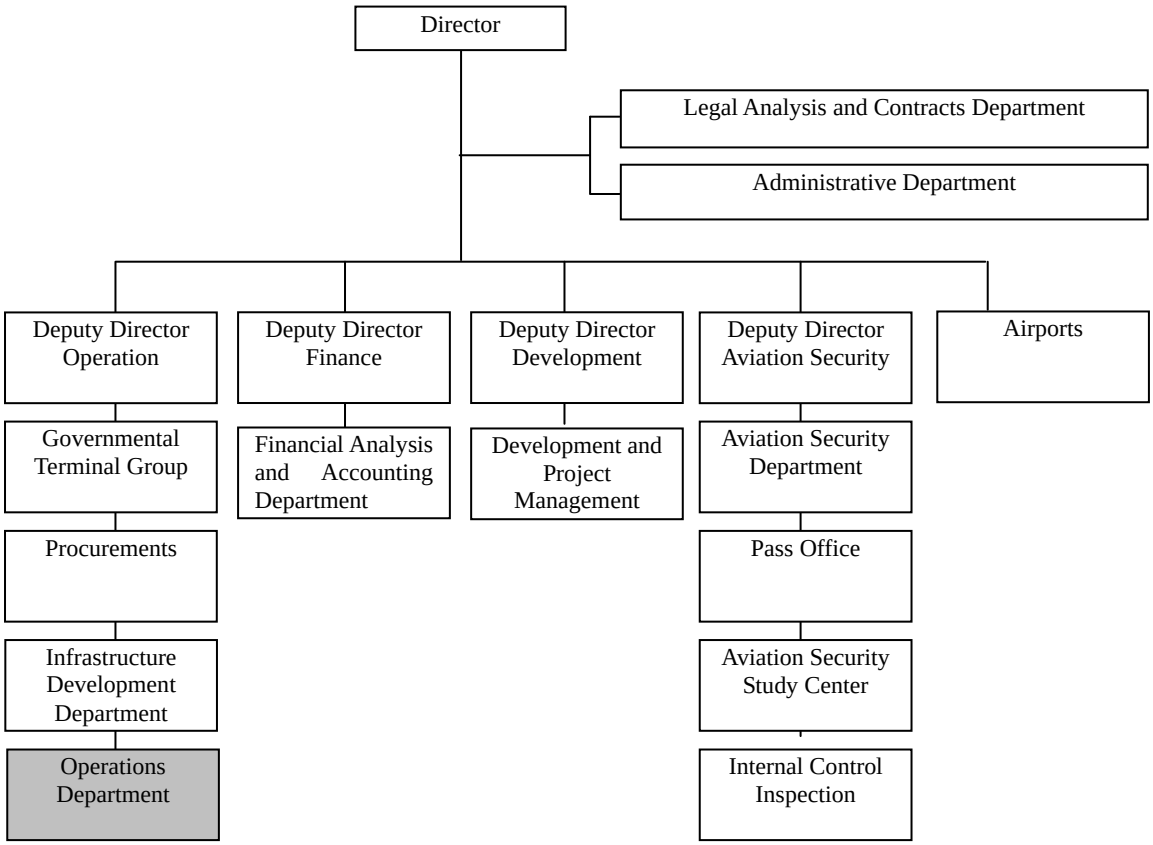


Figure 1 Organization Chart of UAG

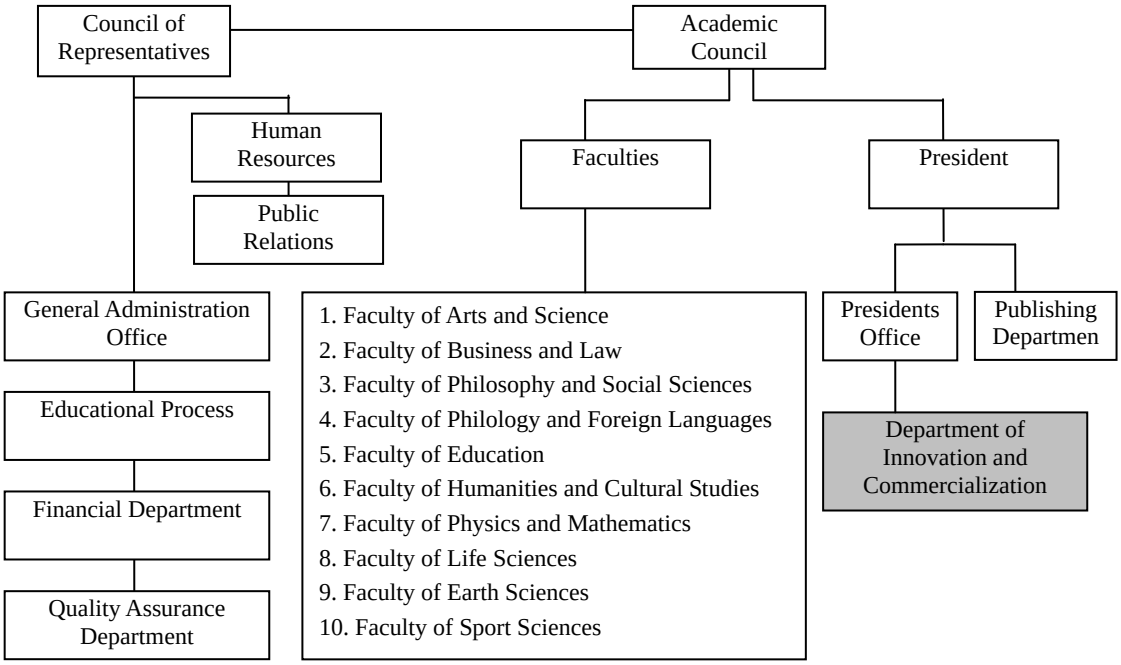


Figure 2 Organization Chart of Ilia State University

2 Objectives of the Soft Component

Objectives of the soft component are set as follows to ensure smooth start-up and sustainability of the system to be introduced;

1. The trainees obtain the ability to appropriately operate and maintain the PV system
2. The trainees obtain the ability to appropriately operate and maintain the interconnection system to the grid
3. The trainees obtain the ability to appropriately utilize the power generating and meteorological data through the process of compilation, edition, processing, and other necessary arrangement.

3 Outcomes of the Soft Component

Outcomes which are needed to be accomplished at the end of the soft component program are set as follows;

1. Trainees understand operation and maintenance method of the PV system including preventive maintenance and troubleshooting method
2. Trainees understand operation and maintenance method of the interconnection system to the grid including setting up method, preventive maintenance and troubleshooting method
3. Trainees understand operation and maintenance method of equipment concerning power generating and meteorological observation including preventive maintenance and troubleshooting, and also understand data arrangement, edition, processing, utilization method and meaning of utilization of data

4 Evaluation Methods

Well designed interactive training approach will be programmed for helping participants take their motivation on the soft component program. Program consists of practical session utilizing equipment which will be newly introduced by this project as well as lecture session. Basically participants will be supposed to be checked their knowledge and understanding level of the contents of the soft component timely by examination and so on.

The evaluation methods are expressed in the following table.

Table 4 Outcomes and Evaluation Methods of the Training

Outcome	Verification method
1. Trainees understand operation and maintenance method of the PV system including preventive maintenance and troubleshooting method	1-1 By final paper and practice exams on the items concerning operation and maintenance of the PV system. In these exams, items such as names and role of each equipment, troubleshooting method, equipment checking method, cleaning and so on are included. 1-2 By preparation of forms of daily /monthly check sheet of the PV system, record of trouble and troubleshooting which will be made by the trainees
2. Trainees understand operation and maintenance method of the interconnection system to the grid including setting up method, preventive maintenance and troubleshooting method	2-1 By final paper exams on the items concerning interconnection system to the grid (names and roles of each equipment, troubleshooting method, equipment checking method and so on) 2-2 By final paper and practice exams on the items concerning the setup of reverse power flow 2-3 By preparation of forms of daily /monthly check sheet of the PV system, record of trouble and troubleshooting which will be made by the trainees
3. Trainees understand operation and maintenance method of equipment concerning power generating and meteorological observation including preventive maintenance and troubleshooting, and also understand data arrangement, edition, processing, utilization method and meaning of utilization of data	3-1 By final paper exams on the items concerning operation and maintenance of power generating and meteorological observation equipment (names and roles of each equipment, troubleshooting method, equipment checking method and so on) 3-2 By preparation of forms of daily /monthly check sheet of the PV system, record of trouble and troubleshooting which will be made by the trainees 3-3 By preparation of form of financial statement of operation and maintenance activity which will be made by the trainees 3-4 By preparation of presentation materials for a public relations using which will be made by the trainees. Data such as decrease in CO_2 emission, power generating and meteorological data are supposed to be expressed in these presentation materials.

5 Activities of the Soft Component

5.1 Activity

The activity steps which are needed to attain above said outcomes are denoted as follows.

【Outcome 1：Trainees understand operation and maintenance method of the PV system including preventive maintenance and troubleshooting method】

This program consists of lecture session using texts on the PV system and its component, work flow materials and manuals, and practical session utilizing the PV system which will be newly introduced by this project.

<Contents>

a) Technical guidance on basic theory and structure of the PV system
b) Technical guidance on the function and features of the main equipment (the PV modules, connection boxes, the power conditioners and so on)
c) Technical guidance on troubleshooting of the PV system targeting rapid and proper response to the faults. Explanation of sample failure due to improper operation and its preventive countermeasure is also included.
d) Technical guidance on technology, skill and planning of daily and periodic inspection for the PV system
e) Technical guidance on various checks such as earth resistance and insulation resistance measurements for the PV system
f) Technical guidance on planning replacement of equipment and dispatching procedure of manufacturer's engineer when it is required such as repair work for the PV system
g) Technical guidance on financial plans for the operation and maintenance for the PV system

【Outcome 2: Trainees understand operation and maintenance method of the interconnection system to the grid including setting up method, preventive maintenance and troubleshooting method】

This program mainly deals with the function and features of the main equipment needed for interconnection. This program consists of lecture session using materials on troubleshooting of connection side in case of system trouble and work flow materials, and practical session utilizing electrical substation and the PV system which will be newly introduced by this project.

<Contents>

a) Technical guidance on equipment components of the substation which is the connection point to the grid
b) Technical guidance on the functions and features of the circuit breakers, protection equipment, transformers, and measurement equipment
c) Technical guidance on troubleshooting of the interconnection system to the grid targeting rapid and proper response to the faults
d) Technical guidance on technology, skill and planning of daily and periodic inspection of the interconnection system to grid
e) Technical guidance on various checks such as earth resistance and insulation resistance measurements for the interconnection system to the grid
f) Technical guidance on setting and operation for reverse power flow
g) Technical guidance on planning replacement of equipment and dispatching procedure of manufacturer's engineer when it is required such as repair work for the interconnection

system

【Outcome 3: Trainees understand operation and maintenance method of equipment concerning power generating and meteorological observation including preventive maintenance and troubleshooting, and also understand data arrangement, edition, processing, utilization method and meaning of utilization of data】

This program mainly deals with the function and features of the main equipment needed for data management and monitoring system. This program consists of lecture session using manuals and work flow materials on data processing, analytic method and data transmission to the large display, and practical session utilizing data management and monitoring equipment and large display which will be newly introduced by this project.

<Contents>

a) Technical guidance on configuration of measurement equipment of the PV system
b) Technical guidance on configuration, function and features of the meteorological observation equipment
c) Technical guidance on data collecting and handling methods such as compiling database in relation to power generating and meteorological data
d) Technical guidance on analysis and evaluation skill of power generating and meteorological data and its operation such as budgetary planning of power purchase.
e) Technical guidance on promotion of public relations activity utilizing various data including chart which is processed and transmitted to the large display
f) Technical guidance on planning replacement of equipment and dispatching procedure of manufacturer's engineer when it is required such as repair work for PV Information system

5.2 Deliverable by Georgian side

Deliverables by Georgian side are following documents which the trainees should finalize within this soft component.

- Manual on the PV system operation and maintenance
- Manual on data arrangement, processing and utilization
- Manual on troubleshooting
- Daily/periodic inspection form
- Daily/monthly check sheet
- Financial statements on operation and maintenance related to the PV system

5.3 Resource for the Soft Component Implementation

Resource for the soft component implementation is expressed in the following chart. The trainees

(target group) consist of implementing agency of UAG, TAV, ILIA STATE UNIVERSITY and TELASI.

Table 5 Operation and Maintenance Resource

Georgian side	Japanese side
Trainee (Target group): UAG staff 3 persons TAV staff 5 persons ILIA STATE UNIVERSITY staff 10 persons TELASI staff 10 persons Place: TIA ILIA STATE UNIVERSITY	Lecturers: PV system operation and maintenance 1.5MM Interconnection 1.5MM Data management and monitoring system 1.5MM Training period: 30 days

It is planned to have 3 lecturers of PV system operation and maintenance, interconnection, and data management and PV information system. Each lecturer deals with items needed for attainment of each outcome, that is, the lecturer of PV system operation and maintenance for outcome 1, Interconnection for outcome 2, Data management and monitoring system for outcome 3.

In addition to JICA manuals about grid connected PV system, manuals on PV system operation and maintenance, power generating and meteorological data, data management and others, and work flow materials will be used for the soft component. PV system, data management and monitoring system will be used during the practice session. Operation and maintenance method of each system and troubleshooting method will be also covered during the guidance.

6 Resource Procurement Plan

6.1 Dispatch of Japanese Consultants

Since Georgia is inexperienced to introducing grid connected PV system, international resource needs to be used instead of local one. This time it is assumed to have Japanese consultants for guidance of this program. Lecturers for the soft component shall own experiences and abilities shown in Table 6.

Table 6 Experiences and Abilities required for lecturers

Lecturer	Field	Experience	Ability
PV system operation and maintenance expert	PV system	Experienced in similar trainings	Able to conduct lectures in English
Interconnection system expert	Interconnection system		
Data management and monitoring system	Information system and data management of power and meteorological data		

In addition, it is planned to have interpreter(s) during the consultant's guidance because the staff of soft component doesn't have enough command of English for lecture.

6.2 Selection of Lecturers

Lecturers will be selected from Japanese consultants by technical proposal (including CV) and interview. Technical performance will be taken into account at the selection and related cost must be covered by financial budget under this Project.

7 Implementation Schedule of the Soft Component

Schedule of the soft component is expressed in the following chart. This covers two PV systems at the two project sites of TIA and Ilia State University. Therefore, the trainees will be divided into three groups of "UAG and TAV", "Ilia State University" and "TELASI" and implement the training.

	1st Month	2nd Month	3rd Month
Preparation period (in Japan)	0.4MM	Equipment inspection and delivery	
Training period	1.0MM		
Report Writing period (in Japan)		0.1MM	

Figure 3 Implementation schedule

8 Deliverable of the Soft Component

Deliverables of the soft component are shown below. The total soft component period is estimated to be 0.5 months of preparation period in Japan and 1.0 months of training period in Georgia.

Documents to be submitted are final report in English to the implementing agency and Soft Component Completion Report in Japanese version attached with above final report to JICA.

Table 7 Deliverable List

1. Final Report (written in English, to the implementing agency) ① Plan and Implementation of Activities ② Plan and Accomplishment of Outputs ③ Factors that have affected Accomplishment of Outputs ④ Problems on Development and Recommendations for Sustainability of Outputs ⑤ Items of documents so on. as the part of Outputs 2. Completion Report (written in Japanese, to JICA, according to the guideline of soft component completion report) ① Brief summary of the project (Name of the project, E/N execution date, E/N budget and agreement price of consultant's service) ② Brief summary of the soft component (cost, background, objectives, outcomes, planned activity, lecturers, trainees, training period (schedule and M/M), actual activity achievement and degree of attainment) ③ Necessary improvement and recommendation for achieving objectives and continuous utility of the project output ④ Attached documents(soft component schedule, CV of lecturers, trainee list, attendance sheet and deliverable list) ⑤ Other materials (final report (Completion Report to the implementing agency, manuals made within the soft component program, textbooks, results of exams and etc) and others (video, pictures, newspapers and etc))

9 Responsibility of the Implementing Agency

In order that the equipment to be introduced by the project will be effectively and continuously utilized, UAG and ILIA STATE UNIVERSITY are required to;

- revise the "instruction manual" if necessary
- have regular communication with TELASI for improvement of operation and maintenance
- endeavor to develop human resources continuously to keep the sustainability of the above said activities

Appendix 6 Simulation of Annual/Monthly Power Generation

Simulation of Annual/Monthly Power Generation (Tbilisi International Airport)

	Annual Power Generation		
	(A) Parking	(B) Open Space	Total
(1) With Actual Shadow e	220,292 kWh/year	111,075 kWh/year	331,367 kWh/year
(2) With No Shadow Effe	225,575 kWh/year	111,075 kWh/year	336,649 kWh/year
Percentage of Sunshine	97.7 %	100.0 %	98.4 %

(A) Parking

PV Output PV: 210 kW
Design Coefficient Kt: 0.7
Slope and Direction Coefficient Ks: 1.057
Panel Direction 223 ° (South)
Panel Slope 25 °

(1) With Actual Shadow Effect

Month	PV Rated Output (kW)	Solar Radiation (kWh/㎡/d)	Slope Coefficient	Design Coefficient	Percentage of Sunshine	No. of Days (Days/Month)	Power Generation (kWh)
Jan	210	2.08	1.057	0.7	0.89	31	8,917
Feb	210	2.87	1.057	0.7	0.94	28	11,737
Mar	210	3.80	1.057	0.7	1.00	31	18,304
Apr	210	4.70	1.057	0.7	1.00	30	21,908
May	210	5.58	1.057	0.7	1.00	31	26,877
Jun	210	6.30	1.057	0.7	1.00	30	29,367
Jul	210	5.95	1.057	0.7	1.00	31	28,660
Aug	210	5.15	1.057	0.7	1.00	31	24,806
Sep	210	4.23	1.057	0.7	1.00	30	19,718
Oct	210	3.11	1.057	0.7	0.94	31	14,081
Nov	210	2.16	1.057	0.7	0.89	30	8,961
Dec	210	1.74	1.057	0.7	0.83	31	6,956
Annual Power Generation						365	220,292

(2) With No Shadow Effect

Month	PV Rated Output (kW)	Solar Radiation (kWh/㎡/d)	Slope Coefficient	Design Coefficient	Percentage of Sunshine	No. of Days (Days/Month)	Power Generation (kWh)
Jan	210	2.08	1.057	0.7	1.00	31	10,019
Feb	210	2.87	1.057	0.7	1.00	28	12,486
Mar	210	3.80	1.057	0.7	1.00	31	18,304
Apr	210	4.70	1.057	0.7	1.00	30	21,908
May	210	5.58	1.057	0.7	1.00	31	26,877
Jun	210	6.30	1.057	0.7	1.00	30	29,367
Jul	210	5.95	1.057	0.7	1.00	31	28,660
Aug	210	5.15	1.057	0.7	1.00	31	24,806
Sep	210	4.23	1.057	0.7	1.00	30	19,718
Oct	210	3.11	1.057	0.7	1.00	31	14,980
Nov	210	2.16	1.057	0.7	1.00	30	10,069
Dec	210	1.74	1.057	0.7	1.00	31	8,381
Annual Power Generation						365	225,575

(B) Open Space

PV Output PV: 100 kW
Design Coefficient Kt: 0.7
Slope and Direction Coefficient Ks: 1.093
Panel Direction 180 ° (South)
Panel Slope 30 °

(1) With Actual Shadow Effect

Month	PV Rated Output (kW)	Solar Radiation (kWh/㎡/d)	Slope Coefficient	Design Coefficient	Percentage of Sunshine	No. of Days (Days/Month)	Power Generation (kWh)
Jan	100	2.08	1.093	0.7	1.00	31	4,933
Feb	100	2.87	1.093	0.7	1.00	28	6,148
Mar	100	3.80	1.093	0.7	1.00	31	9,013
Apr	100	4.70	1.093	0.7	1.00	30	10,788
May	100	5.58	1.093	0.7	1.00	31	13,235
Jun	100	6.30	1.093	0.7	1.00	30	14,460
Jul	100	5.95	1.093	0.7	1.00	31	14,112
Aug	100	5.15	1.093	0.7	1.00	31	12,215
Sep	100	4.23	1.093	0.7	1.00	30	9,709
Oct	100	3.11	1.093	0.7	1.00	31	7,376
Nov	100	2.16	1.093	0.7	1.00	30	4,958
Dec	100	1.74	1.093	0.7	1.00	31	4,127
Annual Power Generation						365	111,075

(2) With No Shadow Effect

Month	PV Rated Output (kW)	Solar Radiation (kWh/㎡/d)	Slope Coefficient	Design Coefficient	Percentage of Sunshine	No. of Days (Days/Month)	Power Generation (kWh)
Jan	100	2.08	1.093	0.7	1.00	31	4,933
Feb	100	2.87	1.093	0.7	1.00	28	6,148
Mar	100	3.80	1.093	0.7	1.00	31	9,013
Apr	100	4.70	1.093	0.7	1.00	30	10,788
May	100	5.58	1.093	0.7	1.00	31	13,235
Jun	100	6.30	1.093	0.7	1.00	30	14,460
Jul	100	5.95	1.093	0.7	1.00	31	14,112
Aug	100	5.15	1.093	0.7	1.00	31	12,215
Sep	100	4.23	1.093	0.7	1.00	30	9,709
Oct	100	3.11	1.093	0.7	1.00	31	7,376
Nov	100	2.16	1.093	0.7	1.00	30	4,958
Dec	100	1.74	1.093	0.7	1.00	31	4,127
Annual Power Generation						365	111,075

Simulation of Percentage of Sunshine (Tbilisi International Airport)

1. Annual Percentage of Sunshine

	Solar Radiation (kWh/㎡/d)	No. of Days (Days/Month)	Percentage of Radiation (%)	Solar Radiation(1) (KWh/㎡/month)	Solar Radiation(2) (KWh/㎡/month)
Jan	2.08	31	89	64.48	57.39
Feb	2.87	28	94	80.36	75.54
Mar	3.80	31	100	117.80	117.80
Apr	4.70	30	100	141.00	141.00
May	5.58	31	100	172.98	172.98
Jun	6.30	30	100	189.00	189.00
Jul	5.95	31	100	184.45	184.45
Aug	5.15	31	100	159.65	159.65
Sep	4.23	30	100	126.90	126.90
Oct	3.11	31	94	96.41	90.63
Nov	2.16	30	89	64.80	57.67
Dec	1.74	31	83	53.94	44.77
Total/Average	3.98	365		1,451.77	1,417.77
Annual Percentage of Sunshine				**97.7%**	

*Solar Radiation(1):With No Shadow Effect
*Solar Radiation(2):With Actual Shadow Effect

2. Seasonal Percentage of Sunshine

(1) Midwinter

Area No.	Area (㎡)	Sunshine Duration (h)	Area・Sunshine Duration (㎡・h) Sub Total	Total
①	210.0	7.5	1575.0	
②	1190.0	6.5	7735.0	
			0.0	
			0.0	
			0.0	
			0.0	9,310.0
			0.0	
			0.0	
Total	1400.0	8		11,200.0
Percentage of Sunshine			**83%**	

(2) Equinox

Area No.	Area (㎡)	Sunshine Duration (h)	Area・Sunshine Duration (㎡・h) Sub Total	Total
	1400.0	8	11200.0	
			0.0	
			0.0	
			0.0	
			0.0	11,200.0
			0.0	
			0.0	
			0.0	
			0.0	
Total	1400.0	8		11,200.0
Percentage of Sunshine			**100%**	

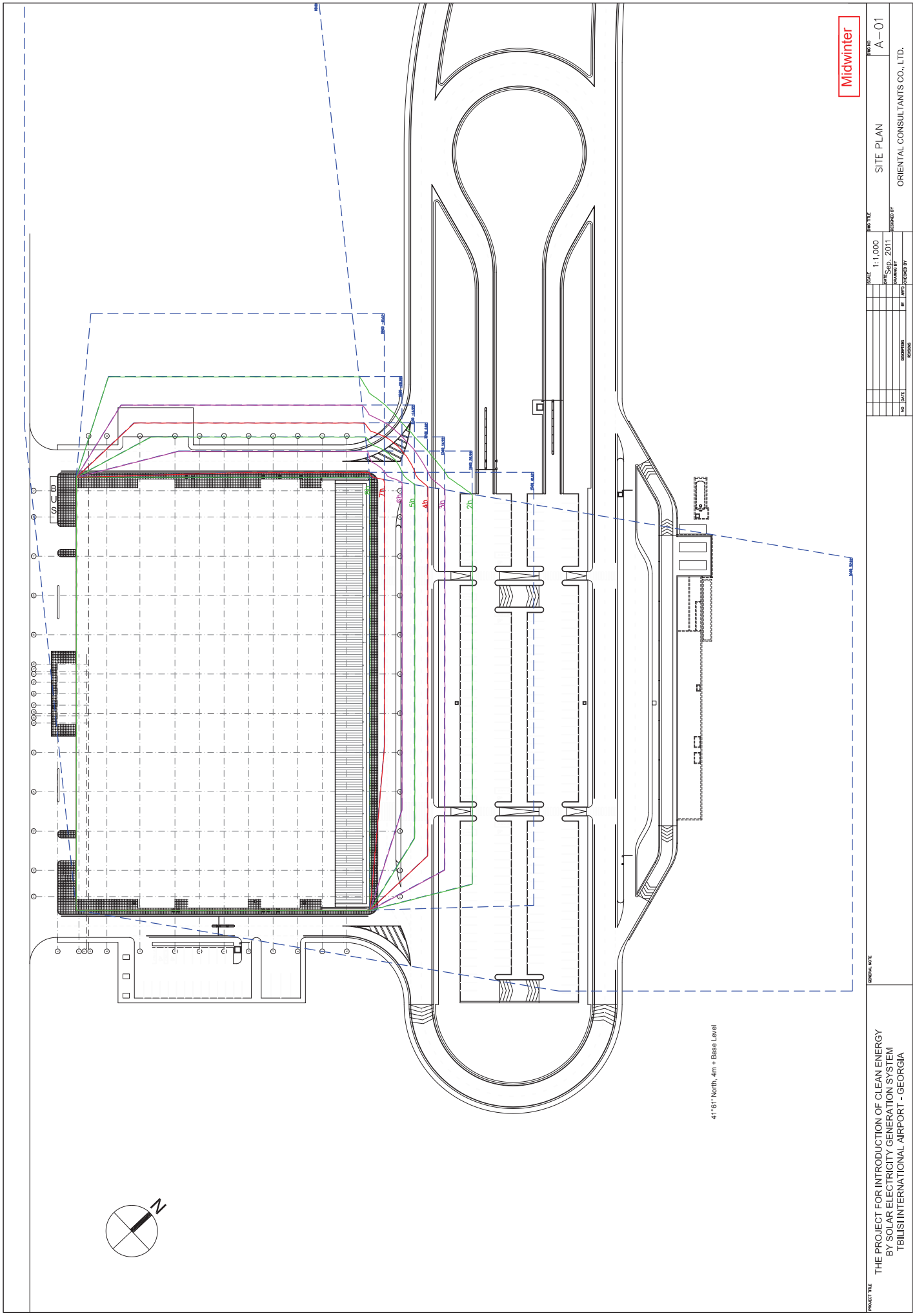
(3) Midsummer

Area No.	Area (㎡)	Sunshine Duration (h)	Area・Sunshine Duration (㎡・h) Sub Total	Total
	1400.0	8	11,200.0	
			0.0	
			0.0	
			0.0	11200.0
			0.0	
			0.0	
			0.0	
Total	1400.0	8		11,200.0
Percentage of Sunshine			**100%**	

Simulation of Solar Radiation on Panel (Tbilisi International Airport)

Latitude: 41° 68' North
Longitude: 45° East
Solar Altitude at 9:00 and 15:00 in midwinter: 13°
Solar Direction at 9:00 and 15:00 in midwinter: 42°

Direction / Tilting Angle	180° (True South)		
	Solar Radiation on Panel (kWh/㎡/d)	On Panel/Even Solar Radiation Ratio	On Panel/Optimum Solar Radiation Ratio
0° (Even)	3.66	1.00	91.5%
5°	3.76	1.027	94.0%
10°	3.85	1.052	96.3%
15°	3.92	1.071	98.0%
20°	3.97	1.085	99.3%
25°	3.99	1.090	99.8%
30°	**4.00**	**1.093**	**100.0%**
35°	3.99	1.090	99.8%
40°	3.95	1.079	98.8%
45°	3.90	1.066	97.5%
50°	3.82	1.044	95.5%
55°	3.72	1.016	93.0%
60°	3.61	0.986	90.3%
65°	3.48	0.951	87.0%
70°	3.33	0.910	83.3%
75°	3.17	0.866	79.3%
80°	2.99	0.817	74.8%
85°	2.80	0.765	70.0%
90° (Vertical)	2.60	0.710	65.0%
Direction / Tilting Angle	223° (South West)		
	Solar Radiation on Panel (kWh/㎡/d)	On Panel/Even Solar Radiation Ratio	On Panel/Optimum Solar Radiation Ratio
0° (Even)	3.66	1.000	91.5%
5°	3.73	1.019	93.3%
10°	3.79	1.036	94.8%
15°	3.84	1.049	96.0%
20°	3.86	1.055	96.5%
25°	**3.87**	**1.057**	**96.8%**
30°	3.86	1.055	96.5%
35°	3.83	1.046	95.8%
40°	3.79	1.036	94.8%
45°	3.73	1.019	93.3%
50°	3.65	0.997	91.3%
55°	3.56	0.973	89.0%
60°	3.45	0.943	86.3%
65°	3.33	0.910	83.3%
70°	3.19	0.872	79.8%
75°	3.05	0.833	76.3%
80°	3.89	1.063	97.3%
85°	2.73	0.746	68.3%
90° (Vertical)	2.55	0.697	63.8%


Midwinter
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THE PROJECT FOR INTRODUCTION OF CLEAN ENERGY
BY SOLAR ELECTRICITY GENERATION SYSTEM
TBILISI INTERNATIONAL AIRPORT - GEORGIA
41°61' North, 4m + Base Level
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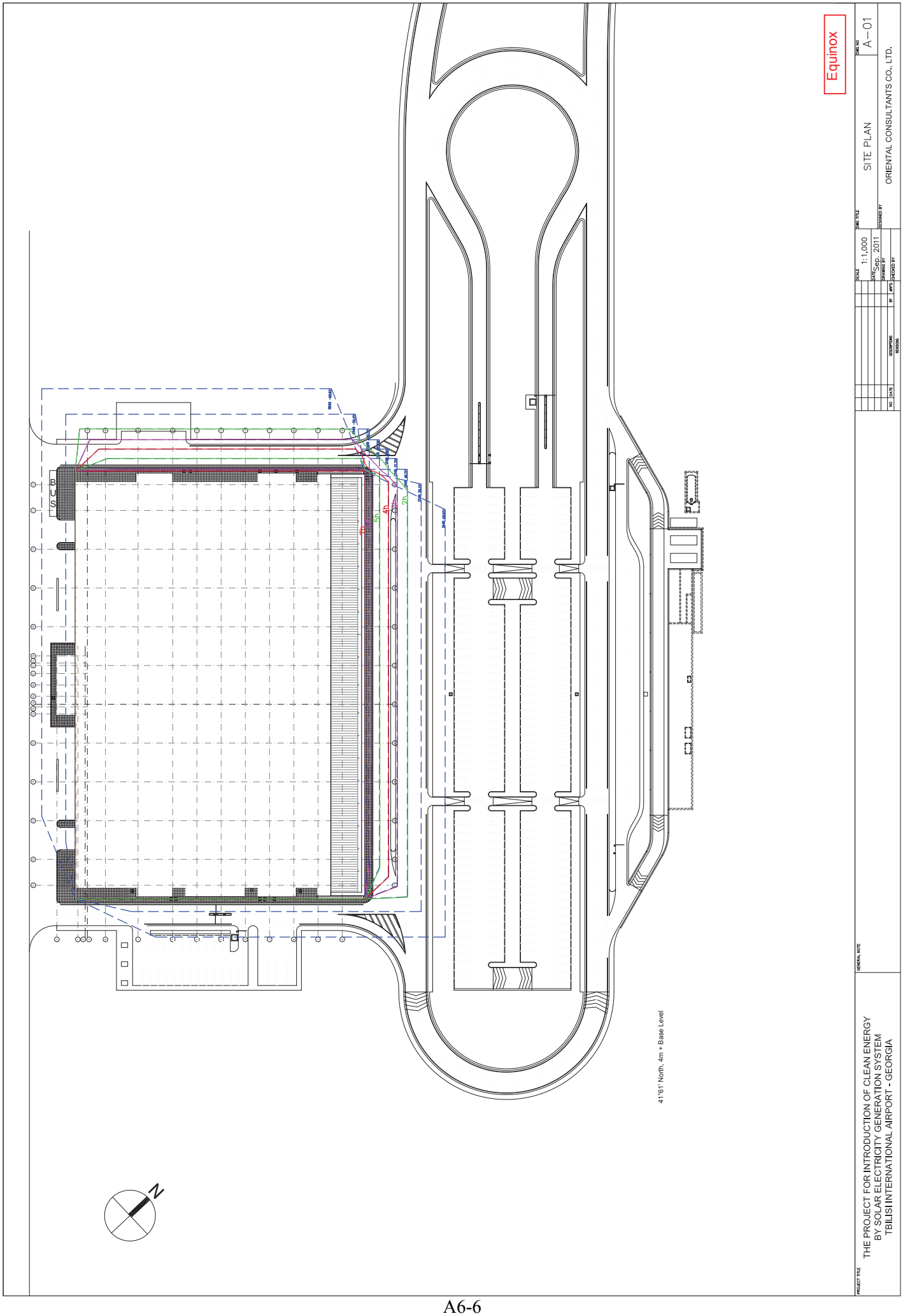
Equinox
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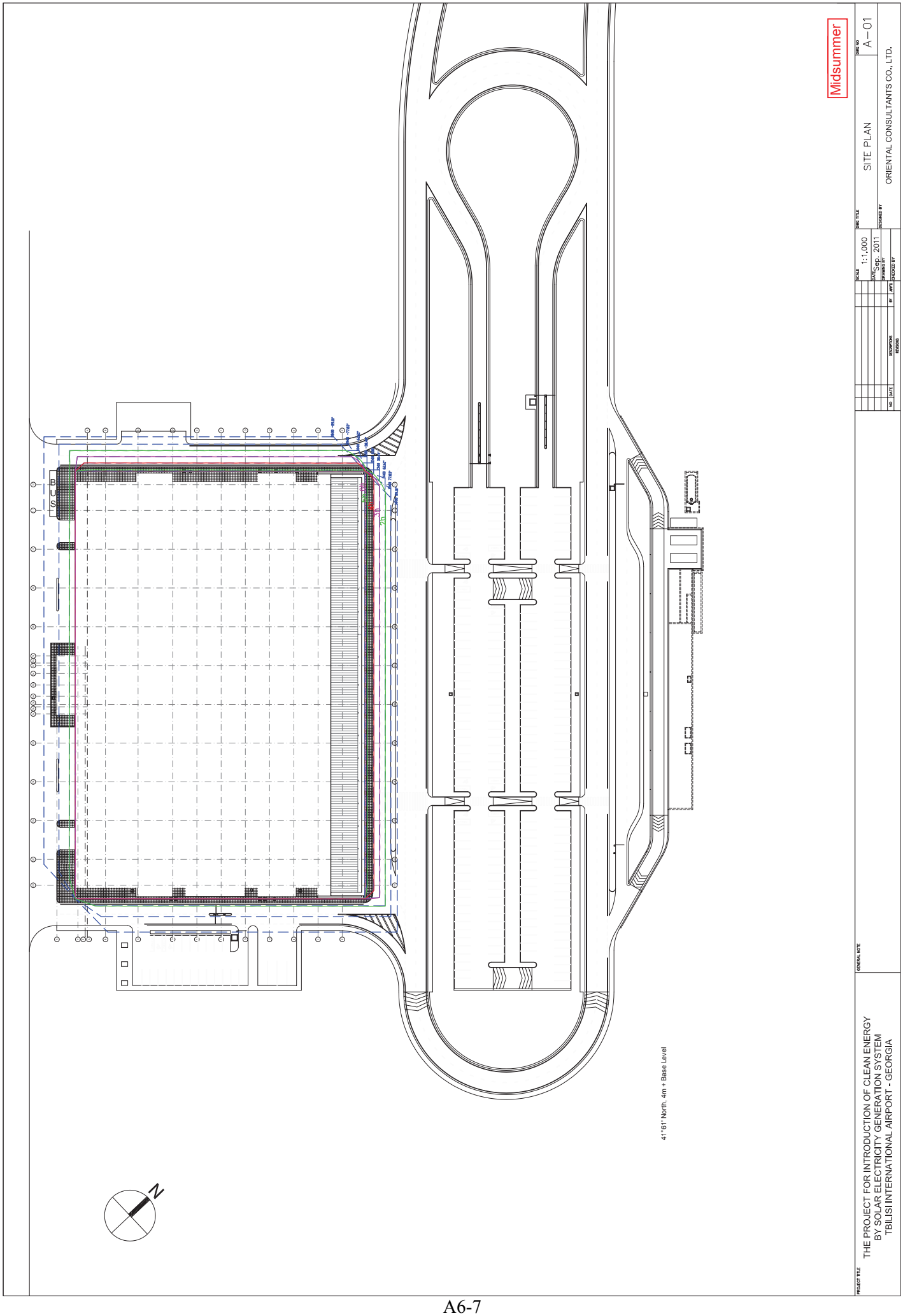
BY SOLAR ELECTRICITY GENERATION SYSTEM
TBILISI INTERNATIONAL AIRPORT - GEORGIA


Midsummer
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A-01
SCALE 1:1,000
DATE Sep. 2011
DESIGNED BY
DRAWN BY
CHECKED BY
ORIENTAL CONSULTANTS CO., LTD.
THE PROJECT FOR INTRODUCTION OF CLEAN ENERGY
BY SOLAR ELECTRICITY GENERATION SYSTEM
TBILISI INTERNATIONAL AIRPORT - GEORGIA
GENERAL NOTE
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Simulation of Annual/Monthly Power Generation (Ilia State University)

	Annual Power Generation	
(1) With Actual Shadow effect	32,812	kWh/year
(2) With No Shadow Effect	39,556	kWh/year
Percentage of Sunshine	83.0	%

PV Output PV: 37 kW
Design Coefficient Kt: 0.7
Slope and Direction Coefficient Ks: 1.052
Panel Direction 179 ° (South)
Panel Slope 10 °

(1) With Actual Shadow Effect

Month	PV Rated Output (kW)	Solar Radiation (kWh/㎡/d)	Slope Coefficient	Design Coefficient	Percentage of Sunshine	No. of Days (Days/Month)	Power Generation (kWh)
Jan	37	2.08	1.052	0.7	0.59	31	1,037
Feb	37	2.87	1.052	0.7	0.73	28	1,598
Mar	37	3.80	1.052	0.7	**0.85**	31	2,728
Apr	37	4.70	1.052	0.7	0.88	30	3,381
May	37	5.58	1.052	0.7	0.91	31	4,289
Jun	37	6.30	1.052	0.7	**0.93**	30	4,789
Jul	37	5.95	1.052	0.7	0.91	31	4,573
Aug	37	5.15	1.052	0.7	0.88	31	3,828
Sep	37	4.23	1.052	0.7	**0.85**	30	2,939
Oct	37	3.11	1.052	0.7	0.73	31	1,918
Nov	37	2.16	1.052	0.7	0.59	30	1,042
Dec	37	1.74	1.052	0.7	**0.47**	31	691
Annual Power Generation						365	32,812

(2) With No Shadow Effect

Month	PV Rated Output (kW)	Solar Radiation (kWh/㎡/d)	Slope Coefficient	Design Coefficient	Percentage of Sunshine	No. of Days (Days/Month)	Power Generation (kWh)
Jan	37	2.08	1.052	0.7	1.00	31	1,757
Feb	37	2.87	1.052	0.7	1.00	28	2,190
Mar	37	3.80	1.052	0.7	1.00	31	3,210
Apr	37	4.70	1.052	0.7	1.00	30	3,842
May	37	5.58	1.052	0.7	1.00	31	4,713
Jun	37	6.30	1.052	0.7	1.00	30	5,150
Jul	37	5.95	1.052	0.7	1.00	31	5,026
Aug	37	5.15	1.052	0.7	1.00	31	4,350
Sep	37	4.23	1.052	0.7	1.00	30	3,458
Oct	37	3.11	1.052	0.7	1.00	31	2,627
Nov	37	2.16	1.052	0.7	1.00	30	1,766
Dec	37	1.74	1.052	0.7	1.00	31	1,470
Annual Power Generation						365	39,556

Simulation of Percentage of Sunshine (Ilia State University)

1. Annual Percentage of Sunshine

	Solar Radiation (kWh/㎡/d)	No. of Days (Days/Month)	Percentage of Radiation (%)	Solar Radiation(1) (KWh/㎡/month)	Solar Radiation(2) (KWh/㎡/month)
Jan	2.08	31	59	64.48	38.04
Feb	2.87	28	73	80.36	58.66
Mar	3.80	31	**85**	117.80	100.13
Apr	4.70	30	88	141.00	124.08
May	5.58	31	91	172.98	157.41
Jun	6.30	30	**93**	189.00	175.77
Jul	5.95	31	91	184.45	167.85
Aug	5.15	31	88	159.65	140.49
Sep	4.23	30	**85**	126.90	107.87
Oct	3.11	31	73	96.41	70.38
Nov	2.16	30	59	64.80	38.23
Dec	1.74	31	**47**	53.94	25.35
Total/Average	3.98	365		1,451.77	1,204.27
Annual Percentage of Sunshine				**83.0%**	

*Solar Radiation(1):With No Shadow Effect
*Solar Radiation(2):With Actual Shadow Effect

2. Seasonal Percentage of Sunshine

(1) Midwinter

Area No.	Area (㎡)	Sunshine Duration (h)	Area・Sunshine Duration(㎡・h) Sub Total	Total
		8	0.0	
①	106.7	5	533.3	
②-1	34.0	4	136.0	
②-2	100.9	4	403.7	
③-1	37.7	3	113.1	
③-2	102.6	3	307.7	1,571.2
④	38.2	2	76.4	
⑤	1.1	1	1.1	
Total	421.1	8		3,368.8
Percentage of Sunshine			**47%**	

(2) Equinox

Area No.	Area (㎡)	Sunshine Duration (h)	Area・Sunshine Duration(㎡・h) Sub Total	Total
	153.1	8	1225.1	
①-1	2.4	7	17.0	
①-2	83.2	7	582.5	
②-1	7.8	6	46.8	
②-2	141.3	6	847.6	2,858.2
③-1	15.4	5	77.1	
④-1	8.8	4	35.1	
⑤-1	8.9	3	26.6	
⑥-1	0.2	2	0.4	
合計	421.1	8		3,368.8
日照係数			**85%**	

(3) Midsummer

Area No.	Area (㎡)	Sunshine Duration (h)	Area・Sunshine Duration(㎡・h) Sub Total	Total
	226.3	8	1,810.2	
①-1	1.4	7	9.9	
①-2	149.3	7	1,045.2	
②-1	4.0	6	23.9	3126.2
②-2	37.0	6	221.8	
③-1	2.7	5	13.4	
④-1	0.5	4	2.0	
Total	421.1	8		3,368.8
Percentage of Sunshine			**93%**	

Simulation of Solar Radiation on Panel (Ilia State University)

Latitude: 41° 68' North
Longitude: 45° East
Solar Altitude at 9:00 and 15:00 in midwinter: 13°
Solar Direction at 9:00 and 15:00 in midwinter: 42°

Direction / Tilting Angle	180° (True South)		
	Solar Radiation on Panel (kWh/㎡/d)	On Panel/Even Solar Radiation Ratio	On Panel/Optimum Solar Radiation Ratio
0° (Even)	3.66	1.00	91.5%
5°	3.76	1.027	94.0%
10°	3.85	1.052	96.3%
15°	3.92	1.071	98.0%
20°	3.97	1.085	99.3%
25°	3.99	1.090	99.8%
30°	**4.00**	1.093	100.0%
35°	3.99	1.090	99.8%
40°	3.95	1.079	98.8%
45°	3.90	1.066	97.5%
50°	3.82	1.044	95.5%
55°	3.72	1.016	93.0%
60°	3.61	0.986	90.3%
65°	3.48	0.951	87.0%
70°	3.33	0.910	83.3%
75°	3.17	0.866	79.3%
80°	2.99	0.817	74.8%
85°	2.80	0.765	70.0%
90° (Vertical)	2.60	0.710	65.0%
Direction / Tilting Angle	179° (South)		
	Solar Radiation on Panel (kWh/㎡/d)	On Panel/Even Solar Radiation Ratio	On Panel/Optimum Solar Radiation Ratio
0° (Even)	3.66	1.000	91.5%
5°	3.76	1.027	94.0%
10°	3.85	**1.052**	**96.3%**
15°	3.92	1.071	98.0%
20°	3.97	1.085	99.3%
25°	3.99	1.090	99.8%
30°	**4.00**	1.093	100.0%
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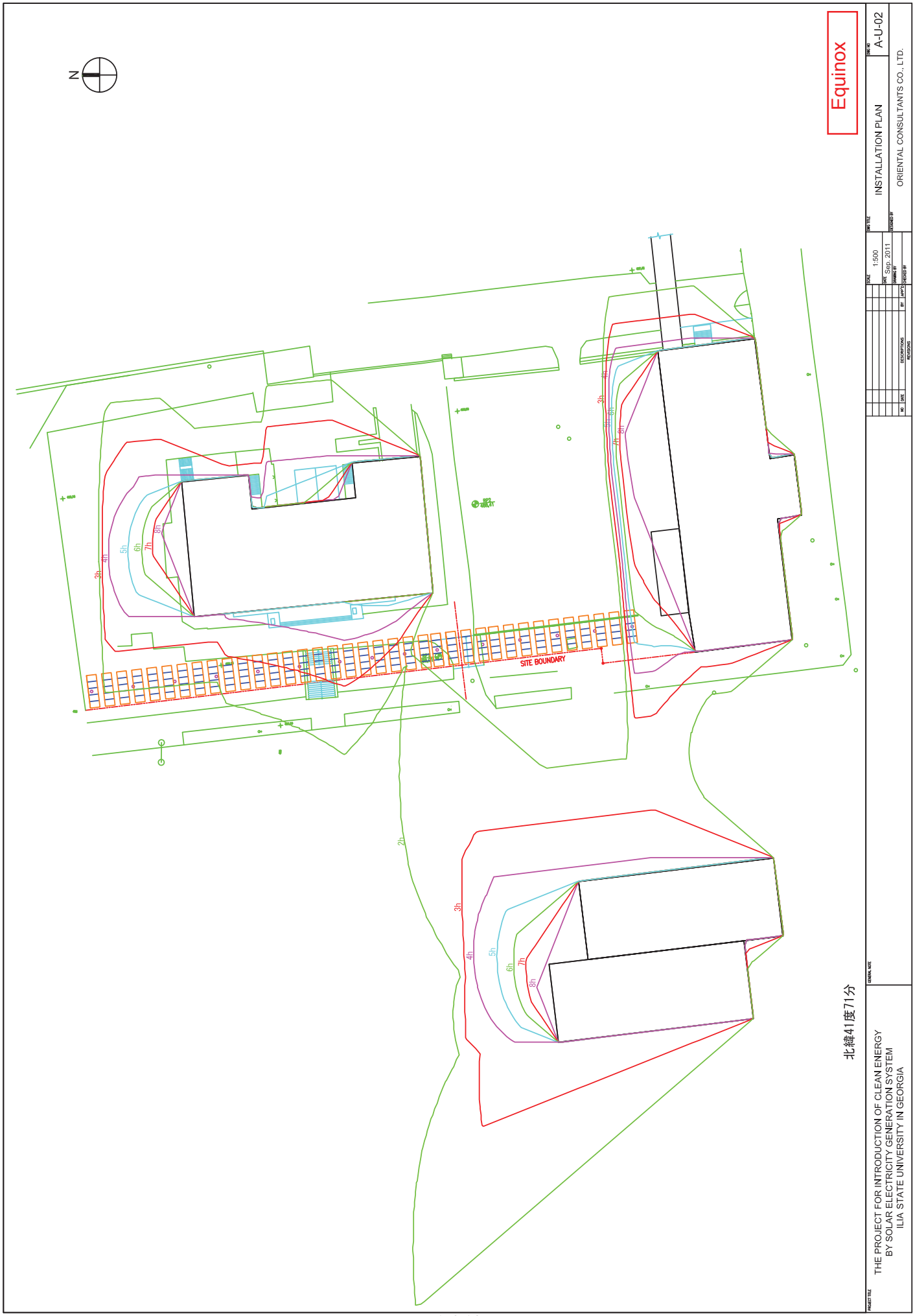
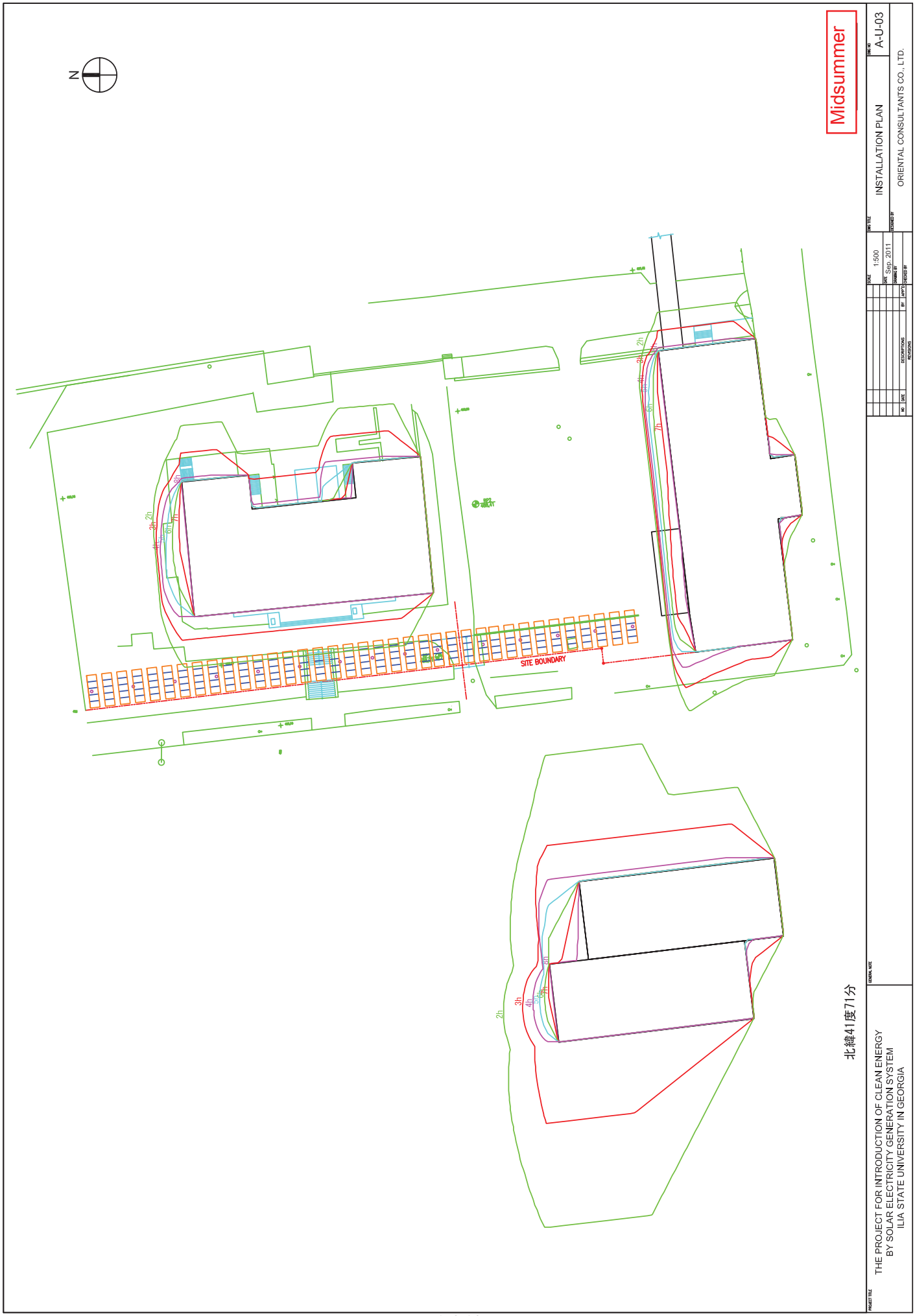
45°	3.90	1.066	97.5%
50°	3.82	1.044	95.5%
55°	3.72	1.016	93.0%
60°	3.61	0.986	90.3%
65°	3.48	0.951	87.0%
70°	3.33	0.910	83.3%
75°	3.17	0.866	79.3%
80°	2.99	0.817	74.8%
85°	2.80	0.765	70.0%
90° (Vertical)	2.60	0.710	65.0%


Midwinter
N
SITE BOUNDARY
2h
3h
4h
5h
6h
7h
8h
北緯41度71分
THE PROJECT FOR INTRODUCTION OF CLEAN ENERGY
BY SOLAR ELECTRICITY GENERATION SYSTEM
ILIA STATE UNIVERSITY IN GEORGIA
INSTALLATION PLAN
A-U-01
ORIENTAL CONSULTANTS CO., LTD.
1:500
Sep. 2011


Equinox
N
SITE BOUNDARY
3h
4h
5h
6h
7h
8h
2h
北緯41度71分
1:500
Sep. 2011
A-U-02
INSTALLATION PLAN
ORIENTAL CONSULTANTS CO., LTD.
THE PROJECT FOR INTRODUCTION OF CLEAN ENERGY
BY SOLAR ELECTRICITY GENERATION SYSTEM
ILIA STATE UNIVERSITY IN GEORGIA


Midsummer
N
SITE BOUNDARY
北緯41度71分
INSTALLATION PLAN
A-U-03
ORIENTAL CONSULTANTS CO., LTD.
1:500
Sep. 2011
THE PROJECT FOR INTRODUCTION OF CLEAN ENERGY
BY SOLAR ELECTRICITY GENERATION SYSTEM
ILIA STATE UNIVERSITY IN GEORGIA