

ANNEX 5: List of Stakeholders Consulted by the Evaluation Mission

(1) The Japanese Side

1	Mr. Masayasu Ishiguro	PV Dissemination Advisor
2	Mr. Kunio Asai	PV Technology 1

(2) The Ghanaian Side

<Ministry of Energy>

1	Prof. Thomas Mba Akabza	Chief Director
2	Mr. Wisdom Ahiataku-Togobo	Director (Renewable Energy)
3	Mr. Mahu Seth	Manager (Renewable Electricity)
4	Mr. J.B. Okai	Director (PPME)
5	Mr. Ebenezer Ashie	Project Engineer (Renewable Energy)

<Ministry of Education>

1	Ms Ivonne Aeguah	Assistant Director/Project Manager
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<Ghana Standard Board>

1	Dr. George B. Cretsil	Executive Director
2	Ms E. Adetola	Deputy Executive Director
3	Mr. Kwabena Acheampong	Director Testing
4	Mr. Osei-Kwabena	Chief Technologist
5	Mr. J.K. Baiden	Chief Standards Officer

<Sissala West District Assembly>

1	Mr. Alexis Domapiell	District Co-ordinating Director
2	Mr. Anabiga David	Assistant Director
3	Mr. Yussif Tapoh	District Deputy Finance Officer
4	Mr. Danke Samson	District Engineering Head Officer

<Nkwanta South District Assembly>

1	Mr. Richard Manuribe	Deputy Coordinator of Youth Employment
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<Kwame Nkrumah University of Science and Technology (KNUST)>

1	Mr. Edwin Adjei	Lecturer
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<Koforidua Polytechnic>

1	Mr. Setu Tuffour Osei-Tutu	Vice Rector
2	Mr. Divine Kafui Atsu	Lecturer
3	Mr. Ebenezer Miezah Kwofie	Lecturer

<Wa Polytechnic>

1	Dr. G.K.S. Aflakpui	Rector
2	Mr. Emmanuel Baganiah	Vice Rector
3	Mr. Charles Ntiamoah	Civil Engineer/Lecturer
4	Mr. Kuuyine Frederick	Instructor

<Tamale Polytechnic>

1	Dr. Alhaji Y.S. Perigah	Rector
2	Dr. Nongiba A. Kheni	Vice Rector
3	Mr. Abukari Issahaku	Head of Director, Electronic Department
4	Mr. Sankpi Linus	Lecturer
5	Mr. Sakibu Bawa	Librarian

<Association of Ghana Solar Industry (AGSI)>

1	Mr. Omane Frimpong	Executive Director (Wilkins Engineering Ltd.)
2	Mr. Kwasi Agyenim Boateng	Marketing Manager (Wilkins Engineering Ltd.)

<Jak Solar>

1	Mr. Joseph Addae	Jak Solar Owner/PV Agent
2	Mr. Abukari Mohammed Salisu	Jak Solar, Senior Technician

<PV Agent>

1	Mr. Isaac Yamdogo	Solar technician (Loagri)
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<Community>

Mr. Micheal Enning	Poultry farming, Trading (Akyerekrekrom)
Mr. Kudjo Jacob	Mobile credit vendor (Akyerekrekrom)
Mr. Joseph Beyuo	(Kul Karni)
Mr. Abudulah S. Abukari	Farmer, Community Secretary (Loagri)
Mr. Abudulah Saasi	Bicycle Mechanic, Shopkeeper (Loagri)
Mr. Ebenezer Balang-nua	Junior High School student • Farming (Pisi)
Mr. Gbaimanah James	Junior High School student (Pisi)
Mr. K. Balinne	Assemble man, Retail business (Tampala)
Mr. Aboochi Hamza	Farming, Junior High School student (Kpalbe)
Mr. Seth Asamoal	Farmer (Mampong Nkwanta)
Mr. Mintah Samuel	Farmer (Mampong Nkwanta)
Mr. George Ansah	Teacher (Mampong Nkwanta)
Mr. Daniel Tetteh	Farmer (Ayawara)
Mr. Jonathan Baku	Entrepreneur (Ayawara)

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ANNEX 6. List of Japanese Experts Dispatched

No.	Title	Name of Expert	Year	M/M
1	Team Leader/PV Advisor	Kunio Asai	2007	1.3
2	PV Technology	Tsutomu Dei	2007	0.6
3	Team Leader/PV Advisor	Kunio Asai	2008	6.8
4	Project Coordinator	Katsuhiko Otaki	2008	1.03
5	PV Technology	Tsutomu Dei	2008	4
6	Team Leader	Katsuhiko Otaki	2009	3.9
7	PV Advisor	Kunio Asai	2009	4.87
8	PV Technology	Tsutomu Dei	2009	2.7
9	PV Equipment Testing	Noritaka Hashimoto	2009	0.37
10	Team Leader/PV Advisor	Masayasu Ishiguro	2010	5.5
11	PV Technology 1	Kunio Asai	2010	6.71
12	PV Technology 2	Yukio Noda	2010	1
13	Team Leader/PV Advisor	Masayasu Ishiguro	2011	5.1
14	PV Technology 1	Kunio Asai	2011	5.57
15	PV Technology 2	Yukio Noda	2011	1.33

ANNEX 7. List of Participants in Study Tour in the Third Country (Bangladesh)

Country: Bangladesh

Date: 4th to 14th October, 2009

Name	Position	Organization
Nii Amarh Ashitey	Project Administrator	MOEn
Yvonne Acquah	Assistant Director	MOEd
Augustine Ntiamoah	Lecturer	Koforidua Polytechnic
Henry Atiglah	Lecturer	Tamale Polytechnic
Isaac Edwin	Lecturer	KNUST
Joseph Addae	PV Company	AGSI

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ANNEX 8. List of Equipment Provided by JICA

1) MoEn

No.	Item	Model	Manufacturer	Quantity	Unit Price
1	Vehicle	PRADO	Toyota	2	76,014 USD 9,105,033 円
2	Demo System	85Wx6	BP, Morningstar	2	8367.62USD

2) KNUST

No.	Item	Model	Manufacturer	Quantity	Unit Price
1	Laptop	HP6720S	HP	2	1220.95GHC
2	Printer	HP6943	HP	1	122.86GHC
3	Projector	2400MP	Dell	1	1523.83GHC
4	Video Recorder	DCR HC62E	Sony	1	603.60GHC
5	Digital camera	HP Photosmart E337	HP	1	96.00GHC
6	DC Power Supply	PSP-2010	Instek	3	860.00USD
7	Clamp/Tester	Model 3347	Fluke	11	210.00USD
8	LaVIEW	Development system	National Instrument	1	1094.00USD
9	PV Systems	50W,50W,50W,30W,300W	BP, Morningstar	2	7416.86USD
10	Data logger	TC-32K	Shyowa Sokki	1	386,300 円
11	IV Curve Tracer	MP1600	EKO	1	3,349,500 円
12	Battery Tester	PFX	Kikusui	1	1,401,750 円

3) Tamale Polytechnic

No.	Item	Model	Manufacturer	Quantity	Price
1	Laptop	HP6720S	HP	2	1220.95GHC
2	Printer	HP6943	HP	1	122.86GHC
3	Projector	2400MP	Dell	1	1523.83GHC
4	Video Recorder	DCR HC62E	Sony	1	603.60GHC
5	Digital camera	HP Photosmart E337	HP	1	96.00GHC
6	DC Power Supply	PSP-2010	Instek	3	860.00USD
7	Clamp/Tester	Model 3347	Fluke	11	210.00USD
8	LaVIEW	Development system	National Instrument	1	1094.00USD
9	PV Systems	50W,50W,50W,30W,300W	BP, Morningstar	2	7416.86USD
10	IV Curve Tracer	MP1600	EKO	1	3,349,500 円
11	Battery Tester	PFX	Kikusui	1	1,401,750 円

4) Koforidua Polytechnic

No.	Item	Model	Manufacturer	Quantity	Price
1	IV checker	MP170	EKO	1	400,000 円
2	Data logger	8430 Memory Hilogger	Hioki	1	110,000 円

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5) Others

No.	Item	Model	Manufacturer	Quantity	Unit Price	Purpose
1	PV Panel	50W, 80W	Suntech	50W x 10, 80W x 10	600GHC, 250USD	CSS
2	KOWA Box	Order	Rural Energy	17	90USD	CSS
3	Battery	12V, 100Ah		40	200USD	Rehabilitation, CSS
4	Controller	12V20A	Morningstar	50	120USD	CSS
5	Inverter		Xantrex	20	80USD	CSS
6	Otaki Lamp	LED	Arist	200	20USD	CSS
7	CA training kit	Small PV panel, training board (board, controller, lamp)		20	300USD	CA Training
8	CA manual	Order		1,000	5GHC	CA Training
9	Account book	Daily income, expenditure		20	10GHC	CSS
10	Maintenance tools	Driver(4), pliers(1), nipper(1), adjustable wrench(1), multi-meter(1), bloom(1) x 1			60USD	CSS
11	Rechargeable lamp		Qlink	100	35GHC	CSS

ANNEX 9. Detail of Operational Expenses from the JICA Project Fund

	2008	2008-2009	2009-2010	2010-2011
Local Activity Cost	64,000	5,246,000	8,586,000	11,383,000
Equipment	9,105,033	16,272,500	602,000	1,998,000
Total (yen)	9,169,033	21,518,500	9,188,000	13,381,000

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ANNEX 10. List of Counterpart Personnel at the Time of Terminal Evaluation

No.	Name	Position	Organization
1	Thomas Mba Akabzaa	Chief Director/ Project Director	MOEn
2	Wisdom Ahiataku-Togobo	Director of RE/ Project Manager	MOEn
3	Yvonne Acquah	Assistant Director/ Project Manager	MOEd
4	Seth Mahu	Deputy Director	MOEn
5	Gifty Tettey	Deputy Director	MOEn
6	Ebenezer Ashie	Staff	MOEn
7	Edwin Adjei	Lecturer	KNUST
8	Robert Okyere	Lecturer	KNUST
9	Baah Joseph Okyere	Lecturer	Tamale Polytechnic
10	Henry Atiglah	Lecturer	Tamale Polytechnic
11	Sankpi Linus	Lecturer	Tamale Polytechnic
13	Augustine Ntiamoah	Lecturer	Koforidua Polytechnic
14	Divine Atsu	Lecturer	Koforidua Polytechnic
15	Jacob Baiden	Principal Officer	GSB
16	Omane Frimpong	Executive Director/Chair	AGSI
17	I. K. Mintah		Energy Commission
	Danquah Otsu	Principal Officer	Energy Commission

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ANNEX 11. List of Activities

	Planned Activities	Actual Activities
1	Institutional training system for PV Agent with a business mind is developed	
1-1	Actual situation of using PV systems in Ghana is studied	The baseline survey was conducted from August to November 2008. The status of PV systems installed in households and public facilities and PV dealers were studied. 8 trainers were selected in 2008 and approved by the 2nd JCC:
1-2	Resource persons are selected	- Tamale Polytechnic: electronics lecturer (2), electrical lecturer (1) - KNUST: mechanical engineering lecturer (2), electrical Engineering (1) - Koforidua Polytechnic: renewable energy (2)
1-3	Human Resource Development Plan is developed	The Human Resource Development Plan (HRDP) was developed in July 2008. The concepts of PVA with a mind for business and CA with basic PV knowledge were concretized in the HRDP. The HRDP focused on the PVA training, which taught not only PV technology but also business skills. In January 2009, it was found that AGSI was also developing a similar type of training. To avoid duplication, the focus of the HRDP shifted from the PVA training to the CA training. The revised HRDP aimed to conduct rehabilitation at 20 sites and CS development at 8 sites. The CA training methods were expected to be developed in these projects, and the output also was expected to be incorporated into AGSIs PVA training. The revision of the HRDP was approved in the 3rd JCC meeting held in September 2009. The scope of the HRDP was further revised. Since the number of application for rehabilitation was not many (because applicants must pay half of the replacement cost), the HRDP learned that execution of the limited number of rehabilitation did not show effectiveness. The HRDP finally decided to integrate rehabilitation projects into CS development projects. As a result, the HRDP shifted to focus on CS development. The number of sites for CS development including previously nominated rehabilitation projects was changed from 8 to 20, and the idea of the rehabilitation project itself was cancelled.
1-4	The technical standards and the code of practice for the PV systems are prepared	The Technical Service Guideline was prepared by the team based on the recommendation of the JICA Master Plan Study on Rural Electrification Using Renewable Energy Resources in the Northern Part of the Republic of Ghana, conducted from February 2005 to May 2006. The technical standards and the code of practice were integrated into "Technical Service Guideline" in 2008. 50 copies were published, distributed to relevant organizations in October 2010.
1-5	The technical service guideline is drawn up	See 1-4.
1-6	The training materials and manuals for PV Agent are developed	"Technical Guideline for PV rural Electrification" was drafted in August 2009, and revised twice: - 1st version (November 2009): 20 copies were delivered for the purpose of review. - 2nd version (February 2010): 50 copies were delivered for the purpose of review. - Final version (August 2010): 1000 copies were published and distributed to the relevant organizations.
1-7	Pilot project sites for Community Solar and PV Rehabilitation are identified	"Practice Board (i.e., training board)" was developed at KNUST and Tamale Polytechnic in JFY2009. See 2-1
1-8	Community Agents are trained through installation of Community Solar and PV Rehabilitation	See 2-3
1-9	Lessons learnt from pilot activities are fed back to institutional training	See 1-10.

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	system and training materials are modified	In 2009, the Project decided not to conduct the PVA training directly but focus on the CA training. This change was approved by the 3rd JCC. Although the Project canceled to implement the PVA training, it discussed with AGSI to transfer the Project output of the CA training to them as described above. In November 2010, the joint training with AGSI was carried out. AGSI took a responsibility for the technical part of the training, while the Project for the business and the CA training parts. By the training, the AGSI lecturer learned the procedure of how to design the CS business and conduct the CA training.
1-10	Requirements for PV Agent training are clarified and reflected to industrial activities on PV system dissemination	
2	Training method for Community Agent are established	Three sites were selected for the purpose of the evaluation of the effectiveness of the PVA/CA and the CS business structure. Sites were chosen from the viewpoint of accessibility of the site and effectiveness of demonstration. - Rehabilitation: Tengzuk/Dussi and Appolonia - CS development: Tomefa After the effectiveness of these three sites had been recognized, another 5 sites were selected. - Rehabilitation: Pishegu, Kpalbe, Kpabia - CS development: Blemazado/Azanu, Bomigo (They were selected from the viewpoint of accessibility. Rehabilitation and CS development was also completed.)
2-1	Pilot project sites are selected	In 2009, the number of the sites for CS development was changed from 8 to 20. In October 2010, the site selection criteria were determined. The additional 20 sites selected in December 2010 are North (Pisi, Tampala, Kelegan, Kulkani, Loagri, Bengmal), Volta (Danladi, Kabiti, Kue, Odumase, Kachebi, Njare, Tekorkope, Kudorkope), Western (Ayawara, Babianiah, Manktuwa), Tamale (Kpalbe), KNUST (Akyerekerecrom), Koforidua (Mampong Nkwanta). The following equipment and material were developed. - Training kit: board equipped with controller, lamp, small battery, and small PV panel. It was used in Community Agent training of the pilot projects in JFY2009. - "Community Agent Manual" was drafted in June 2010 and delivered to MOEn, Tomefa and Bomigo for review. It was published 500 copies. Later on, to be more user friendly, the CA training manual was divided into two parts: the CA manual and the CS manual with more pictorial illustration. New version will be published 500 copies (planned).
2-2	Training materials for Community Agent are developed	
2-3	Community Agent trainings are conducted through installation of Community Solar and PV Rehabilitation	The Project set up target no. of trained CA to be 50 CAs. This target was approved at 3rd JCC meeting held in September 2009. Training was conducted with 1-day training with field exercise. - In Nov. 2009, 5 CAs in Tengzuk/Dussi/Tongo. - In Nov. 2009, 4 CAs in Tomefa. - In Nov. 2009, 3 CAs in Appolonia - In Mar. 2010, 3 CAs in Bomigo. - In Mar. 2010, 5 CAs in Blemazado/Azanu. The CA trainings were also planned for the additional 20 sites and have been conducted at North (Pisi, Tampala, Kul Karmi, Loagri) and Volta (Danladi, Njare), CAs in 9 sites (Kue, Kabiti, Oduamse, Mampong Nkwanta, Akyerekerekrom, Ayawara, Mantukwa, Babiania, Kpalbe) were trained in TOT CA training by KNUST, Tamale and Koforidua, which last 3 - 4 days. Pilot projects applied 2 types of CS business model: one is managed by the community itself, and another by an entrepreneur. It was decided that the fees and charges paid to the government was to be managed by the local district assembly. Prior to install CSS in communities, the MOU was to be signed by the relevant parties.
2-4	Installed PV systems are monitored and maintained	Four CS sites are monitored weekly by MOEn by phone. Operational status (no. of customers and occurrence of trouble) are monitored. For additional 20 sites, monitoring is to be transferred to District Assembly.

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2-5	Lessons learnt from pilot activities are fed back to institutional training system and training materials are modified	Collaboration between the Project and AGSI was discussed in February 2009. The Project and AGSI verbally agreed to transfer the CA training method and lessons learnt in CS operation to the AGSI-DSTC program. (See 1-10)
3	Students with basic knowledge for PV systems are trained	
3-1	Educational facilities for pilot activities are identified	KNUST and Tamale Polytechnics had already been identified before the commencement of the Project. Koforidua Polytechnic, which had a renewable energy course, was additionally selected in 2008. Reinforcement of the PV facility of Koforidua Polytechnic was approved by 4th JCC in March 2010. Equipment for Koforidua Polytechnic has been purchased and provided
3-2	Resource persons are selected	See 1-2 TOT was conducted as follows: - In October 2008, 2-day program (day 1: presentation by the Ghanaian expert, day 2: general knowledge on PV) - In November 2008, 3-day program (days 1&2: lecture of technology, day three: field survey) - In January 2009, 1-day program (fabrication of the component practice board) - In February 2009, 3-day program (day 1&2: peer review, day 3: field practice) - In December 2009, 3-day program (PV testing practice) - In August 2010, 3 times of 3 day program (LED practice) - In September-November 2010, 3 times of 3 day program (PV testing practice) - In June-July 2011, 3 times of 4 day program (CA training) conducted by trainers themselves Workshop on TOT plan in 2011 was held in February 2011. It was decided to develop PV training for students apart from curriculum. The training will be held in October 2011.
3-3	Training curriculum are developed and modified	
3-4	Training materials are developed	"Technical Guideline for PV Rural Electrification" and "Practice Baord" (See 1-6) "Trainer's Manual" was drawn up in October 2008. "Trainer's memo" was drawn up in January 2009. 10 copies of notes and presentation materials which were used in trainers training will be printed and distributed.
3-5	Lectures on PV systems are conducted	Lectures will be held October-November 2011.
3-6	Training materials are modified based on lessons learnt	See 1-6
4	Institutional testing system for PV equipment is developed	
4-1	Facility Development Plan are drawn up	"Improvement Plan for PV Testing Facility" was drawn up in 2008.
4-2	Resource persons are selected	The following resource persons were selected in 2008: - 3 persons from Tamale Polytechnic - 3 persons from KNUST - 2 persons from GSB
4-3	Testing machines for PV components are installed and testing facilities are set up	Testing equipment were purchased and delivered in 2008, and facilities were set up in KNUST and Tamale Polytechnic in November 2009. Lamp house for PV panel test was developed and installed in KNUST and Tamale Polytechnic in January 2010.
4-4	Manuals for PV components test are developed	"PV Testing Manual" and "Normative Reference" were developed in November 2008. These two papers were integrated into the "PV Testing Manual" in November 2009. 50 copies were published, distributed to the relevant agencies in October 2010.
4-5	PV components for testing are selected	In 2008, panel, battery, controller, inverter and lamp were chosen to test. In 2009, PV lantern was also chosen. Regarding the test of panel, battery, controller, inverter and lamp, it was decided that the project can assist only in technical transfer of test methods. And technology transfer of the PV testing was conducted. Holding of a review workshop is planned.

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4-6	PV component test is conducted along the developed manuals	In accordance with the manual, panel, controller and inverter test was conducted in 2008 and 2009: - Panel: three types (no brand) - Controller: Morningstar, focus, and EP Solar - Inverter: anthrax (no brand) PV lantern test was conducted based on the PV GAP in August 2010 and in July 2011.
5	The roles of the respective stakeholders are clarified and the collaboration among the stakeholders is strengthened.	
5-1	The roles between PV Agent and Community Agent are clarified	Their roles proposed by the Project were approved in the 1st JCC in July 2008. Definition of the PVA and the CA are clarified and set forth in the MOU of CSS model in February 2010. Individual roles are clarified as follows:
5-2	The roles among related organizations (MOEn, MOESS, EC, GSB, University, Polytechnics, Industrial Sector) are clarified	- MOEn facilitates electrification using PV, and Mode enhances institutional scheme for PV education. - EC prepares sound regulatory environment for PV dissemination. - GSB tests PV equipment and parts, and certifies them. - Academic institutions (i.e., universities and polytechnics) educate students who have interests in PV. - The industrial sector promotes the PV market.
5-3	The roles between the Government and Industrial sector is clarified	In February 2010, for CSS business model, the roles of the MOEn, the academic institutions, and district assembly were clarified in the MOU. The Project has discussed the roles with MOEn and AGSI.
5-4	PR materials for disseminating PV systems are developed and distributed	One brochure, 3 types of posters and one video material were developed, printed in February 2010, published in October 2010. - Brochure: 500copies - Poster: 500 copies each x 3 types Sticker for PV lantern was developed in February 2010. The development of the video movie for CA/PVA training was developed in March 2010, and the revision is in progress.
5-5	Relationship among the stakeholders for sharing and exchanging information are strengthened	The JCCs were held 5 times in July and November 2008, September 2009, March 2010 and Oct 2010. Seminar for the stakeholders was held in March 2010, and the above-mentioned PR materials were introduced.

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ANNEX 12. Plan of Operation (PO)

Activities	2007				2008				2009				2010				2011				Input						
	Japanese fiscal year				Calendar				2008				2009				2010				2011				Responsible Person	Japanese side	Ghanaian side
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4							
0. Inauguration																									PD	JE	CP
0-1. Inauguration (Actual)	■																										
1. Institutional training system for PV Agent with a business mind is developed																											
1-1. Actual situation of using PV systems in Ghana is studied (Actual)	■																										
1-2. Resource persons are selected (Actual)		■				■																			PD	JE	CP
1-3. Human Resource Development Plan is developed (Actual)			■				■																		PD	JE	CP
1-4. The technical standards and the code of practice for the PV systems are prepared (Actual)				■				■																	PD	JE	CP
1-5. The technical service guideline is drawn up (Actual)				■				■																	PD	JE	CP
1-6. The training materials and manuals for PV Agent are developed (Actual)				■				■																	PD	JE	CP
1-7. Pilot project sites for Community Solar and PV Rehabilitation are identified (Actual)				■				■																	PD	JE	CP
1-8. Community Agents are trained through installation of Community Solar and PV Rehabilitation (Actual)				■				■																	PD	JE	CP
1-9. Lessons learnt from pilot activities are fed back to institutional training system and training materials are modified (Actual)				■				■																	PD	JE	CP
1-10. Requirements for PV Agent training are clarified and reflected to industrial activities on PV system dissemination (Actual)				■				■																	PD	JE	CP
2. Training method for Community Agent are established																											
2-1. Pilot project sites are selected (Actual)				■				■																	PD	JE	CP
2-2. Training materials for Community Agent are developed (Actual)				■				■																	PD	JE	CP
2-3. Community Agent trainings are conducted through installation of Community Solar and PV Rehabilitation (Actual)				■				■																	PD	JE	CP
2-4. Installed PV systems are monitored and maintained (Actual)				■				■																	PD	JE	CP

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ANNEX 13. List of Training Activities

1) Trainings of Trainers

No.	Course Name	Participants Name	Organization	Date
1	Trainer training 1	Baah Joseph Okyere	Tamale-Poly	1-3 October, 2008
2		Henry Atiglah	Tamale-Poly	
3		Sankpi Linus	Tamale-Poly	
4		Edwin Adjeu	KNUST	
5		Emmanuel Ramde	KNUST	
6		Robert Okyere	KNUST	
7		Agenyn Boateng	Koforidua Poly	
8		Augustine Ntiamoah	Koforidua Poly	

No.	Course Name	Participants Name	Organization	Date
1	Trainer training 2	Baah Joseph Okyere	Tamale-Poly	3-5 November, 2008
2		Henry Atiglah	Tamale-Poly	
3		Sankpi Linus	Tamale-Poly	
4		Edwin Adjeu	KNUST	
5		Emmanuel Ramde	KNUST	
6		Robert Okyere	KNUST	
7		Agenyn Boateng	Koforidua Poly	
8		Augustine Ntiamoah	Koforidua Poly	

No.	Course Name	Participants Name	Organization	Date
1	Trainer training 3	Baah Joseph Okyere	Tamale-Poly	2-6 February, 2009
2		Henry Atiglah	Tamale-Poly	
3		Sankpi Linus	Tamale-Poly	
4		Edwin Adjeu	KNUST	
5		Emmanuel Ramde	KNUST	
6		Robert Okyere	KNUST	
7		Agenyn Boateng	Koforidua Poly	
8		Augustine Ntiamoah	Koforidua Poly	

No.	Course Name	Participants Name	Organization	Date
1	PV testing1	Baah Joseph Okyere	Tamale-Poly	3-4 February, 2010
2		Henry Atiglah	Tamale-Poly	
3		Sankpi Linus	Tamale-Poly	
4		Edwin Adjeu	KNUST	21-22 September, 2009
5		Robert Okyere	KNUST	

No.	Course Name	Participants Name	Organization	Date
1	PV testing2	Baah Joseph Okyere	Tamale-Poly	8-10 December, 2009
2		Henry Atiglah	Tamale-Poly	
3		Sankpi Linus	Tamale-Poly	
4		Edwin Adjeu	KNUST	
5		Robert Okyere	KNUST	
6		Kwa Kofi	GSB	
7		Osei Kawabena	GSB	
8		Dennis Turkson	MOEn	
9		Lawrence Sowah	MOEn	

No.	Course Name	Participants Name	Organization	Date
1	PV testing3	Baah Joseph Okyere	Tamale-Poly	1-3 November, 2010
2		Henry Atiglah	Tamale-Poly	
3		Sankpi Linus	Tamale-Poly	
4		Divine Atsu	Koforidua Poly	27-29 October, 2010
5		Augustine Ntiamoah	Koforidua Poly	

No.	Course Name	Participants Name	Organization	Date
1	LED practice	Edwin Adjei	KNUST	18-20 August, 2010
2		Robert Okyere	KNUST	
3		Stephan Achangpong	KNUST	
4		Charles Ntiamoah	Wa Polytechnic	
5		Abdulai Migadeen	Wa Polytechnic	
6		Baar Joseph Okyere	Tamale-Poly	1-3 September, 2010
7		Henry Atiglah	Tamale-Poly	
8		Sankpi Linus	Tamale-Poly	
9		Augustine Ntiamoah	Koforidua Poly	
10		Divine Atsu	Koforidua Poly	
11		Akpalco Frances	GSB	25-27 August, 2010
12		Mawufermo Modjinou	GSB	
13		Lantey Bofchway	EC	
14		Dennis Turkson	MOEn	
15		Ebenzer Ashie	MOEn	

No.	Course Name	Participants Name	Organization	Date
1	LED Lantern Testing	Edward Osei-Kwabena	GSB	14 July-8 August
2		Daniel Ani Dei Hanson	GSB	
3		Akpaloo Francis Mensah	GSB	
4		Eric Akoto	GSB	

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No.	Course Name	Participants Name	Organization	Date
1	Joint Training w/AGSI (PVA training)	Augustine Ntiamoah	Koforidua Poly	15-19 November, 2010
2		Divine Atsu	Koforidua Poly	
3		Gyato Michael	Ex DC of Dambai	
4		Michael Agbensie	Tomefa CA	
5		Mawusi Kpakpah	Keta businessman	
6		Fred Dowoke	Bomigo CA	
7		Auther Manu	REAC	
8		Paul Edem Kwame Atsu	Grau & Sons Inc.	
9		Umar Mohamed	Electrical shop	
10		Benjamin Arther	Electrical shop	
11		Prince Nettey	PV shop	
12		Christopher Asoko	PV shop	
13		Agbeko Evans	Praneries Ltd	
14		Emanuel Asamoah	Praneries Ltd	
15		KennedeyAgozie	Praneries Ltd	
16		Adam Abotsi	PTL	
17		Eric Dor	Seli Technologies	
18		Baar Joseph Okyere	Tamale-Poly	
19		Henry Atiglah	Tamale-Poly	
20		Yeboah Augustine	New Energy	
21		Issac Yamdogo	Upper Solar	
22		Abdulai Migadeen	Wa polytechnic	
23		Alhassan Sumaila	Best Solar	
24		Idris Ndeeya	Best Solar	
25		Agoo Ayamga	North Lite	
26		Wisdom Agbley	Winstech	
27		Isiah Beswine	Winstech	
28		David Atia	Health official	
29		Paschal Bagbuto	DHD of Tamale	
30		Emmanuel Puo	DHD of Nandon	
31		James Frimpong	DHD of Nanumba South	
32		Yacubu Mahama	Bengmal CA	
33		Tagnae Joe	Bengmal CA	
34		Mbangshinui Alhassan	Student of T-poly	
35		Abadallah Mohamed Habib	New Energy	

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No.	Course Name	Participants Name	Organization	Date
1	Tamale CA training	Edwin Adjei	KNUST	28 Jun.-1 Jul. 2011
2		Robert Okyere	KNUST	
3		Idris Baba	Best Solar	
4	Koforidua CA training	Edwin Adjei	KNUST	5-8 Jul 2011
5		Robert Okyere	KNUST	
6		Sankpi Linus	Tamale Polytechnic	
7		?	Tamale Polytechnic	
8	KNUST CA training	Richard	Nkwanta South DA	19-23 Jul 2011
9		Richard	Nkwanta South DA	
10		Sankpi Linus	Tamale Polytechnic	
11		?	Tamale Polytechnic	
12		Divine Atsu	Koforidua Polytechnic	
13		Metzi	Koforidua Polytechnic	
14		Prince Nettey	Takoradi PVA	
15	Volta CA training	Dinkor Gabriel	Kpasa Tech. School	1 Aug. 2011
16		Aglago Godwin	Krachi East DA	

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2) CA training

No. of Training	No. of Participants	Name	Community	Date
1	1	Boare Tengbil Razak	Tongo	Nov. 19, 2009
	2	Mohammed Prince Hassan	Tongo	
	3	Bawa Jeremiah	Tengzuk	
	4	Goldan Michael	Tengzuk	
	5	Martin Kolog	Duusi	
2	6	Ben Banahene	Tomefa	Nov.25, 2009
	7	Michael Agbenusie	Tomefa	
	8	Abuku Kate (Ms)	Tomefa	
	9	Letsu Lawson	Tomefa	
3	10	Wiliam Tetteh	Apollonia	Nov.30, 2009
	11	Samuel Teye	Apollonia	
	12	Kojo James	Apollonia	
4	13	Godwin Alorbu	Bomigo	Mar.13,2010
	14	Glefoti Jerry	Bomigo	
	15	Fred Dowoke	Bomigo	
5	16	Hoenyefia Emmanuel	Azanu	Mar.08, 2010
	17	Klovi Christian	Azanu	
6	18	Huseini Hanuna	Pishegu	Dec. 10, 2009
	19	Mahama Shani	Pishegu	
7	20	Mr. Morgan	Blemazado	Mar.12, 2010
	21	Mr. Morgan's wife	Blemazado	
	22	Mr. Lumorvi	Blemazado	
8	23	Yacubu Mahama	Bengmal	Nov. 2010 (Joint Training)
	24	Tanae Joe	Bengmal	
9	25	James	Piisi	May, 2011
	26	Ebenezer	Piisi	
10	27	Kogliyiri Balinne	Tampala	May, 2011
11	28	Moses Kulah	Kul Karni	May, 2011
	29	Beyou Ibrahim	Kul Karni	
12	30	Abukarisagadow	Loagri	May, 2011
	31	Abdulah Kofi	Loagri	
13	32	Abdul	Kue	Jul, 2011 (Koforidua CA Training)
	33	Darkey Hope	Kabiti	
	34	Darkey Solomon	Kabiti	
	35	Mbey Yajo	Oduamse	
	36	Seth Asamoah	Mampong Nkwanta	
	37	Baba Ggryree	Mampong Nkwanta	
	38	Minth Samuel	Mampong Nkwanta	
	39	Frank Adu	Mampong Nkwanta	
14	40	Goege Anshah	Mampong Nkwanta	Jul, 2011 (KNUST CA Training)
	41	Kudjo Jacos	Akyerekerekrom	
	42	Michael Enning	Akyerekerekrom	
	43	Helina Tabuaah	Watreso	
	44	Cybn Michael	Aiem Manso Nkwanta	
	45	Emmanuel Boakye	Aboabso	
	46	Patrick Osei Tutu	Bonsaaso	
	47	Edwin Kwame	Droborso Kumanu	
	48	Jonathan Barko	Ayawara	
	49	Daniel Tettey	Ayawara	
	50	Marthew	Manktua	
15	51	Jonas Gojah	Babiania	Jun, 2011 (Tamale CA Training)
	52	Paul Hanza Abotsu	Kpalbe	
	53	Seidi	Mpaha	
	54	Toufic	Busumu	
	55	Yakubu	Nakupunduri	
	56	Isifu	Kpalbe	
	57	Moukuny	Overseas	
16	58	Kasimu	Gambaga	Aug. 2011 (Volta CA Training)
	59	Osapo Kwamena	Njare	
	60	James Okele	Njare	

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ANNEX 14. CSS site information

Rehabilitation Project

No.	Site Name	District	Region	Installed Date	Equipment installed/ location	Operational Status of PV at Public Facilities	Owner	PVA	Concessionaire	CA training conducted	No. of CA on operation	MOU Status	Operational management (Revenue allocation)	Payment of CA salary	Operational Status	Daily average of customer	Fee	Monthly average sale	Remark
1	Tonlefa/Dassi	Tamale	Northern	2009 Dec	Rehabilitation	Operational	MEEn (Agreed with paying fee to MEEn) - Chief-Secretary	Knack Baden- transferred from Keta	Community Chief	0	3	x	Chief: 20ced/ month Secretary: 20 ced/ month CA: 20 ced/ month x 3	0	Inverter repaired Operation O	Mobile: 20 (Apr-Aug 2010) Lantem: 1 (Feb-Aug 2010) Battery: 1ced	40p	272 ced	CSS Demonstration site Community model
2	Abodiora	Dagomba	Greater Accra	2009 Dec	Rehabilitation	Operational	MEEn (Agreed with paying fee to MEEn) - DA	(Mawus)	Asafo Morgan	0	1	x	Not decided yet	-	Stopped, to be transferred	Mobile: 20p (Apr-Aug 2010) Lantem: 30p	30p	68 ced	CSS Electrified by grid extension - to be transferred
3	Parasa	Senkogu	Northern	2010 Jan-Feb	Rehabilitation	Operational	MEEn (Agreed with paying fee to MEEn) - DA	(Mawus)	Hoenyedzi Emmanuel Kwaku	0	1	x	Not decided yet	-	Stopped, to be transferred	Mobile: 30p (Apr-Aug 2010) Lantem: 50p	50p	79 ced	CSS Electrified by grid extension - to be transferred
4	Spelba	Yendi	Northern	2010 Oct	Rehabilitation	Operational	MEEn (Agreed with paying fee to MEEn) - DA	(Mawus)	Fred Dwoke	0	1	x	Not decided yet	0	Operation stopped	Mobile: 17 (Apr-Aug 2010) Lantem: 40p	40p	153 ced	CSS Entrepreneur model Wife of school teacher

First stage CSS Pilot Project Site

No.	Site Name	District	Region	Installed Date	Equipment installed/ location	Operational Status of PV at Public Facilities	Owner	PVA	Concessionaire	CA training conducted	No. of CA on operation	MOU Status	Operational management (Revenue allocation)	Payment of CA salary	Operational Status	Daily average of customer	Fee	Monthly average sale	Remark
1	Tonlefa	Greater Accra	Greater Accra	2009 Nov	BCS, Lantem, School, Clinic	Operational	MEEn (Agreed with paying fee to MEEn) - Chief-Secretary	Knack Baden- transferred from Keta	Community Chief	0	3	x	Chief: 20ced/ month Secretary: 20 ced/ month CA: 20 ced/ month x 3	0	Inverter repaired Operation O	Mobile: 20 (Apr-Aug 2010) Lantem: 1 (Feb-Aug 2010) Battery: 1ced	40p	272 ced	CSS Demonstration site Community model
2	Blemkoko	Keta	Volta	2010 Mar	BCS, School	Operational	MEEn (Agreed with paying fee to MEEn) - DA	(Mawus)	Asafo Morgan	0	1	x	Not decided yet	-	Stopped, to be transferred	Mobile: 13 (Apr-Aug 2010) Lantem: 30p	30p	68 ced	CSS Electrified by grid extension - to be transferred
3	Azunu	Keta	Volta	2010 Mar	BCS, School	Operational	MEEn (Agreed with paying fee to MEEn) - DA	(Mawus)	Hoenyedzi Emmanuel Kwaku	0	1	x	Not decided yet	-	Stopped, to be transferred	Mobile: 30p (Apr-Aug 2010) Lantem: 50p	50p	79 ced	CSS Electrified by grid extension - to be transferred
4	Bongbo	Keta	Volta	2010 Mar	BCS, School	Operational	MEEn (Agreed with paying fee to MEEn) - DA	(Mawus)	Fred Dwoke	0	1	x	Not decided yet	0	Operation stopped	Mobile: 17 (Apr-Aug 2010) Lantem: 40p	40p	153 ced	CSS Entrepreneur model Wife of school teacher

Second Stage CSS Pilot Sites

No.	Site Name	District	Region	Installed Date	Equipment installed/ location	Operational Status of PV at Public Facilities	Owner	PVA in charge	Concessionaire	CA training conducted	No. of CA on operation	MOU Status	Operational management (Revenue allocation)	Payment of CA salary	Current Status	Daily average of customer	Fee	Monthly average sale	Remark
1	Kpabe	Erst Gorja	Northern	2011 Mar	BCS, Clinic system, modified to BCS	Operational	Tamale Polytechnic	Tamale Polytechnic	Tamale Polytechnic	0 (Tamale)	1	Δ	Not decided yet	x	Not installed yet	Mobile: 37	Mobile: 20p Lantem: 50p	222 ced	
2	Bangral	Saboba Cherepon	Northern	To be installed	BCS Teachers market	Not yet installed	Tamale Polytechnic	Tamale Polytechnic	Tamale Polytechnic	0 (KNUST)	2	Δ	Not decided yet	x	Not installed yet	Mobile: 25	Mobile: 30p Lantem: 50p	230 ced	
3	Akyerewakrom	Mansae West	Achanti	2011 April	BCS, School	Operational	KNUST	KNUST	KNUST (MPP)	0 (KNUST)	3	Δ	to be decided with MPP	0	Not installed yet	Mobile: 40p Lantem: 50p	50p	140 ced	
4	Mampong Nkwanta	Akwagan North	Central	2011 Mar	BCS, School	Operational	Koforidua Poly	Koforidua Polytechnic	Koforidua Polytechnic	0 (Koforidua)	3	Δ	Polytechnic 75% CA 25%	0	Not installed yet	Mobile: 12	Mobile: 40p Lantem: 50p	140 ced	
5	Pila	Wa	Upper West	2011 April	BCS, Clinic	Operational	Wa Polytechnic	Wa Polytechnic	Wa Polytechnic	0	2	Δ	Not decided yet	x	Not installed yet	Mobile: 12	Mobile: 50p Lantem: 1ced (monthly)	180 ced	
6	Tampala	Jirapa	Upper West	2011 April	BCS, School	Operational	Wa Polytechnic	Wa Polytechnic	Wa Polytechnic	0	1	Δ	Not decided yet	x	Not installed yet	Mobile: 9 - 10	Mobile: 50p Lantem: 1ced (weekly)	150 ced	
7	Ku Kani	Lambussie	Upper West	2011 April	BCS, School	Operational	Lambussie DA	Frestus Mwenkom	To be decided	0	2	x	Not decided yet	x	Not installed yet	Mobile: 50p Lantem: 50p	50p	-	Concessionaire is not identified
8	Kellegan	Sissala West	Upper West	Another site to be installed	-	-	Sissala West DA	Frestus Mwenkom	-	-	-	x	-	x	-	-	-	-	Negotiation with DA
9	Loungi	West Mamprusi	Upper East	2011 April	BCS, School	Operational	West Mamprusi DA	Isaac Yambogo	Isaac Yambogo	0	2	x	Not decided yet	x	Not installed yet	Mobile: 12	Mobile: 50p Lantem: 50p (one night rental fee)	200 ced	

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No.	Site Name	District	Region	Installed Date	Equipment installed location	Operational Status of PV at Public Facilities	Owner	PVA	Concessionaire	CA training conducted	No. of CA on operation	MOU Status	Operational management (Revenue allocation)	Payment of CA salary	Operational Status	Daily average of customer	Fee	Monthly average sale	Remark
10	Kaboti	Newarta South	Volta	2011 May	BCS, School	O	Newarta South DA	Akins?	Darley Hope	o Kforidua	1	Δ	DA 40% Concessionaire 60%	x	O	Mobile: 20	Mobile: 50p Lantern: 1ced	300 cedi	
11	Kachelli	Newarta South	Volta	To be installed	-	-	Newarta South DA	Akins?	Fatiso A. Salami	x	-	DA*	DA 40% Concessionaire 60%	x	Just installed o	-	-	-	
12	Kue	Newarta South	Volta	2011 May	BCS, Clinic	x (to be fixed)	Newarta South DA	Akins?	Dawood Chiedde Brena	o	2	Δ	DA 40% Concessionaire 60%	x	BCS battery discharged; controller broken (May 2011) Operation not started	-	Mobile: 50p ?	-	BCS battery discharged; controller broken
13	Odumase	Newarta South	Volta	2011 May	BCS, School	O	Newarta South DA	Akins?	Mr. Mbebe	o Kforidua	2	DA*	DA 40% Concessionaire 60%	x	Controller broken	-	Mobile: 50p ?	-	
14	Njare	Krachi East	Volta	2011 May	BCS only	Not installed (SpanishProject)	Krachi East DA	Ou?	Martey Samuel	o (Volta)	2	DA*	Not decided yet	x	O	?	Mobile: 50p ?	?	Spanish project installed PV school, street-lighting -
15	Teporokope	Krachi East	Volta	Plan changed to other site	-	-	Krachi East DA	Ou?	-	x	1	x	-	x	-	-	-	-	Spanish project installed PV school, street-lighting - to be transferred
16	Koderokope	Krachi East	Volta	Plan changed to other site	-	-	Krachi East DA	Ou?	-	x	-	x	-	x	-	-	-	-	Spanish project installed PV school, street-lighting - to be transferred
17	Danadi	North Newarta	Volta	To be installed	BCS	Not installed (SpanishProject)	Newarta North DA	Kassa Technical School (Eranua)	Abdulai Muhammed	o (Volta)	1	Δ	Not decided yet	x	Just installed o	-	Mobile: 50p	-	
18	Babenihia	Eliembelle	Westwern	2011 April	BCS, School	O	Eliembelle DA	Wilson Okere	Jeremiah Kugbe	o (KNUST)	1	Δ	Not decided yet	x	Inverter broken	-	Mobile: 50p ?	-	
19	Ayawara	Eliembelle	Westwern	2011 April	BCS, School	O	Eliembelle DA	Wilson Okere	Jonathan Baku	o (KNUST)	1	DA*	Not decided yet	x	O	5	Mobile: 50p Lantern: 1 cedi	80 cedi	
20	Mankuwa	Eliembelle	Westwern	2011 April	BCS, School	O	Eliembelle DA	Wilson Okere	Martin Vordzongbe	o (KNUST)	1	Δ	Not decided yet	x	Inverter broken	-	Mobile: 50p	-	

MOU Status: Δ is the one which DA and concessionaire have already signed. DA is one which only DA has signed.

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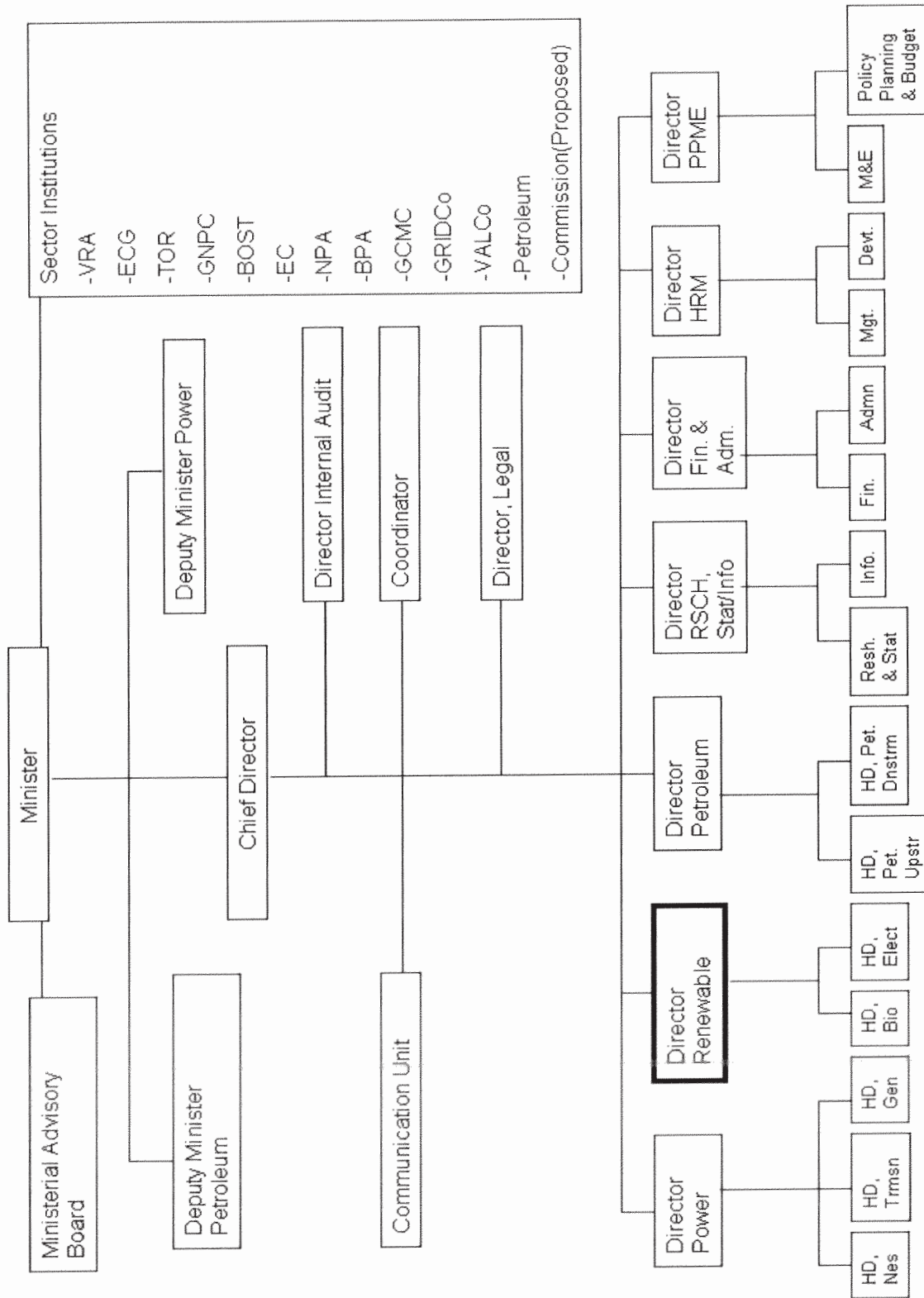
ANNEX 15. List of Materials Produced by JICA experts

No.	Item	Title	Quantity
1	Book	Community Agent Manual	500 500 (New version - planned)
2	Book	Community Solar Mannual	500
3	Book	PV Testing Manual	50
4	Book	Practical Guide for PV rural electrification (1 st version, 2 nd version, Final version)	20 (1 st) 50 (2 nd) 1000(Final)
5	Book	Technical Service Guideline	50
6	Poster	-“Let’s enjoy SOLAR LANTERNS” -“Two ways of Charging Mobile Phone using SOLAR ENERGY” -“Getting Along Well with SOLAR SYSTEM”	500×3 types
7	Brochure	“Solar Energy...is good for you”	500
8	Sticker	Sticker for PV lantern	200

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ANNEX 16. New Organ gram MOEn



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