AIDE MEMOIRE

Scaling-up Renewable Energy Program in Ghana

Scoping Mission

1st to 4th December 2014

Accra

Ghana

I. Introduction and Background

1. Ghana is one of fourteen new pilot countries selected to benefit from the Scaling-Up Renewable Energy Program (SREP) in Low Income Countries. SREP operates under the Climate Investment Funds (CIF). The objective of the SREP is to pilot and demonstrate the economic, social and environmental viability of low carbon development pathways in the energy sector by creating new economic opportunities and increasing energy access through the use of renewable energy.

2. The Government of Ghana will be supported by multilateral development banks (MDBs) including the African Development Bank (AfDB) and the World Bank Group (WBG) for preparing and implementing the SREP program in Ghana. The AfDB is the lead MDB for SREP Ghana.

3. As per the SREP programming modalities, financing from SREP is guided by a number of principles. The SREP financing should:

- address the additional costs and risks associated with renewable energy technologies, which adversely affect the viability of investments;
- meet the specific requirements of removing financial and institutional barriers and to leverage additional public and private financing;
- "crowd-in" the private sector;
- finance investments and capacity building for both public and private sector entities;
- increase the installed renewable energy capacity in a country's energy supply in line with national energy plans;
- support proven renewable technologies.

4. A Multilateral Development Bank (MDB) Scoping Mission ("the Mission") visited Ghana from 1st to 4th December 2014, to launch, with the Government of Ghana, development partners, civil society and private sector representatives, the process of preparing a Renewable Energy Investment Plan. The Mission was led by the SREP National Focal Point, with support from the AfDB as lead MDB. The Mission included observers from the following institutions: the United States Agency for International Development (USAID), State Secretariat for Economic Affairs (SECO) from Switzerland, the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), and the Sustainable Energy for All (SE4All) secretariat in Ghana. Annex 1 provides the names of the Mission members and observers.

5. The Government of Ghana (GoG) put together a team which was led by the SREP National Focal Point, Mr. Seth Mahu, Deputy Director Renewable Energy, at the Ministry of Energy and Petroleum (MoEP); the team included representatives from the Ministry of Finance, the Energy Commission, the Public Utilities Regulatory Commission (PURC), Northern Electricity Distribution Company (NEDCO) and Ghana Grid Company (GRIDCo). Annex 2 provides the names of the officials.

6. The Mission held consultations with the Kumasi Institute of Technology and Environment (KITE) and private sector developers and manufacturers. Consultations were also carried out with the energy sector development partners based in Accra, including the Agence Française de Development (AFD), the European Union (EU), the Spanish Embassy, the Norwegian Embassy, the United Nations Development Programme (UNDP). Annex 3 shows the Mission's meeting schedule.

7. The objective of the Mission was to launch the preparation of the SREP Investment Plan (IP), including discussing the programming and financing modalities, collecting information on ongoing and planned renewable energy initiatives, clarifying the institutional arrangements for the IP preparation, and agreeing on a timeline and resources required for the IP preparation. The Mission also discussed with the Government of Ghana's energy sector policies and programs and possible areas for SREP support.

8. This Aide Memoire records the Mission's findings and recommendations. It was discussed at the wrap-up meeting at the Ministry of Finance on 4th December 2014.

9. The Mission expresses its appreciation for the courtesies received and for the support and cooperation accorded to it by the management and staff of the agencies with whom the Mission interacted.

II. Agreements Reached with the Government

10. The GoG and the Mission reached an agreement on the arrangements and timing for the preparation of the IP. The key agreements are recorded in the paragraphs below followed by a detailed action matrix with timing of next steps.

11. **Institutional arrangements for preparing the IP:**

- ***Responsible Agency:*** Ministry of Energy and Petroleum (MoEP)

- ***Focal Person:*** Mahu Seth, Deputy Director, Renewable Energy, MoEP

- ***National Task Force (NTF):*** MoEP, Ministry of Finance (MoF), Electricity Company of Ghana (ECG), Volta River Authority (VRA), Northern Electricity Distribution Company (NEDCO), Ghana Grid Company (GRIDCo), Energy Commission (EC), Public Utilities Regulatory Commission (PURC), Environmental Protection Agency (EPA)

- ***Consultative Group:*** State Secretariat for Economic Affairs (SECO) from Switzerland, United Nations Development Programme (UNDP), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Kumasi Institute of Technology and Environment (KITE), The Energy Center (TEC) of the Kwame Nkrumah University of Science and Technology (KNUST), SE4All Secretariat for Ghana.

12. **The IP preparation process will include the following steps, some of which have already been completed:**

- Confirm electricity demand and needs.
- Confirm the renewable resource potential.
- Confirm the supply cost curve.
- Define the investment objectives.
- Select technologies and business models.
- Estimate investment and operating costs.
- Identify the financing instruments (co-financing, GoG counterpart financing, leveraging, partnerships, etc.).
- Review the adequacy of policy, regulatory, and legal framework for renewable energy development.
- Propose institutional/organizational arrangements for implementation.
- Establish capacity-building needs and explore options for improving lessons learned and knowledge management on renewable energy.
- Assess risks and design mitigation measures.
- Assess the monitoring and results framework of the sector and explore opportunities for strengthening it.
- Develop the financing plan.

13. The Mission emphasized that the processing of the SREP financing through the MDBs will require adherence to the Environmental and Social Safeguard procedures of the respective institutions. Projects will be categorized according to their impacts, and an Environmental and Social Management Plan (ESMP) and a Resettlement Action Plan, if required, will need to be prepared and disclosed accordingly for each investment project proposed in the investment plan.

14. **Preparation of the Joint Mission:**

- Proposed timing: tentatively early February 2015, depending on progress on IP (see the table in Chapter IV);
- The Joint Mission's TORs will be developed jointly by the Task Force and the MDBs, and circulated to CIF AU by mid-January 2015.

15. **Preparation Grant:**

GoG indicated that it may consider applying for the advance preparation grant to support IP preparation activities if need be. Such decision will be confirmed within the coming weeks by the SREP focal point to CIF AU.

III. Mission Findings

16. **Government of Ghana is committed and has the capacity to develop the SREP investment plan**. Despite Ghana's relatively low carbon-intensive economy, the GoG is committed to implementing mitigation actions, which include broadening Ghana's renewable

energy base. In this regard, the GoG also has established a dedicated Directorate at the Ministry of Energy & PEtroleum focusing on the promotion and development of the renewable energy sector.

17. **Ghana is endowed with proven renewable energy resources** such as biomass, solar, wind energy, waste-to-energy and mini / micro hydropower. The policy objective for the renewable energy sector is to achieve 10% of renewable energy contribution in the generation mix by 2020, as opposed to 0.3% today (with 7.0 MW solar PV installations).

18. **Policy and regulatory measures are in place to boost power generation from renewable energy sources.** The Renewable Energy Act 832 provides for the development, management, utilization, sustainability and adequate supply of renewable energy for generation of heat and power and for related matters with the view to increasing energy access and combat climate change. The Grid Code for Renewable Energy; the feed-in tariffs; the guideline for the Renewable Energy Purchase obligation (under which power distribution utilities and bulk electricity consumers are obliged to purchase a certain percentage of their energy required from electricity generated from renewable energy sources); and the renewable energy Power Purchase Agreement (PPA) draft template are some of the instruments that are in place to promote renewable energy development.

19. The Renewable Energy Act 832 also calls for the establishment of a Renewable Energy Authority (REA) to oversee the implementation of renewable energy activities in the country, execute renewable energy projects initiated by the GoG or in which the GoG has an interest and manage the assets in the renewable energy sector on behalf of the GoG. Moreover, a Renewable Energy Fund (REF) will also be established to provide financial resources for the promotion, development, sustainable management and utilization of renewable energy resources. The GoG explained to the Mission that given its resource constraints, SREP financing could be used to assist the GoG in the establishment of the REA and/or to contribute to the REF.

20. **The MoEP is working with the PURC and the Energy Commission to develop the regulatory framework to deal with the challenges of mini (and micro) grids.** This framework is expected to be reviewed and released for public consultations. The World Bank, through the African Electrification Initiative (AEI), will be providing expert technical review to the draft regulations. This would pave the way for the development of the relevant policy tools and the business model for mini-grids. Besides the four pilot mini-grid projects with World Bank funding, the MoEP has initiated steps to construct three additional mini-grids by end of 2015. The seven (7) mini-grid projects when completed will serve about 14,000 population and with a total generation capacity of about 0.45MW.

21. **Stocktaking:** Development partners' support to renewable energy development includes investments in mini hydro, off-grid electrification, mini-grids, solar, biomass, technical assistance, etc. for a total amount of financing of USD 80.69 million. *Annex 4* provides an indicative list of projects.

22. **High Priority Areas Identified for Support**. The Mission had initial discussions with the GoG and other stakeholders on candidate areas that could benefit from SREP financing subject to completion of the required analysis in the IP. These priority areas are discussed below.

a) ***Hydropower*** is still the most important renewable energy source accounting for about 60%-70% of electricity generation capacity. Plants below 100MW are considered modern renewable energy by ACT 832 and there are 17 potential sites in the country. There are also about 22 exploitable mini-hydro sites ranging from 15kW to 450kW with total potential between 2.6MW to 3.5MW, which can be candidates for SREP financing.

b) ***Solar*** energy plays a significant role in promoting renewable energy sources. The Solar irradiation levels range from 4.5-6.0kWh/m2/day with the highest irradiation levels occurring in the northern half of the country. Over 38,000 solar home systems and lanterns have been deployed in more than 120 communities throughout the country for off-grid applications and 25 grid-tied installations with total installed capacity of 7 MW. The GoG has procured additional 50,000 solar lanterns to be distributed in the coming months. The EC has so far issued Siting Clearance Permits to nine (9) Independent Power Producers (IPPs) for utility scale solar projects, which implies that these IPPs are at a relatively advanced stage of readiness and have provided evidence of title to land, site plan, relevant municipal permits for construction, compliance with all legislation and standards relevant to the firm's activities, an Environmental Impact Assessment (EIA) Report certified by the Environmental Protection Agency (EPA) of Ghana, etc. The GoG is also developing a framework to promote the installation of about 100,000 solar home systems through net metering.

c) ***Wind*** energy potential exists. Average annual wind speeds along the coast and some islands range from 4-6m/s at 50m hub height. This potential can support utility scale wind power and hybrid micro/mini-grid development. Provisional license has been issued to three developers so far. NEK, one of the three developers, has been active in the industry since 1998 and has so far been exploring six sites to develop about 250 MW of wind power.

d) ***Biomass and Waste to Energy*** resource includes agricultural to forest as well as urban wastes/products. A recent World Bank funded study on Agro - Processing and Sawmill Wastes Assessment for Electricity Generation 2014 revealed that there are well over 30 major/clustered agro, wood processing sites in Ghana generating nearly 10,000 ton/year of agro and wood processing wastes alone. Kwamoka Energy, one of the three biomass energy developers, is in the process of acquiring environmental and site permit to develop a 6 MW biomass power project. The EPA of Ghana, in collaboration with the Ghana Coco Board, is also undertaking detailed studies on coco waste for power generation.

e) ***Transmission:*** The Mission discussed with GRIDCo and PURC the constraints within the transmission system to accommodate large scale intermittent renewables. GRIDCo and the two distribution companies (ECG and NEDCo) with support from the German

Government intends to undertake grid dynamic study in 2015 to establish the firm technical capacities of both the transmission and distribution infrastructure to accommodate large variable renewable energies (solar and wind). The Mission learnt that within the current constraints of the grid, a total of 250 MW of solar energy can be safely accommodated within the transmission network based on the result of a preliminary studies commissioned by the GIZ and conducted by Castalia.

f) ***Capacity Building:*** The GoG is taking steps to develop capacities at various levels for the renewable energy industry. This includes arrangements between the private sector and selected public technical institutions to train and certify renewable energy technicians and engineers. However, through interaction with key public and private sector entities and civil society organization, the Mission identified some institutional and human capacity gaps across the renewable energy value chain that can be addressed through SREP financing. Some of the areas identified by the Mission for consideration include capacity development for off-takers, regulatory and government agencies, financial institutions including banks, private sector as well civil society organizations.

23. ***Key Barriers for the Development of RE:*** The Mission used the opportunity of meeting with various sector stakeholders to discuss the barriers that hinder the development of RE in the country. Some of these bottlenecks are reflected in the following paragraphs, and key elements are consolidated in Annex 6.

IV. Consultations with Private Sector, Civil Society Organizations, and Development Partners

24. **Private Sector**. The Mission met with Tradework, a leading RE service provider to understand the challenges facing service providers in the industry and how SREP can contribute to addressing them. The company is setting up an assembling plant to produce about 10MW of solar PV panels per year and ramp up to about 25MW by 2020. Erroneous perceptions about cost of solar technologies, inadequate financing instruments and high cost of capital were identified as some of the key barriers facing players in the industry. The provision of concessional facilities and matching funds were identified as possible areas for consideration under SREP.

25. The mission also met with NEK, a wind power developer. NEK identified the limited capacity of the utilities and regulators to structure and negotiate bankable PPAs and the weak balance sheet of the potential off-takers as a main obstacle for the industry. Capacity building for the relevant stakeholders and support to the potential off-takers to improve their efficiencies is therefore critical and could be supported under the SREP.

26. **Civil Society**. The Mission met with the Kumasi Institute of Technology and Environment (KITE) to understand their role in promoting renewable energy. KITE identified the cost of renewable technologies, lack of clarity on grid vs. off-grid electrification decision making and unfriendly financing terms (borrowing rate at about 30%) as some of the main challenges constraining the scaling-up of the renewable energy solutions in the country. KITE strongly supports the creation of the Renewable Energy Authority, provision of concessional and

grant financing for the industry and the establishment of the Renewable Energy Fund as a step to address the issues raised.

27. **Development Partners.** The Development Partners (DPs) saw SREP as an opportunity for Ghana to accelerate renewable energy development. They showed strong support for the program because its objectives aligns with their interventions in the sector and creates the opportunity for collaboration to leverage resources for the industry. Areas identified by DPs for consideration include productive use of energy, off-grid rural electrification, support to the preparation of Least Cost Power Generation Plan and cost effective solutions, support to improve the bankability of private sector renewable energy projects, support for the standardization of key processes to reduce costs and lead time for project development. Annex 4 provides more information on other programs and projects supported by development partners, which shall be taken into account while designing the IP.

V. Next Steps and Timeline

28. The Mission agreed on the following timeline with the GoG.

Activities	Activity Duration (Weeks)	Start Date	Finish Date	Responsible Party/Personnel
Request for Grant for IP preparation	4	08-Dec-14	5-Jan-15	MDBs/FP
SREP IP Preparation – Draft	8	08-Dec-14	30-Jan-15	NTF
Finalization of TOR for Joint Mission	1	08-Dec-14	7-Jan-14	NTF/MDBs
Clearance of TOR for Joint Mission by CIF AU	5	8-Jan-14	9-Jan-15	CIF Admin Unit
Joint Mission	2	02-Feb-15	13-Feb-15	All
SREP IP Finalization	2	16-Feb-15	27-Feb-15	NTF
Disclosure of IP for public consultations	2	02-Mar-15	13-Mar-15	MOEP
Independent technical review of the IP	2	16-Mar-15	27-Mar-15	CIF Admin Unit
Revision of the IP based on comments received	1	30-Mar-15	03-Apr-15	MOEP
MDB internal quality review of the IP and Government validation	2	06-Apr-15	17-Apr-15	MDBs
Submission of the IP to CIF Admin Unit	3	20-Apr-15		MOEP
Endorsement of IP by SREP sub-committee	0	11-May-15		CIF Admin Unit

ANNEX 1

Mission Members

African Development Bank (AfDB)

1. Thierno Bah, Energy Specialist/ AfDB
2. Djamali Ibrahime, Financial Analyst/ AfDB
3. Florence Richard, Climate Change Specialist/ AfDB (from Abidjan)
4. Giorgio Gualberti, Consultant/ AfDB

Observers:

United States Agency for International Development

1. Waqar Haider, Sr. Energy Advisor/ USAID
2. Hassan Nawab Transaction Advisor PATRP/ USAID
3. Greg Martin, Power Africa Transaction Advisor for Ghana, USAID

Spanish Embassy

1. Celia Peret, Counsellor Head office

United Nations Dvelopment Programmes

1. Paolo Dalla Stella, Sustainable Development Analyst, UNDP

Deutsche Gesellschaft für Internationale Zusammenarbeit

1. Steffen Behrle, Team Leader RE, GIZ

Norway Embassy

1. Trond Augdal, Counsellor

State Secretariat for Economic Affairs (SECO) from Switzerland

1. Seth Adjei Boye, Infrastructure Specialist/ Swiss Embassy

Sustainable Energy for All Secretariat

1. Paula Edze, National SE4ALL Coordinator, EC

ANNEX 2

List of Stakeholders Consulted

Kick-Off Meeting with Ministry of Finance (MoF)

NO.	NAMES	TITLE/ ORGANIZATION	Contact
1	Ruddlima Gandli	Senior Analyst, Consultant GIZ	riddlima.gandli@castalia-advisors.com 0279677083
2	Gianmarco Servetti	Practice Leader, Consultant GIZ	gianmarco.servetti@castalia-advisors.com 0279677082
3	Steffen Behrle	Team leader Renewable Energies, GIZ	steffens.behrle@giz.de 0242797219
4	Seth Mahu	SREP focal point, MOEP	smagbeveb.@yahoo.com 0244209710
5	Thierno Bah	Energy Specialist, AfDB	t.rbah@afd.org 0243868709
6	Brigitte Cuendet	Head of Cooperation, Swiss Embassy	brigitte.cuendet@eda.admin.ch 0202014453
7	Edith Kwawu	Budget Officer, MoF	ekwawu@mofep.gov.gh 0570910077
8	Elizabeth Nancy Ameyaw	Economics Officer, MoF	nameyaw@mofep.gov.gh 0244387306
9	Ahiati K. Theophilus	NSP, MoF	diegotheophiluskudzo@gmail.com 0249571583
10	Desmond Avemegah	Economics Officer, MoF	desavems@yahoo.xo.uk 0503896402
11	Michael Ayensu	Director, MOF	0501322681
12	Augustine Takyi	Head, AfDB unit,MoF,	atakyi@mofep.gov.gh 0208239723

Kick-off Meeting with Minitry of Energy & Petroleum

NO.	NAMES	TITLE/ ORGANIZATION	CONTACT
1	Thierno Bah	Energy Specialist/ AfDB	t.h.bah@yahoo.com
2	Seth Adjei Boye	Infrastructure Specialist/ Swiss Embassy	seth.adjeiboye@eda.admin ich
3	NDK Asante	Technical Director, EC	nasante@energycom.gov.gh
4	Bernard Modey	Director, System Operations, GRIDCo	bernardmodey@gridcogh.com
5	Moses Tawiah	Ag. Dir. Eng. NEDCo	mtawia@yahoo.com
6	Mawunyo Dzobo	CPO SPPD, EC	mdzobo@yahoo.co.uk
7	K. A. Otu-Danquah	Head, Renewables, EC	k.a.otudanquah@gmail.com

8	Dr. Robert B.M. Sogbadji	DD. Energy Efficiency, MOEP	robertmawako@gmail.com
9	Gifty Tettey	DD. Bioenergy, MOEP	gdtettey@gmail.com
10	Seth Mahu	DD. Electricity, MOEP	smagbeve@yahoo.com
11	Gianmarko Servetti	Practice	gianmarco.servetti@castalia.advisor.com

Meeting with Energy Commission

NO	NAME	TITLE/ ORGANIZATION	CONTACT
1	Thierno Bah	Energy Specialist, AfDB	t.h.bah@yahoo.com
2	Djamali Ibrahime	Financial Analyst, AfDB	d.ibrahine@afdb.org
3	Akanksna Chaurey	CEO, 17 Power, ANDIA	
4	K Ofosu Ahenkorah	Ex. Sec. EC	oahenkorah@energycom.gov.gh
5	N.D.K Asante	Tech. Director, EC	nasante@energycom.gov.gh
6	Michael Opam	Director, SPP	michaelopam@yahoo.com
7	Kofi Agyarko	Head, Energy Efficiency & Climate Change Division, EC	kofiagyarko@gmail.com
8	Joseph Esandoh-Jeddu	Head, policy & Planning	jeyeddu@hotmail.com
9	K. A. Otu-Danquah	Head, Renewable Energy	k.a.otudanquah@gmail.com
10	Mawunyo Dzobo	CPO, SPPD	mdzobo@yahoo.co.uk
11	Seth Mahu	DD. RE Electricity (NFP-SREP)	smagbeve@yahoo.com
12	Gifty Tettey	DD. RE Bioenergy	gdtettey@gmail.com
13	Frederick Kenneth Appiah	PPO. RE, EC	appaiahfk@energycom.gov.gh
14	Simpson Attieku	PO, SPPD	attiekus@energycom.gov.gh
15	Paula Edze	Coordinator, SE4ALL	pedze@energyxom.gov.gh
16	Binu Parthan	Consultant, IT Pona/ AfDB	bp@seassoc.org
17	Abrokaa Michael	SE4ALL	
18	Giorgio Gualberti	AfDB	g.gualberti@afdb.org
19	Prosper A Ahmed	EC	ugprosper@yahoo.com
20	Dorothy Adjei	EC	adjei@energycom.gov.gh

Meeting with Public Utilities Regulatory Commission (PURC)

NO.	NAMES	TITLE/ ORGANIZATION	CONTACT
1	Thierno Bah	Energy specialist, AfDB	t.h.bah@yahoo.com
2	Seth Mahu	DD. RE Electricity, NFP-SREP	smagbeve@yahoo.com
3	Djamali Ibrahime	Financial Analyst, AfDB	d.ibrahine@afdb.org
4	Steffen Behrle	GIZ	steffen.behrle@giz.de
5	Gianmarco Servetti	Castalia, GIZ	gianmarco.servetti@castalia-advisors.com
6	Riddlima Gandli	Castalia, GIZ	riddlima.gandli@castalia-

			advisors.com
7	Vivor Gershon Marlet	PURC	torgbuivivor@yahoo.com
8	Samuel Sarpong	PURC	ssarpong@gmail.com
9	Oscar Amonoo-Neizer	PURC	oscaeraneizer@yahoo.com
10	Nutifafa K. Fiasorgbor	PURC	nukfias@yahoo.com

Meeting with Development Partners

NO.	NAMES	TITLE/ ORGANIZATION	CONTACT
1	Djamali Ibrahime	Financial Analyst/ AfDB	d.ibrahine@afdb.org
2	Thierno Bah	Energy specialist/ AfDB	t.h.bah@yahoo.com
3	Florence Richard	Climate Change Specialist/ AfDB	
4	Seth Mahu	DD. RE Electricity (NFP-SREP)	smagbeve@yahoo.com
5	Celia Peret	Counsellor Head office	cperetidcomerci@minew.es
6	Seth Adjei Boye	Infrastructure Specialist/ Swiss Embassy	seth.adjeiboye@eda.adminich
7			
8	Simon Rolland	Proyed officer/ EU	simon.rolland@
9	Waqar Haider	Sr. Energy Advisor/ USAID	shaider@usaid.gov
10	Hassan Nawab	Transaction Advisor PATRP/ USAID	shanwab@nexant.com
11	Giorgio Gualberti	Consultant/ AfDB	g.gualberti@afdb.org
12	Binu Par-An	Consultant/ IT Power-AfDB	bp@seassoc.org
13	Akanksha Chaurey	Consultant/ IT Power-AfDB	akamble.chaurey@itpower.org
14	Paula Edze	National SE4ALL Coordinator, EC	pedze@energycom.gov.gh
15	Paolo Dalla Stella	Sustainable Development Analyst, UNDP	paolo.d.stella@undp.org
16	Steffen Behrle	Team Leader RE, GIZ	steffen.behrle@giz.de
17	Gianmareo Servetti	RE SEE consultant, Castalia	gianmare.servetti@castalia-advisors.com
18	Riddlima Gandli	RE SEE consultant, Castalia	riddlima.gandli@castalia-advisors.com
19	Trond Augdal	Counsellor, Norway Embassy	trau@mfa.no
20	Greg Martin	Power Africa Transaction Advisor for Ghana, USAID	grmartin@revert.com

MEETING with SREP NTF

NO.	NAMES	TITLE/ ORGANIZATION	CONTACTS
1	Gifty Tettey	DD. Bioenergy, MOEP	gdtettey@gmail.com 0262609640
2	Djamali Ibrahime	Financial Analyst, AfDB	d.ibrahire@afdb.org
3	Thierno Bah	Energy Specialist	t.rbah@afd.org

			0243868709
4	Seth Adjei Boye	Infrastructural Specialist, Swiss Embassy	seth.adjeiboye@eda.admini.dr
5	Mawunyo Dzobo	CPO, EC	mdzobo@yahoo.co.uk
6	Nutifafa K. Fiasorgbor	Reg. Engineer, PURC	nukfias@yahoo.com 0244721521
7	Bernard T. Modey	Director System operation, GRIDCo	bernard.modey@gridcogh.com 0244326035
8	Janet Akom	M.D, KEGL	jpakomekwamokag.com 0208110828
9	Edith Kwawu	B.O, MOF	ekwawu@mofep.gov.gh 0570910077
10	Seth Mahu	DD RE, MOEP	smagbeve@gmail.com 0244209710
11	Ebenezer Ashie	PM, MOEP	ebenashie@gmail.com 0233886165
12	Doris Duodo	PO, MOEP	dorisduodo@gmail.com 0233994594

Participants List at Scoping Mission Wrap-Up Meeting Held at Mof_4-12-2014

NO.	NAMES	TITLE/ ORGANIZATION	CONTACTS
1.	Seth Mahu	NFP SREP	smagbeve@yahoo.com 0244209710
2.	Thierno Bah	Energy Specialist	t.r.bah@afdb.org 0243868709
3.	Edith Kwawu	MOF/ AfDB Unit	ekwawu@mofep.gov.gh 0570910077
4.	Augustine Takyi	MOF/ AfDB Unit	atakyi@mofep.gov.gh 0208239723
5.	Zakaria Issahaku	DMD-MOFEP	Zakh2000us@gmail.com 0502474932
6.	Manueli A. Sawyer	MOF-RSD	msawyer@mofep.gov.gh 0502474932
7.	Ahiati K. Theophilus	MOF-RSD	diegotheophiluskudzo@gmail.com 0249571583
8	Bernard T. Modey	Director System Operation, GRIDCo	bernard.modey@gridcogh.com 0244326035
9.	Eugene O. Addo	NEDCo	eugeneaddo@yahoo.com 0244532096
10.	Ebenezer Ashie	MOEP	ebenashie@gmail.com 0233886165
11.	Nutifafa K. Fiasorgbor	Reg. Engineer, PURC	nukfias@yahoo.com 0244721521
12.	Steffen Behrle	GIZ	Steffen.behrle@giz.de024274221 9
13	Gianmarco Servetti	GIZ/ Castalia	gianmarco.servetti@castalia-advisors.com 0279677082

14.	Riddlima Gandli	GIZ/ Castalia	riddlima.gandli@castalia-advisors.com 0279677083
15.	Wisdom Ahiataku-Togobo	Director, MOEP	watogobo@gmail.com0208139326

ANNEX 3

Mission schedule

Date	Time	Activity	Responsible/Place
Day One	09:00 am	- MDB's Internal Meeting	MDBs (AfDB Country office)
	10:30 am	- Kick-off Meeting with Ministry of Finance (MoF)	MDBs, MoF (MoF office)
	02:00 pm	- Kick-off Meeting with Ministry of Energy and Petroleum (MoEP) and related agencies	MDBs, MoEP , VRA, GRIDCO, ECG (MoEP office)
	03:00 pm	- Working session with Ministry of Energy and Petroleum (MoEP) and related agencies: Presentation of SREP modalities and discussions on the sector	MDBs, MoEP , VRA, GRIDCO, ECG (MoEP office)
Day Two	09:00 am	- Meeting with the Energy Commission (EC) to discuss the implementation of the renewable energy law, licensing for renewable energy project, feed-in tariffs, etc.	MDBs, EC (EC Office)
	11:00 am	- Meeting with the Public Utility Regulatory Commission (PURC) to discuss tariff issues	MDBs, PURC (PURC Office)
	2:00pm	- Meeting with Development Partners (DPs)	MDBs, DPs (AfDB Country office)
Day Three	09:00 am	- Meeting with NEK and Tradeworks	MDBs, SREP National Task Force (NEK Office)
	10 :00 am	- Meeting with KITE	MDBs, SREP National Task Force (KITE Office)
	11:00 am	- Meeting with SREP National Task Force to discuss the roadmap for the next steps, draft TORs for the joint mission and the outline of the IP	MDBs, SREP National Task Force (MoEP office)
	02:00 pm	- Drafting Aide Mémoire	MDBs (AfDB Country office)
Day Four	10:00 am	- Finalization of the Aide Memoire	MDBs, SREP National Task Force (MoEP office)
	02:00 pm	- Endorsement of Aide Memoire	MDBs, MoF, SREP National Focal Point (MoF office)

ANNEX 4

Matrix of Donor Initiatives on Renewable Energy

#	Programme/Project	Development Partner	Amount of Financing (in USD)
1	Hydropower Sustainability Assessment Project (HSAP)	Switzerland: Swiss Agency for Dev. & Coop. (SECO)	535000.00
2	Off-grid Electrification for Public Institutions	Spanish Government	6211425.00
3	Human Resource Development for Dissemination of PV	JICA I & II	3500000.00
4	GEDAP : Mini-Grid and Grid-Connected Renewable Energy	World Bank	9100000.00
5	GEDAP: Off-Grid Electrification with Rural Bank Credit Facility	World Bank	10900000.00
6	Capacity for Successful Implementation of RE Act and EndeV	German Government	2298227.25
8	Urban Solar Street lighting Project	China	1291280.72
11	Capacity for RE Development & Promotion	World Bank/ Gov. of China	4500000.00
12	715kW grid-connect solar PV at Noguchi	JICA	7800000.00
13	VRA 12MW Solar Farm	KfW	34560540.00
14	SE4ALL Project		NA
Total			**80,696,472.97**

ANNEX 5

SREP INVESTMENT PLAN OUTLINE

I. Proposal Summary (2 pages)

- Objectives
- Expected outcomes
- Program criteria, priorities and budget

II. Country Context (3-4 pages)

- Energy sector description (market structure, demand supply, and dispatch composition, electricity cost and pricing) incl. renewable energy status
- Gap/barrier analysis; needs assessment

III. Renewable Energy Sector Context (3-4 pages)

- Analysis of RE options (technology, cost, mitigation potential, barriers)
- Government plans or strategy for the sector (willingness to move towards renewable energy investments, existing or envisioned policy, regulation, plans, and resource allocation)
- Institutional structure and capacity (technical, operational, financial, equipment supply, information)
- Role of private sector and leverage of resources
- Ongoing/planned investment by other development partners

IV. Contribution to National Energy Roadmap (2 pages)

- Likely development impacts and co-benefits of SREP investment
- How SREP investment will initiate a process leading towards transformational low carbon growth

V. Program Description (6-8 pages)

- Capacity building and advisory services
- Investment preparation activities
- Technology deployment investments
- Parallel activities to be funded by other development partners
- Environmental, social and gender co-benefits

VI. Financing Plan and Instruments (3-4 pages)

- Budget envelop for investments
- Costs and sources of funding
- SREP assistance (grant, concessional debt, etc.)
- Recipients of funding

VI. Additional Development Activities (2-3 pages)

- Leverage complementary co-financing with other development partners such as bilateral, private sector, and financial institutions

VII. Implementation Potential with Risk Assessment (2 pages)

- Country/regional risks - institutional, technology, environmental, social, financial
- Absorptive capacity for SREP and leveraged resources

VIII. Monitoring and Evaluation (1/2 page)

- Results framework table

Annexes

Information should be included in annexes on the following areas:

- assessment of country's absorptive capacity
- stakeholder consultations
- co benefits
- existing activities in the field of renewable energy, particularly activities of other development partners

For each Investment Plan component, an investment concept brief (maximum two pages) should be provided as annex that includes:

- Problem statement (1-2 paragraphs)
- Proposed contribution to initiating transformation (1-2 paragraphs)
- Implementation readiness (1-2 paragraphs)
- Rationale for SREP financing (1-2 paragraphs)
- Results indicators
- Financing plan
- Project preparation timetable
- Requests, if any, for investment preparation funding

ANNEX 6

Draft Table of Key Barriers which Impede the Development of RE in Ghana

Key Barrier	Main barriers and constraints hampering the development of RE in Ghana	Measures taken so far	Additional measures to which SREP activities may contribute
	General		
Cultural constraints	Many rural communities still regard renewable energy an inferior forms of energy	Sensitization and awareness creation by MoEP through various projects including JICA, GEDAP/WB/ARB Apex Bank, Elecnor, etc.	Finance extensive rebranding, strategizing and planning
	Institutional, regulatory and legal constraints		
Missing Master Plan	Renewable Energy Master Plan to design specific actions to put the Renewable Energy Act into implementation	Renewable energy directorate has been set-up at the Ministry of Energy and Petroleum to implement the Renewable Energy Act	Finance the preparation of a Renewable Energy Master Plan
Renewable Energy Fund without resource	Renewable Energy Fund (REF) is yet to be resourced and detailed strategies to mobilize the necessary funding are yet to be defined.	Framework for the development and implementation of REF developed with support from EU.	Provide some seed capital for the REF
Renewable Energy Authority yet to be established	Renewable Energy Authority (REA), necessary to form partnerships with private operators for PPP implementations, is yet to be established	The AfDB is providing technical assistance under a new project for the power sector in Ghana. However, the financing agreements for this project are yet to be effective.	Provide some technical assistance for the establishment of the REA
Financial situation of the power sector	Serious challenges related to the financial solvency of the power sector (the generation, transmission and distribution utilities), is hampering the involvement of the private sector in the renewable energy sector	MCC is implementing a major program, which is expected to bring private participation into the sector, particular at the distribution level. This is expected to result in a better technical and financial performance.	
	Technical constraints		
High technology risk	High risk due to less mature technology / risky activities	MoEP supporting Ghana Standards Authority and the KNUST TEC Centre to develop capacities for the authentication of RETs	Provide concessional financing for the risky activities, which are unattractive for private investors.
Inefficient operation and maintenance	Inefficiency in the operation and maintenance of complex technology machinery and equipment	MoEP and the Chinese Government providing technical assistance to selected Polytechnics and technical/vocational institutions to build critical middle level manpower for the industry.	Provide capacity building assistance to relevant agencies for the operation and maintenance of renewable energy technology.

Key Barrier	Main barriers and constraints hampering the development of RE in Ghana	Measures taken so far	Additional measures to which SREP activities may contribute
Climate Change	Highly susceptible to climate changes	Mitigation and adaptation measures are being put in place against climate change	Provide concessional financing for developing and implementing a climate change mitigation and adaptation plan
	Economic and financial constraints		
High Cost	High initial investment cost of renewable energy development due to expensive technology which makes such investments unattractive	Cost of technology is coming down for some technologies such as solar	Provide concessional financing to lower the investment cost and make these investments bankable
Limited access to credit	Inability of small and medium enterprises (SMEs) to obtain credit or loans with acceptable terms to finance their investments in the sector	n/a	Provide concessional financing for commercial banks to blend with more commercial loans and ensure more friendly terms
Limited mitigation instruments	Financial sector does not have strong risk mitigating instruments such as partial risk guarantees (RPGs) and renewable energy payment agreements to provide the needed assurance	The African Development Bank and the World Bank are looking at providing PRGs to private investors in the power sector	Provide guarantees for private investor willing to invest in the renewable energy sector.
Limited knowledge of the industry	Need to equip the private sector and especially the financial sector with knowledge of the renewable energy industry	n/a	Provide capacity building assistance for the private sector and financial sector.