



## **SCOPING MISSION AIDE MEMOIRE**

### **SCALING-UP RENEWABLE ENERGY PROGRAM IN LOW INCOME COUNTRIES**

#### **SREP - TANZANIA**



**September 17 - 21, 2012**

## ***INTRODUCTION***

1. Tanzania is one of the pilot countries selected to benefit from the Scaling-Up Renewable Energy Programing Low Income Countries (SREP). SREP operates under the Strategic Climate Fund (SCF), which is part of 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. Multilateral Development Banks (MDBs) provide support to Governments in preparing and implementing their SREP Investment Plan. In the case of the SREP Tanzania, the African Development Bank (AfDB) and the World Bank Group (WBG), including the International Finance Corporation (IFC), jointly provide support to the Government, with the African Development Bank (AfDB) acting as the lead institution.

2. Under the leadership of the Government of Tanzania (GoT), the MDBs Scoping Mission visited Tanzania from September 17<sup>th</sup> – 21<sup>st</sup>, 2012, to launch, with the Government of Tanzania, development partners, civil society and private sector representatives, the process of preparing the SREP Investment Plan (IP). The Mission was led by the African Development Bank and included representatives from the World Bank and International Finance Corporation. The Mission's members are available in Annex 1.

3. The objectives of the Scoping Mission were to:

- ✓ introduce the key features of the SREP to the relevant government ministries, other development partners, and other key stakeholders who should interact with the GoT in the development of the IP and also during the upcoming Joint Mission.
- ✓ confirm with the GoT the contact ministry/agency or/and task force, responsible for preparing the Investment Plan;
- ✓ consolidate necessary documentation and hold preliminary consultations with key stakeholders;
- ✓ do an assessment of necessary technical assistance and resources required to develop the IP;
- ✓ prepare the TORs for the upcoming Joint Mission; and
- ✓ agree on next steps and on a detailed timeline for the preparation of the IP.

4. The Mission expresses its deep appreciation to the Government and all parties met (public institutions, civil society organizations, private sector representatives, development partners) for their interest in this program and the quality and transparency of the discussions. The mission held extensive discussions with the following stakeholders: Ministry of Energy and Minerals (MEM), Rural Energy Agency (REA), Energy and Water Utilities Regulatory Authority (EWURA) and Tanzania Electric Supply Company (TANESCO). Development Partners (DP) were the European Union (EU), Agence Française de Développement (AFD), Department for International Development (DFID), Norway, Sweden, United Nation Development Program (UNDP) and the Netherlands. Also participating in the consultations were representatives from the private sector, commercial banks, and Non-Government Organization NGOs. Annex 2 provides the names of the officials and stakeholders met during the mission.

5. The Mission would like to commend the very good work that the Government has done in preparing a draft SREP Investment Plan ahead of the mission. The interest and commitment of the Government for the SREP Program is fully acknowledged.

### ***MISSION ACTIVITIES***

6. The Mission was received by Mr. Ngosha S. Magonya, Commissioner of External Finance at the Ministry of Finance, and Mr. Edward Leonard Ishengoma Assistant Commissioner for Renewable Energy at the Ministry of Energy and Minerals; then it conducted several meetings with various stakeholders in accordance with its terms of reference.

7. In accordance with the ToR of the Scoping Mission, the following activities have been undertaken: (i) identification of relevant Government counterparts, development partners and stakeholders for SREP activities, (ii) hold initial consultations to discuss the objectives of the SREP program activities, its benefits and the modalities of its implementation in Tanzania to ensure a common understanding by all stakeholders, (iii) undertake a stocktaking of existing activities and documentation available on a range of analytical, strategic and programming activities related to renewable energy, which are important inputs to preparing the investment plan, (iv) agree on the scope of work, consulting services requirements and other support required for preparing the IP on a timely manner, (v) agree on the indicative level of financial support required from SREP for the GoT and the MDBs to prepare the Investment Plan, (vi) identify and agree with the GoT on the contact ministry/agency or/and task force, responsible for preparing the Investment Plan, (vii) agree on the scope and outline of the Investment Plan. Annex3givesthe Mission's program.

8. During the mission, the MDB team detailed the SREP objectives, the principles for SREP financing and approach towards developing the SREP Investment Plan to ensure that all parties has a common understanding of the priorities and the next steps. The mission confirmed that the SREP Sub-committee indicated availability of a funding range of 25-50 million to Tanzania that will be confirmed based on the preparation of a quality IP. The SREP investments should have transformative impacts and it is expected that SREP investments will leverage resources in the order of 1:4from commercial and MDB sources. Annex4provides more information on the Power Point Presentation of SREP that was made during the mission. The suggested outline of the SREP Investment Plan is given in Annex 5.

9. The Ministry of Energy and Minerals and the Rural Energy Agency presented the key elements of its draft Investment Plan; especially the key challenges of the sector, the opportunities for the development of renewable energy in Tanzania, the priority investments selected after some SREP criteria have been applied. The Mission provided guidance for improving this draft IP in the coming weeks (see following paragraphs for further details).

10. The key elements of this Aide Memoire were discussed at a wrap-up meeting chaired by the Permanent Secretariat the MEM, Mr. Eliakim C. Maswi, on September 20<sup>th</sup>, 2012 and on separate meeting on the same day with the Commissioner of External Finance Mr. Ngosha Magonya.

## **MISSION FINDINGS AND AGREEMENTS**

11. The main findings from mission discussions with representatives from the Government, private sector, civil society, and development partners are presented below.

**12. Institutional arrangements for preparing the IP.** The Ministry of Energy and Minerals confirmed Mr. Edward Leonard Ishengoma, Assistant Commissioner –for Renewable Energy at the Ministry of Energy and Minerals as the SREP National Focal Point. The contacts of the SREP National Focal Point are:

Tel. No. +255 22 2117156-9

Fax No. +255 22 2120799

Edward Ishengoma <e\_leonardishe@yahoo.co.uk>

13. The Ministry also confirmed that a multi-agency Task Force is being set up to prepare the SREP IP; details on the institutions and names of the task force members will be made available to the MDBs by the end of the month.

**14. Alignment of SREP with GoT Policy & Planning.** It was agreed that the SREP Investment Plan will be consistent with broader energy sector development plans. In particular, the SREP IP will describe how the SREP investments are aligned with the Power Sector Development Master Plan that is under review, and the Rural Electrification Prospectus that is under preparation. The SREP IP should be clear on how SREP can contribute to achieving the targets set for the energy sector in Tanzania (30% of access to electricity by 2015). The Rural Energy Prospectus which will be available in about April, 2013 expects, among others, to identify priority renewable energy investments to be implemented in the next ten years that contribute to increasing access. As the SREP IP precedes the Prospectus, it was agreed that the SREP IP will describe how it retains the flexibility to support priority investments that the Prospectus identifies.

**15. Donor coordination.** Development partners are well coordinated in Tanzania and have significant commitments for the energy sector ~1.5 trillion TZS (US\$ 1 billion), including renewable energy. Annex 6 provides summary information on DP-funded ongoing and planned renewable energy projects in Tanzania. The DP funding commitment for renewable energy is approximately US\$ 350 million (mission computation based on September 2012 USD conversion rate). The GoT and the DPs affirmed that there is a need for close coordination between SREP support and other support provided by DPs. The SREP is perceived by the donor group as an excellent opportunity to build on the existing donor coordination in the energy sector and leverage renewable energy investments. The DPs mentioned increased interest in geothermal energy, in line with GoT willingness to develop the geothermal potential of the country.

**16. Energy and economic development.** The long-term development strategy stated in the GoT Vision 2025 aims for transforming the country to middle-income country status by 2025 with a prospering economy and a high quality of life for its citizens. It acknowledges that access to affordable and clean energy is an essential requirement to achieve its vision. The GoT also recognizes that climate change could hamper achieving its development vision. While Tanzania is not a major emitter of global warming gases, as a responsible member of the global community, it envisions developing its energy sector in a globally responsible manner, and recognizing that the country is endowed with many renewable

resources that are technically and economically viable, should barriers to their development be removed.

**17. Development constraints.** The major challenges and bottlenecks to develop renewable energies in Tanzania and the mitigation measures that should be under taken were examined (Annex 7). Among these were renewable resource uncertainties, commercial risks including currency depreciation and payment risks, power off - taker risk, regulatory and policy uncertainties, lack of long term financing, limited experience among financial institutions in lending for renewable energy, technology quality and enforcement difficulties, limited human (sector institutions, private sector, commercial banks, etc.) and institutional capacities.

**18. Renewable resources.** The mission also obtained information on the principal renewable sources in Tanzania and adequacy and quality of data (Annex 8). Solar resources in Tanzania are excellent, there is good wind resources in certain areas and resource verification is ongoing, hydro potential is excellent though only a small portion is utilized (however, hydrological variability has been increasing), and biomass resources are extensive, though primarily used as cooking/heating fuel and little mobilized for commercial power generation. There are also concerns about deforestation linked to charcoal production and use of fuel wood.

**19. Role of the Private Sector.** Significant private sector engagement is essential for renewable energy development and obtaining SREP support. There is strong interest by the private sector in investing in renewable energy in Tanzania. Several companies are already investing and others are in various stages of project identification/development. However, for some reasons few commercial banks are financing or considering investing in renewable energy. The following was discussed about attracting participation of commercial banks in investing in renewable energy projects:

- ✓ There is a need for a clear pathway for the private sector in the development of larger scale up renewable energy in Tanzania. The private sector and commercial bankers consulted welcome a longer term strategy that outlines the role of the private sector and encouraged the GoT to address this requirement in energy development plans and policies.
- ✓ The representatives of the private sector acknowledged the usefulness of the Standardized Power Purchase Agreement with a tariff based on avoided cost principles in encouraging renewable energy investments. However, they recommended that EWURA consider a technology-specific feed-in-tariff rather than only the current avoided cost-based with a view towards increasing diversity of supply.
- ✓ The current financial situation of TANESCO creates downstream financing issues for the project developers as the ability of the off-taker to meet its payment obligations under a (Power Purchase Agreement) PPA is in some doubt. The government could explore setting up a risk guarantee to shore up the PPA commitments.
- ✓ Private operators mentioned the need for open access to data/information; also commercial banks have highlighted a need of technology cost/performance information to inform their investment. Also inadequate capacity of the off-taker to consistently absorb power generated by IPPs as well as grid instability needs to be addressed.

- ✓ There is a need for long term financing or guarantees or other instruments that can increase the pool of long term funds that are available.
- ✓ To facilitate the involvement of the private sector, it would be useful to undertake a resource mapping exercise establish/confirm the potential of the various RE sources. Some capacity building would be useful also for small private sector operators and local commercial banks in terms of renewable energy technical expertise, business management, financial modeling, economic and financial appraisal, planning and structuring.
- ✓ More information is available in Annex 9.

20. **Draft Investment Plan.** Ahead of the Scoping Mission, the GoT had done preparatory work in drafting the IP, with both MEM and REA each preparing a draft IP. A “joint” version of this IP was circulated to MDBs ahead of the mission. The MDBs commend the very good work that the Ministry of Energy and Minerals (including MEM and REA) has done in preparing the draft SREP Investment Plan ahead of the Scoping Mission. This is a good basis for discussion and the MDB will provide support in fine tuning the IP in the coming weeks/months.

21. This “joint” draft IP was presented to the MDBs on Tuesday September 18, 2012 by officials from MEM and REA, explaining the key challenges in the sector, the opportunities for RE development, and the priority investments foreseen as part of the SREP IP, after applying a screening process with some SREP criteria. The mission provided preliminary comments and the GoT will submit a revised draft IP that reflects this initial feedback. The mission agreed that the MDBs will provide comments and feedback on the revised consolidated draft IP in order to further fine-tune the IP in the coming weeks.

22. **Initial comments and recommendations from the MDBs** to improve the draft Investment Plan included the following:

- ✓ **Country Ownership of the IP:** The preparation of the IP should be done in a very participatory way. The IP is to be owned by the Government as a whole and should represent the views of the various national stakeholders for the development of renewable energy in the country. Therefore, it is important that various partners, including Government representatives, private sector, commercial and development banks, and Non-Governmental Organizations (NGOs) be invited to contribute to the discussion on the priority investments. MDBs recommend that a consolidated version of the IP, including inputs from MEM, REA, TANESCO, EWURA and other Government representatives (forming the SREP National Task Force) be prepared in the coming weeks for submission to public consultations as part of the upcoming Joint Mission.
- ✓ **Selection of the proposed investments:** The national team has begun to apply some of the SREP investment selection criteria to prioritize the class of investments to be proposed for SREP funding. MDBs recommend prioritization is based on all the SREP criteria as well as criteria which are country specific; the IP should include a table showing how all renewable energy options in the country (geothermal, wind, solar, biomass, etc.) are assessed against these criteria. This is to build the rationale for the proposed investments and select the most suitable interventions. As 50 million USD in SREP co-funding is not a large amount of funds, MDBs recommend that the MEM be very selective in the renewable energy interventions proposed for

SREP support. Rather than spreading these SREP funds thinly across a large number of renewable energy projects, just a few classes of projects should be proposed where SREP can really add value and be transformational. SREP could either scale-up RE initiatives that need additional financing in order to take off, or it could finance activities that would not otherwise been financed by private sector or other partners.

- ✓ **Opening the door for additional renewable energy investments:** If the “ranking” of RE investments is clearly done with the aforementioned criteria, this should provide room for other donors to contribute to investments that could not be supported by SREP. Also, since a “reserve” of SREP funds is available for SREP pilot countries to tap into (according to some conditions), the investments that are ranked a bit lower could be presented as additional projects to be funded with the “reserve”.
- ✓ **Private Sector:** The SREP expects that its funds be leveraged from other sources, especially commercial sources and MDB funds. It calls for a strong engagement of the private sector. Various financial instruments available from the MDBs can be considered to mobilize and leverage private sector financing (e.g., guarantee, debt, subsidy, quasi equity, etc.). SREP funding can be also used for public sector investments, for Public-Private Partnerships (PPP) and providing technical assistance to project developers. The Task Force is encouraged to also consider other ways of leveraging private sector investments, such as further improving the policy and regulatory environment, availing RE resources and opportunities, streamlining transactions and approvals, and increasing transparency in decision-making. These will give clear and consistent messages that private sector investment is welcome.

**23. Next steps for improving the draft IP.** The GoT and MDBs jointly agreed that the following steps would be followed in the coming weeks in order to improve the IP:

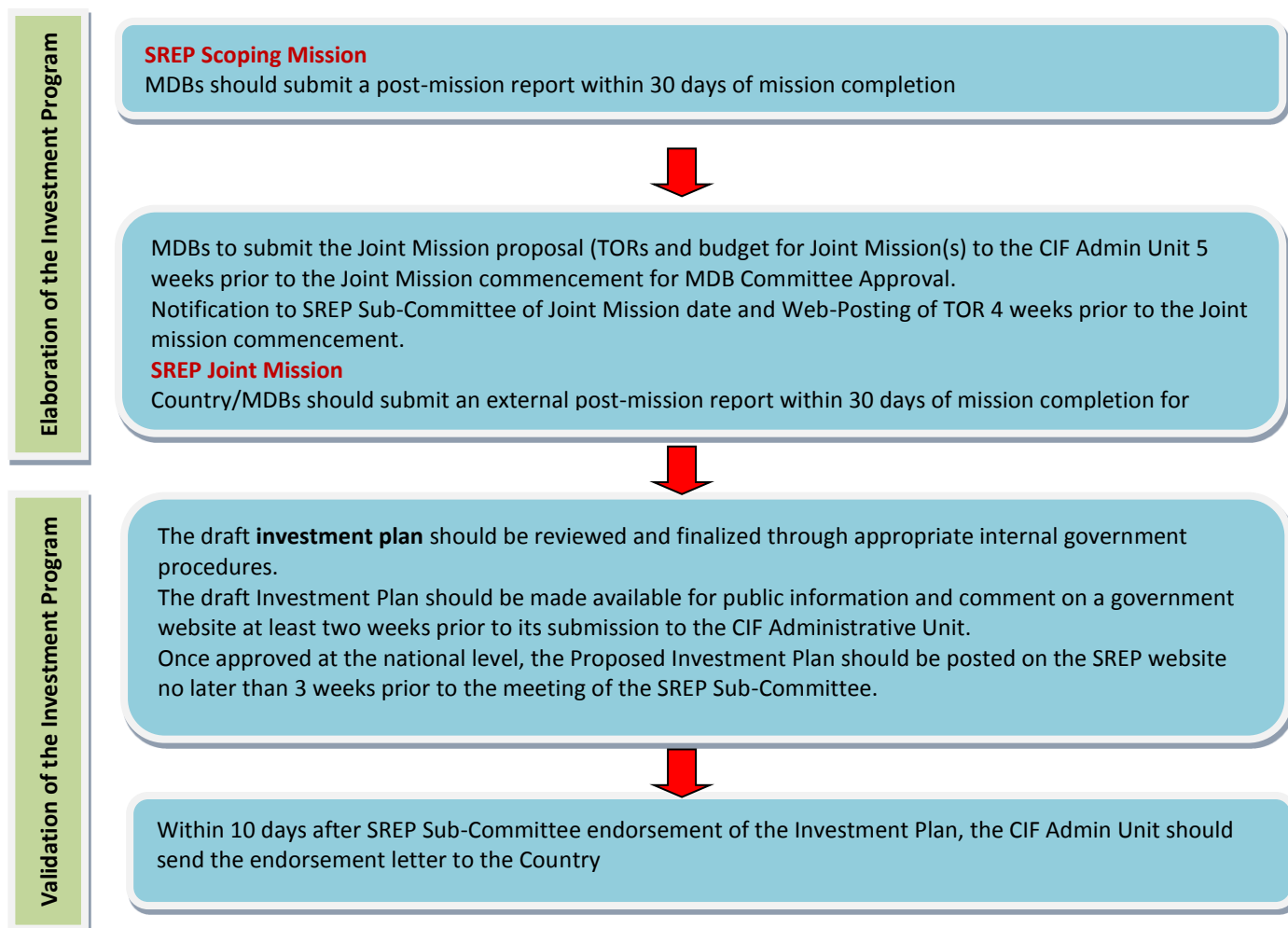
- ✓ The GoT will work on consolidating a joint IP, including inputs from the various members of the Task Force;
- ✓ The MDB will provide written comments on this consolidated version in addition to the comments provided during the Scoping Mission;
- ✓ The GoT will improve the IP on the basis of MDBs comments and this version will be used for consultations during the Joint Mission;
- ✓ MDBs will provide additional support to finalize the IP after the Joint Mission.

**24. Preparation Grant:** The Government indicated that SREP funding should be used for investments projects only; the Government will provide the necessary resources to prepare the IP. No advance grant is required for preparation.

**25. SREP Sub Committee Meeting in Turkey.** At the next SREP Sub-Committee meeting in Turkey in late October, the Tanzania representatives wish to give an update on the SREP IP preparation. The GoT kindly requested the CIF Administrative Unit and SREP Sub-Committee to plan for an initial presentation of the Tanzania IP for information. Tanzanian representatives will give an overview of the strategic approach Tanzania is taking; highlight some of the priority renewable energy interventions the Government is considering for SREP support; and the schedule for presenting the IP to the SREP Sub-Committee.

## WAY FORWARD AND ROADMAP FOR THE NEXT STEPS

26. The Mission discussed with GoT the roadmap leading to the submission of the Investment Plan to SREP Sub-Committee as soon as possible. The GoT is willing to submit the SREP IP in the coming months, taking into account key milestones that need to be achieved. Key milestones are as follows:



27. On this basis, the tentative timeline agreed with GoT for the finalization and submission of the IP is as follows:

Actions	By when (tentative)
TORs for the Joint Mission sent to the SREP Sub Committee	Early October 2012
SREP Sub Committee Meeting in Turkey	Late October
MDB Joint Mission and workshop to review the results of the first draft IP with key stakeholders	November 2012
Finalization of the draft IP	November 2012
Disclosure of IP for public consultations	Early December, 2012
Independent technical review of the IP	Early December, 2012
Revision of the IP based on comments received	Late December, 2012
MDB internal quality review of the IP	Mid-January, 2013
Submission of the IP to the SREP Sub-Committee	Late January, 2013



Actions	By when (tentative)
Endorsement by SREP Sub-Committee (to be confirmed)	Late February, 2013

**28. Preparation of the SREP Joint Mission:** On the basis of the aforementioned planning, the tentative date for the SREP Joint Mission in Tanzania would be around mid-November, depending on the progress done on the draft IP by the national task force. Therefore, the Joint Mission's draft TORs will be developed jointly by SREP national focal point and the MDBs by early October 2012. Annex 10 shows the Guidelines of the Joint Mission ToR.

## **Annex 1: Mission Members**

### **African Development Bank (AfDB)**

1	AlemayehuWubeshet-Zegeye	Chief Power Engineer, Task Manager
2	Florence Richard,	Senior Climate Change Specialist
3	Stella Mandago	Senior Energy Officer
4	Anil Cabraal,	Senior Consultant in Renewable Energy

### **World Bank (WB)**

1	Dana Rysankova	Senior Energy Specialist
2	Anders Pedersen	Renewable Energy Specialist
3	Gevorg Sargsyan	SREP-CTF Coordinator
4	Raluca Golumbeanu	Operations Officer

### **International Finance Corporation (IFC)**

1	Itotia Njagi	Program Manager, Lighting Africa Advisory Services
2	Murefu Barasa	Senior Consultant

### **Representatives of the Members from the SREP Sub-Committee**

Frank Van der Vleuten, Ministry of Foreign Affairs, Netherlands  
SionMc Geever, DFID  
Angus Miller, DFID

## Annex 2: List of Stakeholders Met

Last Name	First Name	Contacts
Maswi	Eliakim	Permanent Secretary - MEM
Mwakaheshya	Lutengano	Director General - REA
Magonya	Ngosha	Commissioner External Financing - MoF
Burette	Jerome	Ass Commissioner - MoF
Ishengoma	Edward Leonard	Ass Commissioner - Renewable Energy
Andilile	James	Commissioner - Energy Development - MEM
Mgejwa	Ngereja	Geologist MEM-
Mayalla	Jacob	Principal Geologist - MEM
Mkumbo	Elineema	Ag. Manager Project Identification and Promotion - REA
Uisso	Justina	Manager Project Appraisal and Supervision - REA
Gissima	Nyamo-hanga	Ag. Manager Technical Assistance - REA
Jovin	Johannes	AfDB Desk Officer - MoF
Luteganya	Rwabangi	Manager investment - TANESCO
Mkumbo	Richard	Director, Policy and planning - MEM
Sima	John	AfDB Desk Officer - MoF
Kiwele	Paul	Biofuel Project Coordinator - MoEM
Mbwambo	Mathew	Manager Electricity - EWURA
Mbawala	Eng. Anastas P.	Director Electricity - EWURA

### Development Partners

Last Name	First Name	Institution
Mcha	Theresia	Dutch Embassy
Ngusaru	Amani	UNDP
Azzoni	Gianluca	European Union
Hermansen	Geir	Norwegian Embassy
Thorsen	Herman	Norwegian Embassy
Bobillier	Baptiste	European Union
Muvune	Dennis	AFD
Fayadh	Samer	Embassy of Sweden

### Private Sector & NGO Representatives

Last Name	First Name	Contacts
Petterson	Bo	Sweco
Andersson	Leif	Sweco
Ekdahl	Anna	Sweco
Mwamanga	Acoys	TCCIA
Ford	Christopher	Songas
Rousset	Julien	TPC
Winkler	Klaus	TAREA
Msigwa	Godwin	TAREA
Peera	Sherif	Stanbic Bank - TZ

Mgimwa	Godfrey	Stanbic Bank -TZ
Nkuba	Francis	Mkonge Energy Systems-Katani Ltd.
Dansian	Kolimba	NBC
Steemers	Pepya	Voltzon
Divecha	Hitesh	Symbion
Cescon	Gianluca	Devergy

### Annex 3: SREP Scoping Mission Program

Date	Time	Activity	Responsible/Place
Monday	08:30 am	- MDB's Internal Meeting	MDBs / AfDB Country office
	02:00 pm	- Meeting with Ministry of Energy and Minerals (MEM , REA) : Presentation of SREP Modalities	MDBs/REA/MEM AfDB office
	04:30 pm	- Kick-off Meeting with Ministry of Energy and Minerals (MEM)	MEM , REA, TANESCO, MDB's, (MEM office)
Tuesday	08:00 am	- Kick-off Meeting with Ministry of Finance (MoF)	MoF, MDBs/ MoF office
	09:00 am	- Meeting with Development Partners	MDBs /AfDB Office
	10:00 am	- Meeting with the Ministry of Energy and Minerals /TANESCO /REA to discuss the Energy Sector Issues and Opportunities	MDBs, MEM - REA – Tanesco / AfDB office
	02:00 pm	- Team 1: Follow up meeting with lead development partner	MDBs/Sweden
	02:00 pm	- Team 2: Draft Aide mémoire	MDBs - AfDB Country office
	04 :00 pm	- Team 1: Follow up meeting with national team on key barriers/challenges for RE in the country	MDBs – REA / REA Office
Wednesday	08:30 am	- Meeting with Private Sector , Commercial Banks and NGOs	AfDB Country office
	2:00pm	- Team 1: Inception meeting for the Rural Electrification Prospectus project	MDBs – REA / REA
	2:00pm	- Team 2: Draft Aide mémoire and discussion on Joint Mission key elements to be shared with GoT	MDBs - AfDB Country office
Thursday	11:30 am	- Wrap Up Meeting with PS MoEM	MDBs/ MEM
	03:30 pm	- Wrap Up Meeting with Commissioner at External Finance	MDBs/MoF
	04:30 pm	- Finalisation of the Aide Mémoire on the basis of the discussion held with PS MEM	MDBs - AfDB Country office
Friday	11:30 am	- Meeting with the Regulator	MDBs/MEM
	02:00 pm	- Closing meeting with the SREP National Focal Point on the content of the Aide Mémoire	MEM Office

**Annex 4: Presentation of SREP**

# CLIMATE INVESTMENT FUNDS

## Scaling Up Renewable Energy Program in Low Income Countries (SREP)

### Scoping Mission

**Tanzania**  
September 2012



1

## Structure and Funding CIF

<p><b>Clean Technology Fund</b></p> <p>Finance scaled-up demonstration, deployment and transfer of <i>low carbon technologies</i></p>	<p><b>Strategic Climate Fund</b></p> <p><i>Targeted programs with dedicated funding to pilot new approaches with potential for scaling up</i></p>		
<p><b>Investment Plans</b></p> <ul style="list-style-type: none"> <li>Support country and regional development strategies</li> <li>Optimize blending with MDB financing and other sources, including bilateral programs</li> <li>Range of financial products to stimulate private sector engagement</li> </ul> <p style="background-color: #0056b3; color: white; text-align: center; padding: 5px;"><b>±\$4.8 billion</b></p>	<p><b>Pilot Program for Climate Resilience (PPCR)</b></p> <p>Mainstream climate resilience into core development planning</p> <p style="text-align: center;"><b>\$1.2 billion</b></p>	<p><b>Forest Investment Program (FIP)</b></p> <p>Reduce emissions from deforestation and forest degradation</p> <p style="text-align: center;"><b>\$639 million</b></p>	<p><b>Scaling Up Renewable Energy in Low Income Countries (SREP)</b></p> <p>Create economic opportunities and increase energy access through renewables</p> <p style="text-align: center;"><b>\$394 million</b></p>
	<b>±\$ 2.2 billion</b>		

2

# Scaling Up Renewable Energy Program in Low Income Countries (SREP)

CIF

## Purpose

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

## Scale

\$394 million in pledges for significant programs of capacity building and investments in renewable energy

## Governance

### SREP Sub-Committee:

- 6 donors countries: Japan/Republic of Korea, Netherlands, Norway/Spain, Switzerland/Denmark, United Kingdom/Australia, United States
- 6 recipient countries: Armenia, Ethiopia, Honduras, Kenya, Nepal, Yemen

Observers : civil society (x4), Indigenous Peoples (x2), private sector (x2), GEF, UNDP, UNEP, UNFCCC

Contributor	Contribution Type	Contribution in million USD eq. (as of March 31, 2012)
Australia	Grant	10
Denmark	Grant	12
Japan	Grant	43
Korea	Grant	6
Netherlands	Grant	76
Norway	Grant	32
Spain	Grant	4
Switzerland	Grant	20
United Kingdom	Capital	119
United States	Grant	30
		<b>394</b>

3

# 'First Batch' Pilot Countries

CIF

## Investment Plans – 'original' Pilot Countries

Country	Endorsed by SREP Sub-Committee	SREP Funding (\$ million)	Total Funding (SREP+Others) (\$ million)	Type of Activities
Kenya	Sep'11	50 *	468	Geothermal, Hybrid Mini-Grid Systems (Solar, Wind)
Honduras	Nov' 11	30 *	273	Strengthening RE Policy and Institutional Framework, RET (TBD) - cook stoves
Mali	Nov' 11	40 **	258	Solar PV, Hybrid Systems (Biofuel, Solar), Mini/Micro Hydro
Nepal	Nov' 11	40 **	514	Small Hydro, Mini and Micro Hydro, Solar, Biogas
Ethiopia	Mar' 12	50 **	496	Geothermal, Wind
Maldives	Nov '12 (tentative)	30 **	TBD	Biomass, Solar PV, Wind, TA/Capacity Building
* Up to 70% Grants, remaining 30% from Capital contributions				
** Up to 100% Grants, except for Private Sector projects which could draw at least \$5 million from Capital contributions				

4

## 'Second Batch' Pilot Countries

CIF

### Prioritization and Tentative Funding for 'Waitlisted' Pilot Countries

Priority Order	Country/Regional Investment Plan	Tentative SREP Funding
1	Tanzania (funding already secured)	Up to \$50 million
2	Liberia	Up to \$50 million
3	Yemen	Up to \$40 million
4	Armenia	Up to \$40 million
5	Pacific Regional Program (Solomon Islands, Vanuatu)	Up to \$30 million
6	Mongolia	Up to \$30 million

5

## Types of Activities

CIF

SREP investment plans should be designed to support a country-level programmatic approach to scaling up renewable energy. An emphasis should be put on the long term transformative outcomes and successful market transformation rather than individual investments or activities.

### Investments

Eligible Investments:

- Solar, wind, bio energy, geothermal, small-hydro (<10MW)
- Electricity and thermal
- On-grid, Off-grid, Mini-grid

### Capacity Building & Advisory Services

- Development of energy policies and legislation
- Assessment of technical resources potential
- Strengthening governance and institutional capacity
- Creation of incentive scheme to improve financial viability of RETs

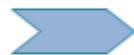
6



- Partnership among Multilateral Development Banks (AfDB, ADB, EBRD, IDB, and WBG)
- Demonstrate scale and transformation
- Multi-stakeholder at governance and country levels
- Leverage public and private sector
- Complementarity with other partners at the country level

7

### Phase 1



Pre-investment activities to support the development of an investment plan and associated advisory services.

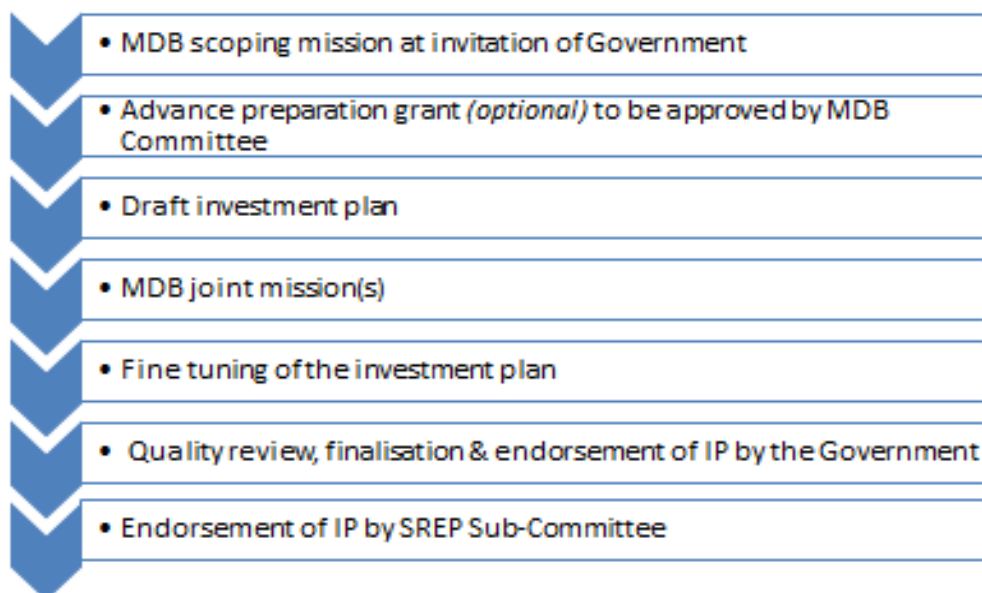
### Phase 2



Implementation of investment plan, under which the investments will be prepared and implemented in accordance with the endorsed investment plan.

## Phase 1: Pre-Investment

CIF



## Key Elements Investment Plan

CIF

- Country context (sector description, needs assessment, barrier analysis)
- Renewable energy sector context (Government plans, ongoing activities, analysis of options, institutional structure and capacity)
- Proposed program description (justification of specific investment, technical assistance requirements)
- Co-financing, leverage, partnership
- Primary and co-benefits
- Transformational impact
- Budget envelop, recipients, implementation arrangements
- Risk assessment
- Results framework
- Investment concept brief for each component to be financed by SREP

10

Projects and Investments should address the following criteria:

- Increased installed capacity from renewable energy sources
- Increased access to energy through renewable energy sources
- Low Emission Development
- Affordability and competitiveness of renewable sources
- Productive use of energy
- Economic, social and environmental development impact
- Economic and financial viability
- Leveraging additional resources
- Gender
- Co-benefits of renewable energy scale up

11

- National measure of “energy poverty” such as the Multi-dimensional Energy Poverty Index (MEPI), or some equivalent mutually agreed measure
- Annual electricity output from RE in GWh
- Annual electricity output from RE as a result of SREP interventions (GWh)
- Number of women and men, community services and businesses benefiting from improved access to electricity and fuels as a result of SREP interventions
- Leverage factor: SREP funding compared to \$ financing from other sources (contributions from MDBs, governments, multilaterals and bilaterals, CSOs, private sector)

12

## SREP Quality Assurance & Endorsement

CIF

- Draft Investment Plan disclosed for public consultations on a government website (2 weeks prior to its finalization)
- External independent expert review + review by MDBs + Approval by the Government
- The Government SREP focal point send the final IP to the CIF Administrative Unit (3 weeks prior the sub-committee meeting)
- Approval by SREP Sub-Committee

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## Scoping Mission Objective

CIF

- Identify relevant government counterparts, development partners and stakeholders, and inform them about the objectives of the SREP program activities, its benefits and the modalities of its implementation;
- Undertake a stocktaking of existing activities and documentation available;
- Agree on the scope of work, consulting services requirements and other support required for preparing the IP on a timely manner;
- Agree on the indicative level of financial support required from SREP for the GoT and the MDBs to prepare the Investment Plan;
- Identify and agree with the GoT on the contact ministry/agency or/and task force, responsible for preparing the Investment Plan;
- Agree on the Terms of Reference for the next Joint Mission.

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❑ **Initial preparation for Country-led Joint Missions**

- i. Joint mission TOR to include composition, budget, contacts, schedule, division of labor
- ii. MDB Committee approves TOR/budget
- iii. CIF Administrative Unit notifies SREP Sub-Committee and posts information on website 4 weeks prior to mission

❑ **Request for Advance Preparation Grant**

After the Scoping Mission, Government may request an advance preparation grant of up to \$375,000 for early preparatory work. Request submitted to CIF Administrative Unit for MDB Committee approval.

<http://www.climateinvestmentfunds.org/cif/srep>

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## THANK YOU!

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## **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: Current and Near-Term Donor Partner-supported Renewable Energy Projects

Projects	Implementing Agency	Objectives	Amount	Components and/or Results and Achievements Enhanced Up to August 2012	Linkages with SREP	Development Partner Supporting GoM	Date
Clusters PV Project	CAMCO	15,000 solar home systems financed through associations' members in Lake Victoria Region with microfinancing through local banks and with subsidy from REA (TEDAP).	Euro 950k	Approaching the end of year one, Project currently working with nine Cluster groups. Tenders for the SHS for the first three groups have been awarded and contract negotiations underway.		EU	2011 to 2014
Up-Scaling Access to integrated modern energy services for poverty reduction		Improve energy productivity	Euro 2.3 million	Installation and commissioning of 50 Multi-Functional Platforms, 50 Productive Use Containers and 25 combined MFP and PUC in 100 villages in northern Tanzania		EU	2008 – 2013
Mwenga 3MW Hydro Power	Mufindi Tea Company Ltd.	Renewable energy-based rural electrification	Euro 7. 2 million	Construction and commissioning of a 3MW hydro power plant, transmission and distribution to surrounding rural communities	Model for SREP scale up	EU	2007 – 2012
Integrated Rural Electrification Planning in Tanzania	REA	Rural electrification planning methodology development	Euro 1 million	Formulation of a relevant Rural Electrification planning methodology through the use of modern and sustainable tools, capacity building for the target groups	Renewable energy projects identification for SREP support	EU	2011 – 2012
Yovi Hydro Power Project		Construction and commissioning of a 1MW hydro power plant on the Yovi River in Msolwa (Kilosa District), transmission and distribution to surrounding rural communities (min-grid)	Euro 4.2 million			EU	2011 – 2014



Sustainable Community-Based Hydro Power Supply in 6 villages of Ludewa District		Upgrading of the existing Mawengi micro hydro plant and mini-grid extension to surrounding communities	Euro 1.8 million		Model for SREP scale up	EU	2011 – 2014
Increasing access to modern energy services in Ikondo Ward		Upgrading of the existing Ikondo micro hydro plant and mini-grid extension to surrounding communities	Euro 1.8 million			EU	2011 – 2015
Introducing a new concept for affordable biogas system		Private sector development and market extension in order to reach at least 10,000 rural households for affordable and locally made new concept of plastic biodigester	Euro 1.5 million			EU	2011-2015
Best Ray Project	Oikos East Africa, Italian NGO (Matteo Leonardi, project manager)	Solar panels are to be installed in all primary and secondary schools in Oldonyo Sambu and Ngarenanyuki wards in Arumeru district to promote the use of renewable sources of energy	Euro 1.5 million	?	Review experience on approach, links to REA efforts as lessons for SREP	EC	~2010
Masigira hydropower	TANESCO	Feasibility Study	NORK 7 million	Procurement		Norway	
Operation and Maintenance	TANESCO	Operation and Maintenance at existing Hydropower generation	NORK 60 million	Not started		Norway	Approved
Kihansi minihydro	TANESCO	Construction of mini hydro	NORK 15 million	Not started		Norway	Proposed
Pinyiny small hydro	TANESCO	Construction of mini hydro		Not started		Norway	Proposed
Energy Small and Medium Enterprises	GVEP International in partnership with REA	Pre-investment support for six mini-hydro projects six projects with a combined capacity of ~ 7.5 MW in regions of Mbeya, Iringa, Ruvuma, Arusha and Kigoma. Most are isolated mini-grids not connected to the main	US\$ XX million from Russian Federation via a World Bank Trust Fund	Six projects identified from long list of 2 and feasibility studies underway.	Approach could be replicable for project development. Financing for projects	Russian Federation (World Bank managed Trust Fund)	2010-?

		electricity network.			prepared with ESME support		
Business development services for solar companies in 16 regions	CAMCO	Technical and marketing training for solar retailers, technicians and vocational school instructors); marketing and awareness, networking among solar industry stakeholders; and policy and institutional support for the implementation of national quality control standards. Support for the strengthening of the Tanzanian Renewable Energy Association (TAREA)	USD 3.2 million	Builds on similar project conducted in Mwanza from 2004-2009, the Project was completed in 2011 (after six years). Over the period the national PV market grew from 100kWp to over 2MW. Over 150 new retailers established and an equal number of rural technicians trained. Tanzanian Renewable Energy Association (TAREA) strengthened, and the Tanzanian Bureau of Standards (TBS) equipped and trained to control solar PV equipment quality.	Builds capacity that could be used for off grid solar scale up with SREP support.	SIDA	2005-2011
REF	REA	Rural Energy Fund support	SEK 203 million			SIDA	2010 - 2014
Capacity building	REA	Capacity Development to REA	SEK 28 million			SIDA	2010 – 2014
WB Trust Fund	REA	Support to REA and rural energy	SEK 30 million			SIDA	To 2013
Ruhudji & Kakono Hydro	Tanesco	Hydropower studies	SEK 30 million			SIDA	2011 – 2012
Hale Hydropower	Tanesco	Rehabilitation of 21 MW Hale Hydro Power Plant in Tanga Region	SEK 160 million			SIDA	
Bio-fuel Project	MEM	Support in strengthening Policy, Legal, Regulatory and Institutional framework to the Development of a sustainable biofuels industry in Tanzania	SEK 13 million			SIDA	2009 – 2012
Mini-Grids Based on Mini/Micro-Hydropower Source to Augment Rural Electrification in Tanzania	UNIDO with REA	Develop nine mini hydropower projects with total capacity of 3.2MW to boost economic development activities in Ruvuma, Iringa, Mbeya and Rukwa regions. Establish centre of excellence for minihydro at the College of Engineering and Technology (CoET) of	US\$ 13 million with US\$ XX form GEF through UNIDO		Could be scaled up by SREP to increase access	United Nations Industrial Development Organization (UNIDO)	2012-16

		the University of Dar es Salaam.					
Malagarasi Hydropower	TANESCO	Malagarasi Hydropower Feasibility Study	US\$ 1.8 million	Implementation		US MCC	2010 to 2012
Kigoma Solar	REA with contractors CAMCO, Rex Investments	Kigoma Solar PV Program. Installation at 45 secondary schools, 10 health centers, 120 dispensaries, municipal buildings and businesses across 25 village market centers.. Also encourage households to install SHS.	US\$ 4.7 million	Contract awarded for supply and installation of PV systems for public/community facilities and program management	Part of REA Sustainable Solar Market Packages. Could be scaled up under SREP.	US MCC	2012 - 2013
Lighting Rural Tanzania 2009	REA	Competitive grant program to support private enterprises in developing and delivering a wide array of modern lighting products for rural households and businesses.	US \$0.982 million. 10 grants up to US\$100,000	In April 2010, a competition in Arusha, Tanzania, selected 10 recipients for implementation over 12 months. Awards made to private sector (including NGOs and community organizations). Subprojects demonstrated innovation and built local capacity in delivering energy services to rural areas in Tanzania, increasing the potential for replicability and scale up of these activities. . Based on the success of the activity, REA has raised funds and organize a second LRT. .	Model for expanding modern renewable energy lighting solutions. SREP could support successful business models scale up	World Bank	2010 - 2012
Lighting Rural Tanzania 2010	REA	Competitive grant program to support private enterprises in developing and delivering a wide array of modern lighting products for rural households and businesses. <ul style="list-style-type: none"> <li>• Increase access to modern lighting systems for households, schools and health centres.</li> <li>• Improve technology for production of low cost renewable energy products.</li> <li>• Bring to the market, products that are competitive in terms of price.</li> </ul>	Maximum grant per winner TZS 150 million Maximum 20 winners  US\$ 2 million	Continuation of the Lighting Rural Tanzania Competition (LRTC) program. WB-IFC Lighting Africa team will continue to advice REA based on its experience in other countries.	Model for expanding modern renewable energy lighting solutions.  SREP could support to successful business models scale up	World Bank	2012- 2014

		<ul style="list-style-type: none"> <li>• Build sustainable technical and commercial capabilities of rural energy entrepreneurs to operate and sustainably manage renewable energy systems.</li> <li>• Enhance project developers' competencies in preparing viable and bankable project proposals.</li> </ul>					
ARGEO	UNEP, World Bank	Promote the development of geothermal energy in the selected countries, including Tanzania. It is expected that this will add low-cost power generation capacity and increase the security of power supply. The global objective of the project is to facilitate reduction of green-house gas emissions in these countries.	Total project US\$ 136.6 million (?) for Djibouti, Eritrea, Ethiopia, Kenya, <u>Tanzania</u> , and Uganda. GEF grant: \$ 18 million (or 36?). co-financing of about \$ 41.5 million from KfW, Iceland, Italy, USA; and recipient countries, . Remainder from private sources.	<ol style="list-style-type: none"> <li>1. The creation of a Regional Network managing a geothermal information system and capacity building and awareness raising programs. (UNEP)</li> <li>2. A Risk Mitigation Fund will provide financial instruments to assist in mitigating the exploration and appraisal risks (World Bank).</li> <li>3. Technical Assistance, <ol style="list-style-type: none"> <li>a. Institutional and technical capacity building (UNEP)</li> <li>b. Risk Management Fund related activities (World Bank).</li> </ol> </li> </ol> <p>c) No country including Tanzania ( ARGEO member have already secured fund to assist in mitigating the exploration and appraisal risks</p>	If resource is confirmed, potential support from SREP for production wells and power generation	World Bank	2010 - 2015
Energy Small and Medium Enterprises (ESME) Trust Fund	REA	Provides green generation performance grants (in the value of future Carbon Emission Reductions) to support small renewable energy projects reach financial closure.	6.5 million from Russian Trust Fund executed by the World Bank	Grant approved this year. Several developers have expressed interest in this facility. The first transaction is expected to be for the 10 MW Mapembasi project	The facility could be supplemented by SREP funding taking into consideration the interest expressed by	World Bank	Dec 2010; to be extend-ed to 2014

					developers		
Singida Wind Power	Wind East Africa JV Telecoms, UK-based Aldwych International and Danish wind consultancy KenTec Denmark)	The proposed project consists of a 100 MW wind farm to be built, owned, and operated by Wind EA. This privately financed project will supply power into the Tanzanian national grid under a long term PPA with TANESCO. The wind farm will be constructed along the Rift Valley on a site located east of the town of Singida. The Project will include the construction of any necessary transmission line to connect the plant to the grid.	Total project cost US\$ 300 million. World Bank: US\$ 100 million PRG to cover commercial lenders against debt service payment defaults.	Decision Meeting scheduled for September 2013.	SREP partner financing	World Bank	2013 -
CDM Programme of Activity (PoA)	REA	To provide additional revenues to the small renewable energy projects (up to 10 MW) to fill the equity gap and reach financial closure	US\$ 10 million	REA submitted request to the World Bank to become a Seller Participant under CPF  Several projects submitted letters of interest to REA to register under the PoA that is expected to reduce their carbon finance transaction cost	Supports the development of small renewable energy projects that could be co-funded by SREP	World Bank, Carbon Partnership Facility (CPF)	
Tanzania Energy Access and Development Project	REA and MEM	Off grid component to support an institutional set-up for the newly established Rural Energy Agency (REA) and to develop and test new off grid electrification approaches for future scale-up.	US\$ 59.6 million. US\$ 16 million IDA. US\$ 6.5 million GEF	1. Standardized Power Purchase Agreement for renewable power to supply Tanesco main and minigrids. a. Tariffs, and SPPA implementation and guidelines issued by EWURA. b. Tanesco set up Small Power Project Office to facilitate project development. c. REA: Matching grants to support pre-feasibility for new projects. d. REA: US\$ 500/connection (max 80% of distribution cost) for mini-grid connections. e. Several projects operating or under construction (TPC, TanWatt,	Good regulatory framework, institutional capacity and strong project pipeline that could be developed with SREP cofunding.  SSMP and Clusters models could be scaled up for off-grid	World Bank, GEF	2007 to 2015

				<p>Mafia Island).</p> <p>f. Several mini-hydro and biomass power projects under development.</p> <p>g. Strong pipeline of projects</p> <p>2. Sustainable Solar Market Packages (SSMP) provide off grid solar electricity for public facilities and households.</p> <p>a. Four SSMP in Rukwa Region under implementation.</p> <p>b. New SSMP packages being prepared for eight more regions.</p> <p>3. Clusters Projects: Solar home systems for member of associations (coffee, tea, cashew,...) with financing through NMB/Stanbic</p> <p>4. Other TA includes low cost electrification methods, renewables financing training for bankers, project developers and sector institutions, wind resource assessment at 4 sites.</p>	solar electrification.		
Tanzania Energy Access and Development Additional Financing Project	REA and TIB	Credit line for financing renewable energy projects	US\$ 25 million IDA	Credit line overseen by REA and managed under trust arrangement by TIB. Commercial banks approved for on-lending funds: CRDB,, NMB, Azania Bank Limited, Twiga Bancorp First loan for Mwenge mini-hydro and minigrids approved and disbursing. The second mini-hydro project, Mapembasi is near financial closure.	Credit line facility can be used to provide SREP and other cofinancing for additional renewable energy investments	World Bank	2011 to 2015

CDM Projects	Tanzania DNA	Carbon emissions reductions		<p>1 Registered project: Landfill gas and Electricity generation at Mtoni dumpsite (202,271 CERs, 3.5MW annually)</p> <p>3 PINs (PIN = Project Idea Note) – given Letter of No Objection:</p> <ol style="list-style-type: none"> <li>1. Wind Energy project-Singida</li> <li>2. Energy efficiency project-TaTEDO</li> <li>3. Power generation from sisal biogas project- Katani Ltd.</li> </ol>	Additional revenues to improve viability of SREP supported projects		
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## Annex 7: Constraints to Renewable energy Development

Key Barrier	Main barriers and constraints hampering the development of RE in Tanzania	Strengths of the Sector and how far they got already	Additional “mitigation” measures to which SREP activities may contribute
<b>Institutional, regulatory and legal constraints</b>			
Planning uncertainties	<ul style="list-style-type: none"> <li>Uncertainty on the future direction of power sector hampers stakeholders’ investment planning.</li> <li>Lack of information on grid extension plans reduce incentive to develop mini-grid projects, including supply of renewable electricity to Tanesco isolated grid (those developing projects feeding mini-grids get higher tariff. One isolated grid connected to main grid, gets only lower main grid tariff)</li> <li>There is mismatch between renewable energy resource distribution relative to existing grid/load centers</li> </ul>	<ul style="list-style-type: none"> <li>MEM in final review phase of Power Sector Development Masterplan (due end 2012)</li> <li>REA launched National Rural Electrification Prospectus (due mid 2013)</li> </ul> <p>Both these should give greater clarity to energy development plans and opportunities for renewable energy.</p>	<ul style="list-style-type: none"> <li>Publicly issue Master Plan and Prospectus without delay.</li> <li>Recognizing the role for and incentivizing the ability of RE to contribute significant electricity quickly, to complement to the forthcoming national plan and prospectus.</li> <li>Need greater transparency and early notification by Tanesco as to grid network expansion plans.</li> </ul>
Pre-investment time is long	RE project approval process takes time and requires coordination and approvals from NEMC, TANESCO, REA (if project development and cofinancing support is needed), as well as financing mobilization.	Regulatory frameworks, legal agreements and tariff, implementation guidelines issued by Regulator EWURA and effectively administered. TANESCO has set up private power cell to facilitate support for small (up to 10 MW) renewable project approvals.	Further strengthening capacities of key institutions beyond that undertaken with TEDAP and related assistance
Quality is low	Solar market spoilage through poor quality and counterfeit products at very low prices flooding market. Consumers highly price sensitive. Market spoilage is happening.	Lighting Africa has engaged with Customs to inform them of quality requirements and to determine how to stop poor quality/mislabeled products entering markets. But border higher porous and nearly-impossible to stop such products entering market.	<ul style="list-style-type: none"> <li>Engage further with border controllers, with wholesalers, distributors and retailers and have expanded awareness programs launched in key target market areas</li> <li>Development of standards by Tanzania Bureau of Standards and regulations by EWURA Enforcement</li> </ul>




Key Barrier	Main barriers and constraints hampering the development of RE in Tanzania	Strengths of the Sector and how far they got already	Additional “mitigation” measures to which SREP activities may contribute
<b>Technical capacities and human capacities</b>			
Low human and institutional capacity	Technical, institutional and financial capacities are still relatively low.	<ul style="list-style-type: none"> <li>• REA has undertaken capacity building in the banking sector.</li> <li>• Tanesco supported in strengthening its private small power cell.</li> <li>• REA offering advisory services and cost shared (up to 80%) funding for pre-investment work.</li> <li>• SIDA and UNDP have supported solar training in several areas that have been very effective</li> <li>• Incorporating solar technology in VETA’S curriculum</li> </ul>	Initiate further and expanded systematic program aimed at building the capacities of all the stakeholders on issues related to RE to banking sector as well as product and service providers (information, project due diligence/appraisal, new financial instruments, awareness building, marketing, sales and repair)
Low human and institutional capacity	There is limited experience and expertise in country for undertaking feasibility studies, detailed designed, construction etc. Existing capacities of experts over stretched	<ul style="list-style-type: none"> <li>• REA offers cost shared support to developers to undertake feasibility and detailed engineering studies.</li> <li>• GVEP supporting the developing of 6 small hydro mini-grid projects.</li> <li>• GEF through UNIDO supporting the development of nine (9) small hydro mini – grid projects</li> <li>• Some developers setting up JV arrangements with foreign partners to fill expertise gap.</li> </ul>	<ul style="list-style-type: none"> <li>• Specialized training to building required experience in mini-hydro and biomass technologies.</li> <li>• Expand training through appropriate university and technical schools.</li> <li>• Support partnerships with international firms through South-South exchanges.</li> </ul>
Low human and institutional capacity	Off grid solar for public service facilities difficult to service/maintain due to limited technical capability in area, theft of modules and batteries from public facilities, users do not have adequate capacity to use/operate and do routine maintenance due to staff turnover.	REA has piloted with the “Sustainable Solar Market Packages” (SSMP) approach that issues supply and installation contracts to a large group of public facilities in a contiguous area, with incentives to sell/service SHS to public customers. Some signs of success but problems remain. REA preparing packages in seven other regions. Also incorporating solar technology in VETA’S curriculum	<ul style="list-style-type: none"> <li>• Future SSMP packages must be designed to overcome contract- and contract-performance problems.</li> <li>• Greater attention to contractor capability and less to “lowest cost” in contractor selection.</li> <li>• More effective methods of making SHS affordable to private customers.</li> </ul>
Renewable resource uncertainty	Renewable resource information of a quality and duration is lacking	<ul style="list-style-type: none"> <li>• Wind resource monitoring supported by REA in six areas.</li> <li>• Hydro resource data collection being undertaken by developers with cost-shared assistance from REA at specific project sites and assessment of Small hydro by MEM and TANESCO in 5 regions. Norway supporting more extensive hydro potential</li> </ul>	<ul style="list-style-type: none"> <li>• Expand resource monitoring to cover biomass and verify solar resources (currently depending on data from NASA, EU satellite-based sources).</li> <li>• More resources for hydro resource characterization for minigrids to feed mini-grids (Tanesco and private).</li> <li>• Expand geothermal resource assessment work.</li> </ul>

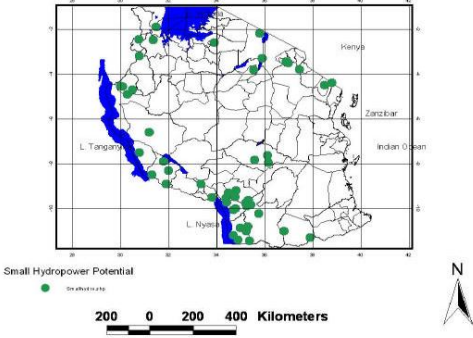
Key Barrier	Main barriers and constraints hampering the development of RE in Tanzania	Strengths of the Sector and how far they got already	Additional “mitigation” measures to which SREP activities may contribute
		characterization (but may focus on larger scale RE) Geothermal Power Tanzania given concession in Lake Ngozi and Rufiji and investing \$5 million in geotechnical, geological and drilling work. <ul style="list-style-type: none"> <li>• Surface exploration done at Lake Ngozi</li> <li>• Area special for energy crops to be identified in the country</li> </ul>	<ul style="list-style-type: none"> <li>• To support Agro – ecological zoning</li> </ul>
Renewable resource uncertainty	Climate change impacts increase variability of hydro flows (REA IP)	Afforestation efforts are underway.	
<b>Economic and financial context</b>			
High pre-investment and transaction costs	High cost of resource assessment and feasibility studies.	<ul style="list-style-type: none"> <li>• REA offering cost-shared support for pre-investment studies.</li> <li>• EWURA has issued guidelines for renewable project development up to 100MW</li> <li>• REA supporting wind resource assessment and mapping hydro resources.</li> <li>• REA offers cost shared funding for feasibility studies</li> </ul> Exploration concession awarded to Geothermal Power Tanzania Ltd.	Continue REA support programs.  Support expanded and well-designed geothermal resource assessment - Surface exploration and appraisal drilling  Default note have been issued to all geothermal licensees to make geothermal resource develop in a better way.
High capital cost renewable energy technology and development	<ul style="list-style-type: none"> <li>• Upfront investment costs of RE are high due to intrinsic capital intensity of technology.</li> <li>• High also due to limited number of projects, lack of competition, currency depreciation etc.</li> <li>• High transport costs due to long distances to sites.</li> <li>• Unduly long time for pre-investment, financial closure and construction include costs as well as increase IDC requirements</li> <li>• For grid connected projects including electricity distribution networks, customer connection costs are very high</li> </ul>	<ul style="list-style-type: none"> <li>• Designed incentive packages to promote private sector investments by zero rating import Duties and Taxes on equipment and accessories.</li> <li>• Annual budget allocation of approximately USD 625,000 to develop geothermal</li> <li>• Partnering with Development Partners in funding geothermal development</li> <li>• REA supporting better project designs through cost-shared pre-investment support encourages international partnerships.</li> <li>• REA offers \$500/connection (up to 80% of connection cost), to mini-grid developers.</li> <li>• Low cost rural electrification study underway, include</li> </ul>	<ul style="list-style-type: none"> <li>• Increased implementation scale can help reduce costs. In the case of geothermal, comprehensive geo-scientific investigations that precede test and production well drilling reduces risks of expensive dry wells.</li> <li>• Little can be done to overcome some constraints, but support to streamlining processes, especially pre-investment requirements, financial closure.</li> <li>• Support best practice through encouraging international partnerships.</li> <li>• If low cost electrification pilot successful, mainstream approaches emerging from low cost electrification study. For a limited time, support</li> </ul>

Key Barrier	Main barriers and constraints hampering the development of RE in Tanzania	Strengths of the Sector and how far they got already	Additional “mitigation” measures to which SREP activities may contribute
		pilot to demonstrate lower cost methods	connection subsidies to those adopting low cost methods.
Financing unavailability	Domestic banks require high equity share (40%) for investments and makes mobilizing project financing difficult and expensive.	Those requiring additional equity are bringing in foreign equity partners (e.g. green funds or other investors). Others getting local investors	<ul style="list-style-type: none"> <li>• Guarantee instruments to cover currency and other commercial risks that foreign equity partners may require.</li> <li>• Quasi equity facility</li> </ul>
Financing unavailability	Domestic banks mobilize only short term funds and so hesitant to lend long term. Limited or no long term financing available.	TEDAP has established a US\$22 million credit line. It offers long term financing to banks at AWDR plus a margin to cover forex risk. Introduction of the Green Energy Facility (REA)	<ul style="list-style-type: none"> <li>• Increase funding to credit line.</li> <li>• Encourage and facilitate international green funds and socially-oriented investors to invest in Tanzania’s renewable energy sector.</li> </ul>
Investment risk high	International private investors consider the energy sector in Tanzania a risky sector. Those who do come seek higher risk premiums which make projects financially unviable.	TEDAP credit line and World Bank engagement has helped attract international investors, but significant risks remain.	Provide greater guarantees and security to private investors and define conditions to improve public-private partnerships for utility scale projects, such as grid connected RE investments
Revenues inadequate	Off-grid solar electrification, though a thriving business in some areas is limited by affordability to higher income consumers.	<ul style="list-style-type: none"> <li>• REA and World Bank have funded pilot efforts to engage SACCOS to lend to solar, undertaken “Cluster” projects to aggregate SHS loans to association members (group lending), with some positive results, but too early to declare success.</li> <li>• GOT has removed all taxes and duties from SHS REA offers grants (\$2.5/Wp)</li> </ul>	<ul style="list-style-type: none"> <li>• Further engagement with banks and MFIs as well as large agricultural or mining operations, with appropriate incentives and training to engage in such credit schemes.</li> <li>• Mobilization of additional funding (grants) from development partners (to subsidize initial investment costs)</li> </ul>
Revenues inadequate	Renewable energy tariff, based on avoided cost is distorted by gas price subsidies, preventing otherwise economically viable renewables not being developed.	EWURA has established, and transparently and effectively manages the RE tariff setting process. But pricing is based on financial prices and not economic pricing.	<ul style="list-style-type: none"> <li>• Policy dialogue with GOT and EWURA on a pricing formula to recognize true economic avoided costs. Consider pool of funds to cover payments for difference between economic and financial avoided cost as TANESCO should not bear that cost.</li> <li>• Consider technology-specific Feed in Tariffs (FiT) to support energy supply diversity.</li> </ul>

Revenues inadequate	CDM project prospects exist but progress slow to non-existent due to complexities of CDM process, lack of country capacity, small scale of projects and bureaucracy in Tanzania.	<ul style="list-style-type: none"> <li>• Several CDM training sessions held in Tanzania.</li> <li>• One project registered and 3 PINS prepared</li> <li>• REA submitted request to the World Bank to become a Seller Participant under CPF. Several projects submitted letters of interest to REA to register under the PoA</li> </ul>	<ul style="list-style-type: none"> <li>• Greater proactivity and effectivity of DNA required</li> <li>• REA to be approved as Seller participant in PoA</li> </ul>
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## Annex 8: Renewable Energy Resources in Tanzania

Renewable Energy Sources	What type of Mapping is available?	Key Mapping Data (Zones and potential in terms of MW)	If not available, is there any mapping planned to be done shortly?	Sources where information is available
Geothermal	Identified through surface manifestations except at Lake Ngozi – Songwe Mbeya region where detailed geological, geophysical, and geochemical studies done ) (June 2006-July 2007 and July 2010).	<p>According to GoT sources, potential is more than 650MW. More than 50 potential geothermal sites are identified along the Rift Valley, Lake ngozi (Songwe), Lake Natron (Manyara), Luhoi (coast region) and Kisaki ranked as first four.</p> <p>Geothermal potential areas in Tanzania are divided into four zones; this is due to two arms of rift formation (eastern and western rift)</p> <p>The Lake Ngozi – Songwe potential ~100MWe.</p>	Geothermal Power Tanzania Ltd. granted prospecting licenses for geothermal exploration in the Mbeya area and Rufiji. Announced plans in May 2012 to invest \$5 million in geotechnical, geological and drilling work. Contracting a dedicated geothermal drilling rig with capacity to drill to 2.5 km. Expects drilling to commence at end 2012. Main target: geothermal reservoir at the Ngozi volcano ~100MWe.	MEM, Geological Survey of Tanzania, Federal Institute for Geosciences and Natural Resources (BGR) of Germany and TANESCO.  SWECO – Swedish company based in Sweden
Solar	Meteorology and solar radiation for NASA SSE from the NASA satellite and re-analysis research programs. Parameters based upon the solar and/or meteorology data were derived and validated based on recommendations from partners in the energy industry. PV system sizing based on solar radiation maps available from EC JRC (less useful than NASA for planning and system design)	<p>Tanzania is situated in the solar belt with high levels of solar energy with global radiation of 4-7kWh/m<sup>2</sup>day (REA).</p>  <p>Figure 1 Solar Radiation – 2250-2750 kWh/m<sup>2</sup>/year (EC-JRC PVGIS)</p>		<p>NASA Surface meteorology and Solar Energy <a href="http://data.nasa.gov/surface-meteorology-and-solar-energy/">http://data.nasa.gov/surface-meteorology-and-solar-energy/</a></p> <p>European Commission, Joint Research Centre, Photovoltaic Geographical Information System - Interactive Maps <a href="http://re.jrc.ec.europa.eu/pvgis/apps4/pvest.php?map=af-rica">http://re.jrc.ec.europa.eu/pvgis/apps4/pvest.php?map=af-rica</a></p>

Hydro - Large		<p>Large hydro potential about 4700MW., only 12 % exploited. Increased rainfall variability has led to unpredictability in output.</p> <p>Saiguran Loisulie reports “There is a general decrease of the amount of annual rainfall. The frequency of below average rainfall is generally going up. It is also evident that the severity of extreme weather events like dry and wet spells is intensifying. The predictability of seasonal weather patterns is becoming more challenging.”</p>	Norway-supported survey (	<p>TanESCO</p> <p>Saiguran Loisulie, Vulnerability of the Tanzanian Hydropower Production to Extreme Weather Events, Sokoine University of Agriculture, Faculty of Science Department of Physical Sciences, Morogoro. <a href="mailto:saiguran@suanet.ac.tz">saiguran@suanet.ac.tz</a>, +255 757 876603</p>
Hydro - Small	<p>TANESCO desk studies and fieldwork. New sites identified via topographical map reading of the standard 1:50,000 sheets. Reconnaissance studies of new potentials and confirmation of existing information are completed for Rukwa, Kagera and Ruvuma regions (2007). Also field studies were done 2007 in Iringa, Mbeya and Morogoro. The next will be Kigoma regions.</p>	<p>The assessed potential for small, mini and micro-hydro system (with capacities of less than 10 MW each) is 480MW. A survey by TANESCO identified 85 specific sites - 187 MW (TANESCO)</p>  <p><b>Figure 2 SHP Location (GTZ)</b></p>	<p>Norway supporting large hydro development survey and planning (check status!).</p> <p>REA supported by WB and GVEP funding feasibility studies for SHP based rural electrification and grid supply projects</p> <p>MEM and TANESCO is assessing small hydro potential in 7 regions and 5 regions already completed</p>	<p>TANESCO surveys. Kato T. Kabaka and Florence Gwang'ombe, Challenges in Small Hydropower Development in Tanzania: Rural Electrification Perspective, International Conference on Small Hydropower - Hydro Sri Lanka, 22-24 October 2007.</p> <p>GTZ, Tanzania's Small-Hydro Energy Market, 2009. Table 6 gives location of 56 SHP sites with estimated capacities, head, flow etc.</p> <p>REA SHP database gives more specific data on SHP sites.</p>

Biomass	Forest 35 million hectares are available	Biomass consumption estimated at 40 million m <sup>3</sup> of wood equivalent leading to clearing nearly 400,000 ha of forest annually.		MEM
Biomass – Point sources Industrial/ Power, MSW	Factory data, survey reports  MSW in major cities	<p>Biomass production estimated at more than 2 billion m<sup>3</sup> of solid wood/annum (2000). Largely from sugar, timber, paper, tannin, and sisal processing. TPC-Moshi, TANWAT, Sao Hill, Mtibwa, Kilombero and Kagera sugar factories, Mufindi Paper, etc.</p> <p><u>Sugar Industry</u>: Production in 2011 ~320,000 MT. 4-5 MT of bagasse/MT sugar. Bagasse production 1.5 million MT.</p> <p>AfDB funded 2004 study: <u>Sugar</u> (see update, above) <u>Sisal Industry</u>: 200,000 tons sisal waste <u>Coffee Curing</u>: Present production is 45,000 MT, to increase to 65,000 MT by 2010. About 20% of the gross weight is coffee husks, which are not utilized so far. There are plans to convert the husks into charcoal. <u>Rice Milling</u>: Annual rice production (2004) ~800,000 tons. <u>Forest/wood industry</u>: Slight surplus of wood biomass available (2004) for energy use will shifted into a deficit by 2020. Major potential at TANWATT, Saohill.</p> <p><u>MSW</u>: Kishimba estimates only about 10% of Dar es Salaam MSW ends up in landfills. Forecasts 4.7 million MT of urban MSW by 2015 with energy potential of 1200 GWh/year</p>		<p>M. A. Kishimba, The Potential of Energy From Sugar Cane Wastes in Tanzania, AFREPREN, October, 2000.</p> <p>DECON – SWECO – Inter-Consult, Tanzania Rural Electrification Study, for MEM and TANESCO, 2004, funded by AfDB</p> <p>M.A. Kishimba, Energy Recovery from Municipal Waste, Chemistry Department, University of Dar es Salaam</p> <p>Daily News Online Edition, <a href="http://dailynews.co.tz/index.php/biz/1459-sugar-production-potential-yet-to-be-fully-exploited">http://dailynews.co.tz/index.php/biz/1459-sugar-production-potential-yet-to-be-fully-exploited</a></p>

Biomass – Distributed	Research/survey data, REA	<p>Agricultural, municipal, and industrial wastes and residues, and animals waste ~ 15 million MT/annum. 17.5 million cattle, 12.5 million goats, 3.5 million sheep (1998 Census)</p> <p>1.1 million tons forest residues.</p> <p>Available nationwide as fuelwood, charcoal from forest resources for urban consumers (contributes to deforestation) and agricultural waste. Biomass contributes 80% of Tanzania’s final energy demand. Provides for more than 90 percent of rural household energy needs.</p>		
Wind	<p>Anemometer measurements.</p> <p>Also estimates based on satellite data available from NASA Surface meteorology and Solar Energy</p>	<p>Assessments in Kititimo (Singida) and Makambako (Iringa) areas. Average wind speed estimated 9.9 m/s at Kititimo and 8.9 m/s at Makambako (50m?).</p>	<p>REA supporting wind mapping in six areas: Makambako in Iringa region, Karatu in Arusha region, Mkumbara in Tanga region, Mafia in Coast region (off-grid), Sumbawanga in Rukwa region (off-grid) and Singida.</p> <p>MEM with TANESCO conducting a Wind Assessments in Mkumbara (Tanga), Karatu (Manyara), Gomvu (Dar es Salaam), Litembe (Mtwara), Makambako (Iringa), Mgagao (Kilimanjaro), and Kititimo (Singida). Plans for assessment in Usevya area (Mpanda).</p>	MEM, TANESCO, REA, DANIDA



## Annex 9: Private Sector Meeting

### Notes from Consultations with Private Sector, Commercial Banks and NGOs

AfDB Conference Room, September 19, 2012

Key concerns expressed regarding private sector investment in renewable power projects:

- Resource risk
- Commercial risk
- Regulatory Risk
- Pricing/tariff inadequacy
- Renewable energy development plans and policy uncertainties

#### Sector based issues

1. There is a need for a clear pathway for the private sector in the development of geothermal and other large RE in Tanzania. The current policy is not very detailed on this aspect; concerns are raised on the long term impact of the new concessions being offered in geothermal. What is required is a long term strategy that outlines the role of the private sector.
2. Tariffs: there is a need to reflect a cost based structure for the various RE sources – the current rate is not financially viable. However, the evaluation of RE costs should be taken within the wider cost of the other sources of power that are cheaper than RE. Tariffs also are vulnerable to currency risks. However, there has to be a strong justification why TANESCO should pay seemingly higher tariff than the avoided cost – for example, factors such as diversity of generation is not considered in TANESCO planning and decision making.
3. Capacity and risk issues with the off-taker: the current financial situation of TANESCO has created some downstream financing issues for the project developers as the ability of the off-taker to meet its FIT/PPA obligations is in doubt. The government could explore setting up a risk guarantee to shore up the FIT/PPA commitments that underlines the agreement.
4. Technical issues: The capacity of off-taker to consistently absorb power especially in outlying grids, distribution of the grid was discussed. TANESCO technical capability in power system management is good.
5. Need open access to renewable resource data.
6. Some developers unaware of pre-investment support and \$500/connection grant available from REA.

#### Commercial viability

1. Feasibility studies: undertake resource mapping exercise to determine/confirm the potential of the various RE sources. Demand side studies (isolated and mini-grids) should help private sector to engage.
2. The commercial banks have also highlighted a desperate need of technology cost/performance information to inform their investment. [Note: training for bankers in small hydro and biomass power project due diligence has been provided by Triodos team with TEDAP/SIDA support.]
3. Risk guarantees: both the project developers and commercial banks have requested for risk guarantee to enhance the attractiveness of the project/investment.

## Firm/project level

1. Working capital issues: specifically an issue facing the new SHP and project developers
2. Capacity issues (technical, financial modelling, planning and structuring) and feasibility assessments
3. Long-term financing to enhance viability of the projects.
4. High equity requirements ~40% by banks (required by Bank of Tanzania rules)
5. Several power suppliers (small and large) report significant payment delays for power supplied to Tanesco. Situation might be improving as 40.29% tariff increase (first time such large increase approved). Unfortunately tariff increase coincided with drought and need to use more emergency thermal plants.
6. Geothermal concessions awarded for six sites to Geothermal Development Tanzania Ltd. The Ministry of Energy Minerals is planning to revoke all the license that are already issued.

## **Annex 10: Guidelines for the Terms of Reference of the Joint Mission**

### **1. Executive summary** including:

- i) Objective, mission
- ii) Dates of the Mission
- iii) Government contact (leading agency).
- iv) Activities undertaken before the Joint Mission
- v) Activities to be undertaken during the Joint Mission
- vi) Expected results and outcomes

### **2. Context of the mission**

### **3. Preparatory Activities**

### **4. Joint Mission Activities** including

- i) Share of responsibilities
- ii) Consultations with the stakeholders
- iii) Validation of the investment priorities and identification of the implementing projects
- iv) Support to the Tanzanian Government in writing up the Investment plan

### **5. Composition of the Mission**

### **6. Mission Calendar**

### **7. Contacts** (MDBs and Government)

### **8. MDBs Budget** for Phase 1 Activities (FY11 and FY12)

### **Annexes**