

**Response from ADB—Approval by Mail: SREP Maldives: Preparing Outer Islands for Sustainable Energy Development Project (ADB) SREP**

**Queries and Replies**

**From the UK**

**- Form of support:**

**o Given that the SREP funds are to be on-lent, why is it necessary that SREP provide grant resources to the ADB and why would loan resources not be applicable here? Further to this, we note that the proposed (but not confirmed?) funding from EIB and IsDB is in the form of loans.**

**o Pg 4 of the ADB proposal says that GoM will on-lend SREP grant funds for a period of 20 yrs, with 5 yrs grace at and interest rate of 2%. What will the reflowing interest payments and principal amounts be used for, who will manage and retain it?**

**ADB:**

The SREP Investment Plan (IP) for the Maldives specified SREP grants to support public sector investments. Initially, ADB considered a stand-alone project which would have been all grant: i.e. an Asian Development Fund (ADF) grant from ADB plus an SREP grant administered by ADB. To meet co-financing and leverage goals of SREP as well as ADB, the availability of ADF and SREP grants became instrumental in facilitating cofinancing from European Investment Bank (EIB) and Islamic Development Bank (IsDB), which adds value to the project in terms of impact and support of SREP transformative goals. IsDB loans are practically interest free while EIB is LIBOR-based, so the overall financing package of \$100 million (not including government counterpart financing) is therefore concessional in nature, consistent with the country's debt situation; this concessionality will also facilitate Parliamentary clearances for the energy sector project.

The Government determined that a package of loans (overall concessional in nature) would generate re-flows back to the Government that could be utilized for investing in future RE projects through among other options providing a corpus to improve payment security for private sector RE projects as noted in the IP. Appropriate loan covenants and conditions will be included as necessary to address fiduciary and governance issues associated with the re-flow of funds.

**- Use of SREP funds:**

**o Page 12 of the RRP document implies that 20MW of diesel will be replaced, however it is not clear if this is with more diesel (the GoM component?) or with the solar PV. Could ADB provide clearer information on the cost-breakdown of the project by expenditure**

**category and on what SREP funds and other co-funding will be used for?**

**ADB:**

Funds from all sources -- ADB, SREP, EIB, and IsDB -- will be used for solar PV, energy storage, and associated distribution system upgrades. The SREP funds will be used only for the RE investments, consistent with SREP guidance.

Financing from ADB's own ADF funds, EIB and IsDB will be used for supply side efficiency investments including upgrading inefficient diesel generator sets to efficient low load diesel generator sets that can successfully integrate renewable energy and reduce diesel consumption as well as for distribution grid upgrades to reduce losses. The draft breakdown by expenditure category is presented below.

<b>Cost Breakdown by Expenditure Category</b>	<b>Total Cost (\$ million)</b>
Renewable Energy mini grid packages (ADB,SREP, other financiers)	54.3
Energy Efficiency mini grid packages (ADB, other financiers)	44.9
Project Management	4.0
Environment and Social Mitigation	1.0
Contingencies	8.2
Interest during construction	1.6
<b>TOTAL</b>	<b>114.0</b>

- **TA: How will the report into private sector barriers (component 2 of the TA) be additional to research that the World Bank have already conducted to design their partial risk guarantee program?**

**ADB:**

As outlined in the IP and the project proposal, the ADB and WB projects are complementary with WB focus initially on the larger islands including Male, while ADB focus would mainly be on the outer islands. The larger islands (particularly around Male) are expected to be more attractive for private sector investors given the larger scale of energy installations. While a partial risk guarantee instrument may also be an option to attract private investment in the outer islands, "one size may not fit all" and there is a need to conduct additional investigations and determine additional risk mitigation measures and instruments that may be appropriate and effective. E.g., FENAKA covers the outer islands and does not have the credit-worthiness or track record of STELCO, and has a significantly higher cost structure and subsidy requirement from the government. The potential off-take risks of STELCO and FENAKA will be perceived differently by private developers.

- **Private investment**

o Although para 14 mentions possible WB partial risk guarantees to encourage private investment, the remainder of the proposal does not seem to allow for any possibility of private investment in this project – it would be useful to explain why this is the case. Para 4 states, *Private sector investment projects to support solar photovoltaic investments on larger islands (initially planned for STELCO) are under consideration outside and complementary to the Project.* Given that it is SREP’s ambition to be transformative, it would be useful to understand why more concrete steps “complementary to the project” cannot be cited. Can the ADB/GoM better explain why SREP funds are best used in this way?

**ADB:**

The Maldives has over 110 MW of diesel generation capacity on the utility serviced islands (this is increasing as more outer islands get incorporated into the Fenaka utility). There is a significant scope to add renewable energy to replace diesel generation in addition to the ongoing ADB and World Bank’s interventions that can be taken up by investors including from the private sector.

In the case of the ADB project, it is expected to create an enabling environment for the Maldives to attract more private sector investment, through direct public sector investment in new efficient low load generator sets, distribution grids, control systems as well as energy storage focusing on the outer islands. These investments will help increase the technical limits of solar PV penetration on the islands allowing enhanced private sector investments. The impact of the future support for private sector investment from the loan re-flows to the government from the utilities (Refer the response to Question 1) is also a benefit.

Also, the ADB-led investment will utilize the sector modality which has the flexibility to accommodate the requirements of the government from time to time linked to the project impact and outcome, including future support for private sector investment which is not explicitly included at this time. Part of the EIB co-financing is proposed to be used for a credit line that could support additional private sector investment (to be determined during EIB due diligence tentatively scheduled for Q3 2014).

**Results:**

o **Cost per MW:** Since there is no cost-breakdown by type of activity it is not possible to evaluate the cost per MW installed. In the ASPIRE –WB project carried out on the main islands of Male and Hulhumale we have seen a cost per MW of \$2M (\$61M budget for 20MW installed).

**ADB:**

The WB project cost indicated above at \$61 M for 20 MW is about \$3/watt for solar PV generation.

For the ADB project, in addition to solar PV, the project will also support investments in energy storage, distribution grid upgrades, generator upgrades and control systems etc. that are considered a critical requirement for the outer island grids to manage the integration of solar energy and to operate as a hybrid.

If considering just the solar PV installations (without other components), the cost of supply and installation for solar PV on the remote outer islands including a 2 year O&M service package is in the region of \$3/watt. As solar PV costs are continuing to decline, the delivered cost will hopefully be lower than this estimate; under the sector modality adopted by ADB for the POISED project, any savings can be readily allocated for additional investments on the remaining outer islands.

**o CO2 savings: Based on the installation of 21 MW solar capacity and annual electricity output of 27.6 GWh (assuming 15% output) directly supported by the project and the SREP proxy for emission conversion CO2 savings per annum should be 20,411 tons, whereas the document refers to 40,000 tons carbon dioxide equivalent per year. Could ADB clarify the calculations including project boundaries, baselines, evidence on the lifetime of technology or investment, source of energy savings etc.?**

**ADB:**

As noted in the project proposal, the 100% diesel dependence makes the country's carbon emissions per unit of electricity among the highest in the region. The 40,000 tCO<sub>2</sub>e/y savings includes reductions from solar PV offsetting diesel generation, estimated reductions due to efficiency gains in the form of new low load diesel generator sets, and reduced distribution grid losses expected to be achieved as part the integrated project. Assuming the PV offsets state-of-the-art diesel gensets with an emissions factor of 0.7 tCO<sub>2</sub>e/MWh, the estimated GHG reductions would be 19,316 tCO<sub>2</sub>e/year. With the implementation of the project, diesel consumption will also be reduced to 0.1-0.3 liters/kWh (against the baseline of 0.45-0.70 liters/kWh in 2012) and will account for the remainder of the GHG reductions estimates.

On this point we would like to note that the magnitude of GHG emissions reductions is insignificant in the global context. Rather, the value addition of the project is in demonstrating the case for a carbon-neutral zone -- i.e., a geographic-based, rather than strictly project-based, approach to GHG reductions – which can be replicated in other countries and regions within countries.

*From Switzerland*

**1. It is not quite clear for what the SREP grant, the ADB grant and co-financing from Islamic Development Bank, EIB and the Government of Maldives will be used. Please confirm that the SREP grant will be blended with the ADB grant and other co-financing for the entire POISED program and not serve exclusively to finance the pilot stage of 5 islands.**

**ADB:**

Please refer to the cost breakdown by expenditure category shown above in responses to the UK. The SREP grant will be blended with ADB and other sources of cofinancing for the RE components. It is also confirmed that SREP financing will not be used exclusively for these 5 islands (which represent the first phase of bids commencing in 2014) but also for future RE projects expected for 2015 and 2016.

**2. Please confirm that the mentioned objectives are consistent with the SREP financed part of the project and not part of a larger program.**

**ADB:**

Please refer to the responses to UK above. The objectives are consistent with the SREP guidelines. As noted in the draft project proposal, the RE investments complement supply side efficiency investments. The ADB POISED project (as well as the World Bank project) are part of the government's strategic objective of achieving carbon neutrality.

**3. How many people will gain access to renewable energy through the program? In the objectives, only the 4600 inhabitants of the pilot islands are included. Why?**

**ADB:**

As noted in the project proposal, the deployment of RE on the initial 5 islands is expected to benefit 4600 people for which procurement commences in 2014. This number will grow as additional islands are supported under a sector wide program under which procurement will be taken forward in 2015 and 2016 to cover a larger number of islands (up to 160+ outer islands).

**4. Please explain the roles of MEE, STELCO and Fenaka in the overall program and the pilot phase. What will be realized by whom?**

**ADB:**

MEE is the line ministry with oversight of the energy sector. STELCO and FENAKA are the power utilities which will be implementing agencies. STELCO and FENAKA each have specific geographic coverage within the country with STELCO covering the Greater Male area and FENAKA the rest of the country. The initial phase in 2014 covers 5 islands under FENAKA where the diesel generators and distribution grids would be upgraded to reduce losses and make them ready for renewable energy integration as well as installation of solar PV and energy storage and control systems. MEE will be involved in monitoring project implementation.

**5. Please confirm that no SREP money will be used to finance the diesel generator part of the program.**

**ADB:**

We confirm that the SREP money will be used only to finance RE components of the project, consistent with SREP criteria.

## **From Japan**

We think the projects related to "Outer Island Sustainable Electricity Development Project" are very significant in that these projects intend to support development objective by expanding renewable energy system installation for outer islands and developing capacity of Maldives Energy Authority.

As for your information, JICA has also assisted installation of renewable energy system mainly in Male. The Project for Clean Energy Promotion was implemented for promoting energy transformation from diesel power to solar power. The project cost was around JPY 1billion. And 740kW was successfully installed in March of 2014.

Other than above, one project and one feasibility study are going on under Japanese Government's assistance. The Project for Provision of a Solar Power Generation System to Dhiffushi Island has been implemented with a collaboration of the Kansai Electric Power company. This is implemented as a part of Japan's grant assistance for grassroots human security projects. 40kW solar system will be installed by September, 2014. Its operation will be starting in coming January, 2015. The feasibility study on application of renewable energy hybrid system was conducted by JV under Denkyo Engineering and Okinawa Enetic and the study was completed in March, 2014. The project formulation comes under review based on the study.

As indicated above, Japan have also engaged in assisting sustainable energy development in Maldives through several projects. We hope to strengthen our collaborations with other development partners in the field of sustainable energy development in Maldives. If necessary, we think that coordination activities would be much appreciated for promoting clean energy in Maldives.

### **ADB:**

Japan's activities are acknowledged and welcomed with great appreciation, in particular the solar diesel hybrid project on Dhiffushi island with ice making facilities that replaces diesel power with cleaner renewables and could provide useful income generation options for islanders.

As noted in the replies to the UK above, there are many opportunities for developing renewable energy projects in the Maldives (in addition to interventions in the transport sector deploying low-carbon fuels). We note several proposed initiatives in the Maldives islands and look forward to coordinating with Japan on specific projects.