



# Scaling Up Renewable Energy

Country / Region: **Bangladesh** | Project Id: **XSREBD076A** | Fund Name: **SREP** |

MDB : **International Bank for Reconstruction and Development**

Comment Type	Commenter Name	Commenter Profile	Comment	Date
Comment 1	Daniel Menebhi	Switzerland	<p>Thank you for circulating this proposal.</p> <p>We have the following questions (Q) and comments (C):</p> <ol style="list-style-type: none"> <li>1. Project description and rationale:               <ol style="list-style-type: none"> <li>a. (Q) We noticed that the SREP grant-financed resources assessment (\$0.95 million) has been extended to include other technical assistance for a total amount of \$2.37 million. Please explain this difference and detail the additional technical assistance that will be rendered under the project.</li> <li>2. Project financing:                   <ol style="list-style-type: none"> <li>a. (Q) Under co-financing in the SREP Cover Page, an amount of \$0.5 million from ESMAP is listed, this is not included in the PAD (para.42 p.19-20). Please explain and if ESMAP funding is included, please specify for what activities.</li> <li>b. (Q) Is counterpart funding [\$186 million] in the PAD (para.42 p.19) for the REFF entirely from the private sector?</li> <li>c. (Q) In the endorsed IP, a contribution from the Government of Bangladesh (GOB) of \$49.2 million was foreseen for this project. What happened to this contribution?</li> </ol> </li> </ol> </li> <li>3. Expected results               <ol style="list-style-type: none"> <li>a. (Q) Employment opportunities: How many jobs are expected to be created by the project?</li> <li>b. (Q) Please explain the mechanism by which the project and in particular REFF will contribute to further scaling-up RE in Bangladesh.</li> </ol> </li> <li>4. Financial and economic viability               <ol style="list-style-type: none"> <li>a. (C/Q) It was noted that the projects to be co-financed by SREP (and IDA) are remarkably profitable in terms of EIRR and ROE. Why is concessional financing needed nevertheless?</li> </ol> </li> </ol>	Jun 22, 2017
Response 1	Leesle Hong	IBRD	<p>[1. Project description and rationale]</p> <ol style="list-style-type: none"> <li>a. (Q) We noticed that the SREP grant-financed resources assessment (\$0.95 million) has been extended to include other technical assistance for a total amount of \$2.37 million. Please explain this difference and detail the additional technical assistance that will be rendered under the project.               <ol style="list-style-type: none"> <li>a. (A) The Investment Plan originally envisaged \$3m of grant for this Project (\$2.7m for grid-connected renewables and \$0.3m for waste-to-energy), which was adjusted to \$2.87m in total to accommodate the shortage of SREP grant funding. The team has identified a number of technical assistance and capacity building activities necessary for implementing large-scale grid-connected renewable projects in Bangladesh, which have very limited experience until now, and allocated the available grant resource to Component 3 (\$2.37m) and Component 4 (\$0.5m). \$1m is allocated to renewable energy resource measurement and mapping to establish a national atlas for solar and wind resource potential, which is critical to unlock the potential of scaling-up renewable energy development. Another \$1m is expected for training and capacity building of relevant agencies, including the Sustainable and Renewable Energy Development Authority (SREDA), Infrastructure Development Company Limited (IDCOL), Ministry of Power, Energy and Mineral Resources (MPEMR) and Power Grid Company of Bangladesh (PGCB) (i) to develop capacity of financial intermediary (REFF) under IDCOL, (ii) to support preparation of pipeline sub-projects, e.g. feasibility study, safeguards assessment, etc., (iii) to prepare competitive auctions, (iv) to develop capacity of assessing proposals from the private sector, and (v) to plan and implement integration of variable renewable energy into the grid. The remaining \$0.37m will support technical studies required for grid integration of variable renewable energy. The allocation to waste-to-energy has slightly increased to \$0.5m to reflect the range of activities from a feasibility study to a small scale pilot in an actual municipal city.</li> </ol> </li> <li>[2. Project financing]</li> </ol>	Jul 12, 2017



a. (Q) Under co-financing in the SREP Cover Page, an amount of \$0.5 million from ESMAP is listed, this is not included in the PAD (para.42 p.19-20). Please explain and if ESMAP funding is included, please specify for what activities.

a. (A) ESMAP funding has been utilized to initiate renewable energy resource measurement at the Feni site, the first sub-project to be supported under the proposed Project. The measurement station was installed on site and began ground measurement campaign in June 2017, which will help expedite the project preparation. In paragraph 30 of the PAD, this is mentioned as a complementary activity, but not included in the financing plan of the PAD because this ESMAP-supported activity is processed separately within the World Bank system.

b. (Q) Is counterpart funding [\$186 million] in the PAD (para.42 p.19) for the REFF entirely from the private sector?

b. (A) \$186m is total mobilized financing, including both private and public such as DFIs, expected through the REFF. The detailed breakdown can be found Table 2 (PAD page 23-24). Private sector contribution is expected around \$152m, under the assumption that DFIs may finance about 15% of the total project cost of utility-scale renewable projects. Please note that this estimate is tentative and may change subject to total installed capacity under the Project and DFI's share in project financing.

c. (Q) In the endorsed IP, a contribution from the Government of Bangladesh (GOB) of \$49.2 million was foreseen for this project. What happened to this contribution?

c. (A) The Government contributions are provided in the form of duty exemptions and tax incentives. This indirect financial benefit was foreseen and the estimated amount of \$49.2 million included in the SREP IP. However, as the contribution is not direct co-financing to investments the amount was not included in the financing plan in the PAD. This is explained in para 7 of the SREP annex (PAD page 80). The exact amount of the financial benefit for specific sub-projects would be determined at the time of implementation.

[3. Expected results]

a. (Q) Employment opportunities: How many jobs are expected to be created by the project?

a. (A) The proposed Project is expected to generate employment opportunities through i) construction of several utility-scale renewable energy sub-projects, ii) operation and maintenance of the utility-scale sub-projects, iii) establishment of the REFF, iv) promotion of ESCO business for scaling up rooftop solar PV, and v) testing waste-to-energy opportunities. However, the number of jobs to be created would be difficult to be estimated ex-ante at the moment.

b. (Q) Please explain the mechanism by which the project and in particular REFF will contribute to further scaling-up RE in Bangladesh.

b. (A) The Project will help address existing barriers in Bangladesh, identified on page 11, which have hindered developing grid-connected renewable energy at scale. The REFF will support to unlock public land for renewable energy development, which can be a breakthrough under the severe land constraint, particularly in acquiring private land. In addition, the REFF will supply long term financing and other suitable financing products such as risk mitigation, which is not available in the market, to support a series of grid-connected renewable projects to reach financial close and implementation. Capacity building necessary to develop and support grid-connected renewables will be also provided under the Project. Altogether, the Project, and in particular the REFF, will encourage first movers to successfully implement their investment in grid-connected renewable energy, thereby provide experience and learning to relevant stakeholders and the market, which will unlock the market potential to scale up renewable energy development in Bangladesh.

[4. Financial and economic viability]

a.(C/Q) It was noted that the projects to be co-financed by SREP (and IDA) are remarkably profitable in terms of EIRR and ROE. Why is concessional financing needed nevertheless?

a. (A) Both utility-scale solar PV IPP and rooftop solar PV are financially feasible, but only provided that REFF offers financing with longer term or higher risk appetite which is not available in the purely commercial financing market. If REFF financing is replaced, both projects are not financially viable anymore, thus they need concessional financing to make them happen. In the long run, experience with first movers will help reduce the cost of RE in Bangladesh and improve the terms and conditions of commercial financing, and will eventually promote scaling-up RE through the market-based approach.

Response 2 Daniel Menebhi Switzerland

Thank you for responding to our questions and comments.  
We support the approval of this project by the SREP Subcommittee without further comments.

Jul 17, 2017



Comment 2	Simon Ratcliffe	United Kingdom	<p>Could the project team please provide a more detailed breakdown of the Financial and Economic analysis for the whole of the Component 2 - Renewable Energy Financing Facility (REFF), as opposed to just the Solar PV rooftop subproject discussed in Annex 3, giving details of any assumptions used so we can reach a fuller understanding of the total expected results.</p>	Jul 17, 2017																																										
Response 1	Monyl Nefer Toga Makang	IBRD	<p>Preliminary Economic and Financial Analysis of the Renewable Energy Financing Facility (REFF) Assumptions</p> <p>The Renewable Energy Financing Facility (REFF) is proposed to provide long term loans for utility-scale renewable energy and rooftop solar PV sub-projects supported by the proposed Bangladesh Scaling-up Renewable Energy Project (the proposed Project). The economic and financial analysis presented below uses the same assumptions as those in Annex 3 of the Project Appraisal Document for the solar PV rooftop subproject. This includes the assumption that the REFF would support a maximum of 25% and 75% of the capital cost required for utility-scale renewable energy, and rooftop solar PV sub-projects respectively. The table below presents the assumed schedule of REFF loan disbursements and REFF supported installed generation capacity commissioned during the life of the proposed Project.</p> <table border="1"> <thead> <tr> <th>Year 1</th> <th>Year 2</th> <th>Year 3</th> <th>Year 4</th> <th>Year 5</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td colspan="6">Utility-scale RE</td> </tr> <tr> <td colspan="6">Installed capacity (MW) 0 120 50 0 0 170</td> </tr> <tr> <td colspan="6">Loans from REFF (US\$ m) 0 42 18 0 0 60</td> </tr> <tr> <td colspan="6">Rooftop solar PV</td> </tr> <tr> <td colspan="6">Installed capacity (MW) 4 5 6 7 8 30</td> </tr> <tr> <td colspan="6">Loans from REFF (US\$ m) 3 4 4 5 6 22</td> </tr> </tbody> </table> <p>In addition to generating significant economic and financial benefits as shown below, the REFF is designed to leverage SREP funds to crowd-in commercial capital. The REFF will offer about US\$ 82 million of debt financing, which will mobilize an additional US\$ 186 million of capital for utility scale renewable energy and rooftop solar PV, as clarified in Table 2 of the Project Appraisal Document. The IDA guarantee offered in parallel with the REFF debt financing under the proposed Project is expected to help mobilize the additional long term capital from commercial sources by mitigating payment and/or credit risk. Depending on the progress of pipeline development, the REFF may take additional financing from other financing sources, including trust funds and development banks, to support investments beyond what is projected in the table above.</p> <p><b>Economic Analysis – Results</b></p> <p>The REFF is expected to support about 200 MW of renewable energy generation capacity in total. The total investment mobilized through the REFF is economically viable. The economic internal rate of return (EIRR) is estimated around 18.3%, with the net economic benefit of US\$ 69.9 million, excluding global environmental benefits. The portfolio supported by the REFF will reduce over 4.5 MtCO<sub>2</sub>e of greenhouse gas (GHG) emissions over the lifetime of the sub-projects. Taking into account positive environmental externalities through GHG emission reduction, the EIRR increases to 24.9% which will strengthen the economic case of the proposed Project.</p> <p><b>Financial Analysis – Results</b></p> <p>The investment portfolio supported by the REFF is financially viable. The financial net present value (FNPV) of the sub-project portfolio is estimated around US\$ 24 million, and the financial internal rate of return (FIRR) is 10.9%, exceeding the projected weighted average cost of capital (WACC at 8.5%). The average FIRR to equity holders is expected at 18.6%, covering expected cost of equity of 15% and providing reasonable return on equity from similar RE projects in the region and from infrastructure PPPs, in the context of Bangladesh.</p>	Year 1	Year 2	Year 3	Year 4	Year 5	Total	Utility-scale RE						Installed capacity (MW) 0 120 50 0 0 170						Loans from REFF (US\$ m) 0 42 18 0 0 60						Rooftop solar PV						Installed capacity (MW) 4 5 6 7 8 30						Loans from REFF (US\$ m) 3 4 4 5 6 22						Aug 22, 2017
Year 1	Year 2	Year 3	Year 4	Year 5	Total																																									
Utility-scale RE																																														
Installed capacity (MW) 0 120 50 0 0 170																																														
Loans from REFF (US\$ m) 0 42 18 0 0 60																																														
Rooftop solar PV																																														
Installed capacity (MW) 4 5 6 7 8 30																																														
Loans from REFF (US\$ m) 3 4 4 5 6 22																																														