Maldives: ASPIRE Program
Scaling-up Renewable Energy Program (SREP) in Low Income Countries

Responses to comments from the US

USA (April 1, 2014)

Comment: Thank for you the chance to comment on the proposal for the ASPIRE program in the Maldives. We think this program is particularly interesting because it is one of the first proposals in the CIFs to address the particular challenges of developing renewable energy development in small island countries. If successful, the ASPIRE program could provide a useful example for other countries to help displace dirtier sources of energy while maintaining and improving energy access.

There are a number of aspects of the proposal that are unclear, however, and we have some clarifying questions we'd like to ask before approving. The proposal does not clearly address the degree to which solar PV installation will displace diesel fuel use on Male and Hulhumale islands and the corresponding financial benefits to the country. We ask that the AsDB provide a more focused explanation of the financial impact of replacing diesel with solar PV, including cost savings to the government and estimated savings to end users, both annually and over the lifetime of the project. This explanation should include some further discussion of the impact of market volatility and how ASPIRE will protect against it. We would also like more of an explanation about how the guarantee portion of the SREP funding with be structured.

ASPIRE team thanks you for your note. Regarding the clarification sought on diesel replacement and related benefits, please note that Solar PV penetration in the generation mix, significantly benefits Maldives, as outlined below.

Diesel Displaced: The team has used the average fuel consumption for diesel based generation in the medium and larger islands, as stated in the SREP Investment Plan. This figure is 0.35 liters/ kWh. Based on this, PV generated electricity from 20 MW of installations will displace 11.4 million liters of diesel per annum, or 228 million liters of diesel over the 20 year life of the proposed Power Purchase Agreements. At an estimated diesel price of US$ 0.9/ liter to US$ 1.1 /liter this amounts to annual savings in the range of US$ 10.2 - 12.5 million.

Considering a higher efficiency of diesel generators - at around 0.28 liters/ kWh; 20 MW of PV installations will still displace around 9.1 million liters of diesel per annum, resulting in annual savings of US$8 - 10 million at the above stated diesel price range.

Reduction in Fuel Bill Outflows: Based on a rigorous market sounding exercise, the team anticipates a ceiling price of US$0.25/kWh for PV based generation in the Maldives. At that price, US$ 7.8 million per annum will be the net outflow for 20 MW of PV capacity addition. This should be compared to an annual outflow of US$ 8 - 12 million on the larger islands (where diesel generation is more efficient) for equivalent diesel based generation. For the smaller, more remote islands, this figure is much higher. Maldives Ministry of Environment and Energy data shows that on the smaller islands, the fuel cost of diesel based generation can be twice that of the larger islands, as a result of poorer efficiencies and the cost associated with fuel transport. Thus, PV generation provides positive financial benefits to Maldives, and reduces foreign currency outflows, as well as exposure to the volatility of fossil prices.

Capital Costs Avoided: Additionally, we estimate that about US cents 5.4/kWh* is the levelized capital cost for diesel generation, which is also incurred in US Dollars. This cost will also be offset by PV generation in future years. Please note that per the SREP Investment Plan, power demand in Maldives is estimated to increase at 8.5% per annum, so new generation will be needed.

Government Savings on Subsidies: At present, Government of Maldives subsidizes each kWh generated at an average of US$0.05/kWh. Since PV based generation at even the anticipated ceiling price of US$ 0.25/kWh, is about 10 US cents/kWh cheaper than the estimated fuel cost of 35 US cents/kWh of diesel costs for the larger islands (with the more efficient diesel generation), electricity from PV will not require subsidies if current end-user tariffs are maintained. Thus, as more PV based generation is added to the mix, it will reduce the amount of government subsidy required, and hence the financial burden on the government. Also, depending of electricity tariff reform, some of these savings, could be passed on to the end users.

GHG Reductions: According to US EIA, CO2 emission from energy consumption in Maldives was 1.07 million tCO2 in 2011, all of which is attributable to use of petroleum products. SREP Investment Plan reported emission from electricity sector (excluding resorts and transportation) to be around 0.25 million tCO2 in 2009. PV generation supported by ASPIRE is expected to reduce approximately 25,900 tCO2 annually and over 0.5 million tCO2 over the lifetime of 20 MW of PV.

Security Package Description:

Regarding the structure of the security package, we would like to clarify that the package consists of an escrow account funded by SREP, to cover up to 6 months of payment delays and shortfalls, and a WB/IDA guarantee to cover termination and longer term default risks. The Security Package consists of a total (i) SREP allocation of US$ 3.9 million and (ii) IDA allocation of US$ 4 million to provide guarantee cover of up to US$ 16 million, spread over the program life. Please note that it is the obligation of the utility, backed by GoM, to replenish the escrow when a non-payment event results in a draw on the escrow. SREP is not required to

replenish the escrow once depleted. Additionally, please note that the guarantee amount is also designed to backstop only a part of the utility/GoM's payment obligations under a termination scenario; the private investor is still exposed to the utility and GoM risk for the remainder. As with the escrow, once the guarantee is exercised, the GoM is obliged to repay the funds drawn, since the guarantee backstops the utility/GOM's obligations.

*Based on Final Report on "Cost Estimates from Thermal Peaking Plant," by Parsons Brinckerhoff 2008 To clarify, the total funding requested for ASPIRE project (USD 11.684 million) originates from USD 10.75 million from ASPIRE component and USD 0.880 million from Technical Assistance component (as per Maldives IP), and USD 0.054 million from unused funds for IP preparation which were returned by the country to CIF Trustee in January 2013.

Regarding the Technical Assistance component, the Maldives IP did not specify the