Scientific and Technical Advisory Panel

The Scientific and Technical Advisory Panel, administered by UNEP, advises the Global Environment Facility
(Version 5)

STAP Scientific and Technical screening of the Project Identification Form (PIF)

Date of screening: October 07, 2011 Screener: Lev Neretin

Panel member validation by: Nijavalli H. Ravindranath
Consultant(s):

I. PIF Information *(Copied from the PIF)*
FULL SIZE PROJECT GEF TRUST FUND
GEF PROJECT ID: 4459
PROJECT DURATION : 6
COUNTRIES : Bangladesh
PROJECT TITLE: Development of Sustainable Renewable Energy Power Generation
GEF AGENCIES: UNDP
OTHER EXECUTING PARTNERS: Sustainable Energy Development Authority (SEDA), Ministry of Power, Energy and Mineral Resources
GEF FOCAL AREA: Climate Change

II. STAP Advisory Response *(see table below for explanation)*

Based on this PIF screening, STAP's advisory response to the GEF Secretariat and GEF Agency(ies): **Minor revision required**

III. Further guidance from STAP

The project aims at the reduction in the annual growth rate of GHG emissions from fossil fuel fired power generation through the exploitation of renewable energy resources for power generation in Bangladesh. STAP suggests minor modification for the project. The project has selected solar, wind and biomass based technologies for promotion in Bangladesh. However, STAP suggests that the following issues could be addressed during the full project development phase:

1. Baseline scenario: The PIF describes proposed capacity additions for the period up to 2015 and the proposed share of renewable energy technologies. It is suggested to develop a baseline scenario for the current and projected emissions from the energy sector, as well as, the rate of spread of different renewable energy technologies under the no project scenario.

2. Rationale for selection of renewable energy technologies: The PIF has incorporated all the three critical RETs, namely, solar, wind and biomass based energy systems. The project also aims at investment for demonstrating the three technologies. It has proposed to install 3MW of wind power, 3MW of solar power and 4MW of biomass powered systems. The rational for the proposed scale of demonstration projects could be explained. Similarly, the rational for selecting LEDs could be considered. Micro-hydro and many other RETs are not included in the PIF. It is suggested to consider all the RETs based on cost effectiveness and climate change mitigation potential and rank the RETS based on mitigation potential and national need for energy.

3. Grid connected vis-a-vis stand alone power generation systems: There is a need for techno-economic evaluation of grid connected systems vis-a-vis stand alone or distributed local grids. It is strongly suggested to conduct this analysis, before decisions on installation of grid connected power generation systems. Further, the PIF talks about increased access to electricity to rural areas. However, it is not clear how feeding the renewable energy power to the national grid would lead to increased access to the poor, since the power fed to the grid may end up for application in industries and urban areas. The interface and technology required for connecting the decentralized power generation source to the national gird for feeding electricity to the grid is available, it could involve high investment including installation of energy storage capacity, maintenance costs and engineering personnel costs.

4. Tariff fixing for renewable electricity: Fixing the feed in tariff rates for renewable power could be a challenge, especially if the private sector has to participate in installing RE systems. The cost of RET based power generation is likely to be far higher than centralized grid based power generation systems. Thus, SEDA may have to subsidize the

difference between the cost of renewable power and that of centralized large scale power generation systems. RE electricity pricing would be a challenge if the interests of consumers as well as power producers are to be satisfied.

5. Barrier analysis: There is a need for a systematic barrier analysis for each of the RETs from the perspective of SEDA, industry and consumers.

6. Biomass energy: Assessment of the potential of biomass energy could be a challenge for various reasons. A national level assessment of biomass energy potential would be of little use for specific project development in a given location. The potential for biomass field stock resource availability may have to be assessed for crop residue, forest residue and dedicated energy plantations. If crop residue or forest/plantation residue is being considered, then the opportunity cost of using such biomass resource for power generation needs to be assessed. It is important to consider all the bio-energy technologies such as biomass combustion, biomass gasification and bio-methanation technologies for decentralized power generation. The land availability for raising dedicated energy plantations will have to be explored for specific locations.

7. Risks to renewable energy technology based power generation: The risk of incremental cost of renewable electricity for the end users need to be considered based on their willingness to pay.

8. Climate change risk: Bangladesh is one of the most vulnerable countries to current climate variability and future climate change and its impacts. There is a need to assess the implications of projected climate change on the potential of different renewable energy technologies in the short and medium term. All RET and EET infrastructure installed may be vulnerable to climate extremes and risks. Thus, STAP suggests exploring World Bank Climate Change Knowledge Portal, the emerging National Communication Reports and the World Bank's report on, "Climate Change Impacts on Energy Sector" by Ebinger and Vergara (2010). This World Bank report states "Energy services and resources will be increasingly affected by climate change - Changing trends, increasing variability, greater extremes, and large inter-annual variations in climate parameters. The report provides approaches and methods to assess impacts and options to address the climate risks in energy sector.

STAP advisory response	*Brief explanation of advisory response and action proposed*
1. Consent	STAP acknowledges that on scientific/technical grounds the concept has merit. However, STAP may state its views on the concept emphasising any issues that could be improved and the proponent is invited to approach STAP for advice at any time during the development of the project brief prior to submission for CEO endorsement.
2. Minor revision required.	STAP has identified specific scientific/technical suggestions or opportunities that should be discussed with the proponent as early as possible during development of the project brief. One or more options that remain open to STAP include: (i) Opening a dialogue between STAP and the proponent to clarify issues (ii) Setting a review point during early stage project development and agreeing terms of reference for an independent expert to be appointed to conduct this review The proponent should provide a report of the action agreed and taken, at the time of submission of the full project brief for CEO endorsement.
3. Major revision required	STAP proposes significant improvements or has concerns on the grounds of specified major scientific/technical omissions in the concept. If STAP provides this advisory response, a full explanation would also be provided. Normally, a STAP approved review will be mandatory prior to submission of the project brief for CEO endorsement. The proponent should provide a report of the action agreed and taken, at the time of submission of the full project brief for CEO endorsement.