

# 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: May 04, 2012

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### I. PIF Information *(Copied from the PIF)*

**FULL SIZE PROJECT    GEF TRUST FUND**

**GEF PROJECT ID:** 4345

**PROJECT DURATION :** 5

**COUNTRIES :** Nepal

**PROJECT TITLE:** Renewable Energy for Rural Livelihood (RERL)

**GEF AGENCIES:** UNDP

**OTHER EXECUTING PARTNERS:** Alternative Energy Promotion Centre (AEPCC), Nepal

**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): **Consent**

### III. Further guidance from STAP

The project meets GEF Climate Change Strategic Objective 3 aims and will assist the Nepalese government meet its target of 10% of total end-use energy coming from renewables by 2020 as well as its goal to electrify 30% of the population currently without power using renewable energy systems.

1. Rational for technology selection: It is not justified why off-grid micro-hydro and solar PV are the two selected RE technology "most feasible solutions". The government's Alternative Energy Strategy also includes 1 MW of wind power and 90,000 biogas plants, though it is realized the 15 MW of micro-hydro and around 8MW (peak) of solar PV are the dominant technologies. Solar water pumping for drinking and irrigation and improved watermills are also included in the proposal but no targets are given so it is not clear if these are to be included or not. The project title is very broad but the focus of the project is "Off-grid micro-hydro and solar energy systems to supply energy services for rural communities". Solar PV application for pumping irrigation water is likely to be a very expensive technology. Economic justification is necessary for the SPV technologies for different applications.
2. Demonstration sites: Solar and micro-hydro systems are relatively mature with many installations operating successfully in Nepal and elsewhere. Probably good solar and hydro resources exist in many locations within Nepal, so replication and enhanced deployment is a commendable objective. Whether this needs new demonstration projects when monitoring existing projects and promotion of the findings could achieve a similar purpose is not clear. Also how the information collected from the demonstrations will actually be disseminated has not been discussed other than broadly under item 3B. Whether the sites for the stated 1.1 MW of hydro demonstration plants have been selected is not known, nor who will undertake the maintenance and monitoring of these plants once operating. Ideally they should be typical sites rather than being selected as having exceptionally good resources (those with good all year-round flows and high head). The 35% load factor used for hydro- seems low (although acknowledged as "conservative"). Existing schemes should be able to provide a more accurate indicator. The key point, not acknowledged, is how any seasonal variations in water flows might impact on the end-users of the electricity if supplies are unreliable, especially for rural livelihood activities.
3. Solar system options: Clarification is needed between the goal of having 0.5 MW/yr of "solar power installations" and including solar pumps for drinking and irrigation which use direct mechanical power. Solar water heating is not discussed though there must also be good potential for this technology. How the project will enhance the existing 4500 watermills is also not clear.
4. Barriers: Providing training courses for a wide range of stakeholders is commended to overcome the capacity barrier. Overcoming the financing barrier is also a key part of encouraging RE deployment. The challenge to increase

manufacturing capacity has been acknowledged, though the selected technologies may well depend on some imported products. Electric generators, Pelton wheel turbines and solar PV panels (or possibly cells) will possibly be imported. It is not clear what components will be locally made.

5. Climate change risks: There is a chance that precipitation and cloud cover may change over time affecting the local hydro and solar resources, but this is unlikely to be significant before the working life of any technologies installed has past.

Incremental reasoning, monitoring and evaluation: Given the baseline scenario and all the other parallel initiatives to increase the deployment of RE projects, it is not clear how the additional uptake resulting from GEF investment of 10 MW micro-hydro and 2.5 MW solar systems after 5 years can ever be measured. However, this should not be a deterrent as there is a good opportunity for this GEF RERL project to evolve in parallel with the Nepal government's SREP and RREP programmes as these are developed, and together expand the deployment of renewables. A breakdown of annual targets for hydro and solar PV (and pumping?) capacity installations, which will probably ramp up from a slow start as the 5 year period progresses, would be useful.

<i>STAP advisory response</i>	<i>Brief explanation of advisory response and action proposed</i>
<b>1. Consent</b>	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.
<b>2. Minor revision required.</b>	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: <ul style="list-style-type: none"> <li>(i) Opening a dialogue between STAP and the proponent to clarify issues</li> <li>(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</li> </ul> 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.
<b>3. Major revision required</b>	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.