

# 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, 2013

Screeners: Nijavalli H. Ravindranath

Panel member validation by: Ralph E. Sims  
Consultant(s):

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

**FULL SIZE PROJECT    GEF TRUST FUND**

**GEF PROJECT ID:** 5317

**PROJECT DURATION :** 4

**COUNTRIES :** Madagascar

**PROJECT TITLE:** Increased Energy Access for Productive Use through Small Hydropower Development in Rural Areas

**GEF AGENCIES:** UNIDO

**OTHER EXECUTING PARTNERS:** Ministry of Energy (ME); Ministry of Environment and Forestry (MEF); Rural Electrification Development Agency (ADER)

**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 aims to stimulate SHP and the productive use of electricity for income generation and to reduce dependence on fossil fuels. This is a typical SHP project and similar SHP projects are being funded by GEF. The project has many innovative components such as linking power generation to productive demands and linking to industries. However, STAP has a number of comments which could be addressed during the next phase.

1. Consideration of the seasonality of the water flow for SHP is necessary to ensure year round power supply.
2. If the water availability is seasonal then what is the alternative for the gap months.
3. Will the power generated be for off-grid use or for feeding it into the regional or national grids? This is a very critical for decisions on investment in the grid systems. This will have cost and technology implications as it is not simple to feed power from SHP systems to the national grids. In addition, the location of the grid in relation to the hydro site can generate high connection costs if not nearby.
4. Will the power generated be largely for industries or for rural applications also?
5. How will the GHG emission reduction be calculated? If the diesel-fired power generation continues to be largely used by urban areas and large industries, and the SHP electricity is used for rural lighting and small industries, then GHG reduction is from diesel and kerosene substitution and possible avoidance of deforestation for traditional biomass.
6. The PIF states that the firewood used in the rural domestic sector will be replaced by electricity. This may not be feasible since electricity for cooking is often a high demanding, costly alternative.
7. Regarding the impact of climate change on future water availability, one could refer to National Communications Project Report and the World Bank data base on climate change projections.
8. Which are the potential productive users that are being considered so that the power generation and the demand schedule profiles can be matched?
9. In effect, this is a typical hydro project with little that is innovative, but still worthy of GEF support. The 3 small hydro plants proposed will provide limited power generation 24 hours a day but not all year round if the water source is

constrained. The major problem will therefore be to match supply with demand, or more likely, to continue with diesel-gensets as a back-up system.

10. With so much hydro resource potential in the country, it is good some GEF funding is maybe being well spent to help develop a long-term national strategy to develop the resource in an organised manner with cost/ benefit and environmental impact analyses identifying priorities for developing the 22 individual hydro plants already mapped by the UNIDO project. Power generation is only one part of a system- distributing the power needs investment in wires and poles or upgrading an existing network. This has to be part of the national system design. The three small plants in this project were selected based on the UNIDO project. It is not clear whether that included social and environmental impacts as well as economic and technical viability.

11. For the wide range of benefits that hydro power can provide for Madagascar, it is better to provide quickly the hydro resources, especially where it is cost-effective to do so and where minimal environmental impacts will occur. This project will help that process and hopefully provide models and a learning curve to enable other hydro projects to be developed.

<i>STAP advisory response</i>	<i>Brief explanation of advisory response and action proposed</i>
<b>1. Consent</b>	<p>STAP acknowledges that on scientific or technical grounds the concept has merit. However, STAP may state its views on the concept emphasizing any issues where the project could be improved.</p> <p>Follow up: The GEF Agency is invited to approach STAP for advice during the development of the project prior to submission of the final document for CEO endorsement.</p>
<b>2. Minor revision required.</b>	<p>STAP has identified specific scientific or technical challenges, omissions or opportunities that should be addressed by the project proponents during project development.</p> <p>Follow up: One or more options are open to STAP and the GEF Agency:</p> <ul style="list-style-type: none"> <li>(i) GEF Agency should discuss the issues with STAP to clarify them and possible solutions.</li> <li>(ii) In its request for CEO endorsement, the GEF Agency will report on actions taken in response to STAP's recommended actions.</li> </ul>
<b>3. Major revision required</b>	<p>STAP has identified significant scientific or technical challenges or omissions in the PIF and recommends significant improvements to project design.</p> <p>Follow-up:</p> <ul style="list-style-type: none"> <li>(i) The Agency should request that the project undergo a STAP review prior to CEO endorsement, at a point in time when the particular scientific or technical issue is sufficiently developed to be reviewed, or as agreed between the Agency and STAP.</li> <li>(ii) In its request for CEO endorsement, the Agency will report on actions taken in response to STAP concerns.</li> </ul>