

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: February 21, 2014

Screeners: Virginia Gorsevski

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: 4923

PROJECT DURATION : 5

COUNTRIES : Congo DR

PROJECT TITLE: Promotion of Mini and Micro-hydro Power Plants in Congo DR

GEF AGENCIES: UNDP

OTHER EXECUTING PARTNERS: MinistÃ¨re de l'Environnement et Conservation de la nature; MinistÃ¨re de l'Energie

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 involves developing policy, capacity building and production of a manual (giving project guidelines). Training on project design and construction is also a component but with the majority of funding going towards developing several pilot hydro projects totaling around 10-12 MW. Resources have been assessed with run-of-river given priority.

1. Recent privatization of the electricity industry and support for rural electrification (FONEL) makes this project timely. The proposal is well thought through and well presented. However, it is not clear whether the specialist technology (e.g. the turbines) is to be imported or designed and manufactured locally. If the latter, this could take some time to develop. It is also not clear who will invest in, and construct, the mini-grids (poles and wires) to connect the generation plants with the consumers, often needing to pass across rugged country from remote sites. Is this component included in the total project costs? The proximity of load to generation should be a component of site selection.

2. Displacing diesel generation makes good sense " with linked GHG emission reduction. Expansion of rural electrification to give improved energy access, through mini-grids for lighting, communications, water heating and possibly cooking, is a major benefit. Potential sites have been selected with good rationale given. What is not clear is whether the rainfall in each location is seasonal and reliable. As a result of possible climate change impacts, threats of future increased droughts appear to have been assessed along with the risk of more intensive floods such that the power plants will need to be designed to resist? Climate change risks are presumed to be low and the project states that existing and projected climatic data will be used to ensure that the chosen sites are not affected by irregular rain trends. Ground data is severely limited in DRC - what data will you use to understand the relevant hydrological systems? Remote sensing data (e.g. TRMM (tropical rainfall measuring mission)-derived rainfall estimates)? How will you take into account seasonal variations in land water storage?

Also could upstream uses of water for irrigation in the future pose a risk? It is assumed this is what is meant by "whether the water source is not a constraining factor" under Natural risks, but it is not entirely clear.

3. Developing mini- and micro-hydro schemes is well understood with thousands of examples operating in many countries, so there is little innovation involved, other than to adapt existing knowledge to match local conditions and offer capacity building as outlined. Lessons should be learned by initially reviewing policies and hydro- project development in other countries rather than starting from scratch. Such learning

experiences include the setting of appropriate tariffs which can be challenging to set at the right level to stimulate developments but not be too costly for the government to maintain. Long-term commitments are recommended to give stability to the nascent industry. The present OBA proposal appears to have been well-researched.

4. For the baseline of CO2 emissions, the project could take into account the black carbon from kerosene lighting, which apparently is quite significant. A recent study by the Brookings Institute found that 270,000 tons of black carbon are emitted to the atmosphere each year from kerosene lamps and that the warming effect of these emissions is equivalent to about 240 million tons of CO2 (Lam, N.L.; K.R. Smith; A. Gauthier; M.N. Bates (2012b) "Kerosene: A Review of Household Uses and Their Hazards in Low- and Middle-Income Countries," Journal of Toxicology and Environmental Health, Part B: Critical Reviews, 15(6), 396-432.) Black carbon is also emitted from firewood used in cookstoves, which may be replaced as a result of this project resulting in equivalent CO2 emission reductions.

5. The project should also take into account possible avoided deforestation resulting from the project. What will happen if the projects are located near areas where unplanned deforestation or degradation takes place – will that have an impact on the project? Will future projected climate impact be taken into consideration when selecting specific sites?

6. The project states that the environmental risks of the project are minimal – however, even small systems need concrete and clearing for construction and will divert water. Has the potential impact on aquatic systems been taken into consideration? What about changes in temperature and pressure than might affect water chemistry, such as dissolved oxygen available to organisms? What about possible erosion? Upstream and downstream migration barriers?

<i>STAP advisory response</i>	<i>Brief explanation of advisory response and action proposed</i>
1. Consent	<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>
2. Minor revision required.	<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: (i) GEF Agency should discuss the issues with STAP to clarify them and possible solutions. (ii) In its request for CEO endorsement, the GEF Agency will report on actions taken in response to STAP's recommended actions.</p>
3. Major revision required	<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: (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. (ii) In its request for CEO endorsement, the Agency will report on actions taken in response to STAP concerns.</p>