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 24, 2014 Screener: 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: 5673
PROJECT DURATION : 4
COUNTRIES : Sudan
PROJECT TITLE: Promoting the Use of Electric Water Pumps for Irrigation
GEF AGENCIES: UNDP
OTHER EXECUTING PARTNERS: Ministry of Water Resources and Electricity; Ministry of Environment, Forestry & Physical Development
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 majority of funding for this project is to support loans for solar PV electric water pump installations to displace diesel-engine pumping, with other funding to develop quality standards and training of farmers. The relatively high capital cost of a solar pump is a major constraint to deployment. Overall the proposal to displace diesel pumps with solar pumps is comprehensive and has been well thought through.

Decreases in annual rainfall (possibly due to climate change) is driving more land under irrigation, though the water sources are not unlimited. Grid electric water pumps are already in place but limited by relatively high electricity charges and limited access to the grid. Solar pumps are an alternative in more remote regions. Micro-finance through bank loans are in place but experience in funding solar pump installations is limited and GEF funding is to support this initiative through providing subsidies, with 28 demonstration solar pumps also being financed. Capacity building is an important component of the project.

1. It is acknowledged that water scarcity is a problem and will be worse in the future due to increased demand as well as potential impacts of climate change. This project claims that it will not expand the area under irrigation beyond what would happen in the baseline. However, in an earlier section on "Innovativeness, sustainability and potential for scaling up", it is stated that the irrigated sector is expected to grow rapidly - the Government is planning a doubling in spatial extent by 2015. If so, and if that's the baseline, what will be the impact on the water table and water resources in general?

2. A cost comparison between diesel and solar water pumping for a range of pumped water volumes is not provided but should be undertaken to determine the level of subsidy required. Recent lower PV prices will help the cost effectiveness but balance-of-plant may be costly. It is not clear whether pumping will occur only when solar radiation is available or whether some battery storage for irrigating during the night will be necessary. (Evaporation losses are usually less when irrigating at night). If diesel pumps work 24 hours a day and solar pumps only operate during daytime, larger solar pumps will be needed to pump the same volume of water per day. Therefore, development of the pump sizing software is an important component of the project (though many similar tools already exist).

3. It is assumed in the proposal that diesel fuel costs will rise in future years (partly due to the removal of government subsidies). However, other analyses show crude oil prices may not eventuate during the next

decade or two, hence a sensitivity analysis should be undertaken. Providing technical support and product certification designed to de-risk the project makes sense.

4. GHG emission reduction calculations are relatively simple (not including full life cycle analyses - e.g. for manufacturing, transport of diesel fuel etc.) but are acceptable given the uncertainties involved.

STAP advisory response	*Brief explanation of advisory response and action proposed*
1. Consent	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. 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.
2. Minor revision required.	STAP has identified specific scientific or technical challenges, omissions or opportunities that should be addressed by the project proponents during project development. 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.
3. Major revision required	STAP has identified significant scientific or technical challenges or omissions in the PIF and recommends significant improvements to project design. 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.