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 07, 2016
Screener: Thomas Hammond
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:	9291
PROJECT DURATION:	5
COUNTRIES:	Central African Republic
PROJECT TITLE:	Promotion of Small Hydropower Based Mini-Grids for a Better Access to Modern Energy Services in Central African Republic
GEF AGENCIES:	UNDP
OTHER EXECUTING PARTNERS:	Minister of Mines, Energy and Hydraulics
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): **Concur**

III. Further guidance from STAP

1. The project's aim is to encourage the development of small-hydro power systems linked to mini-grids and develop appropriate means of payment by end-users. Local manufacture is encouraged and capacity building a key and necessary component. A roll-out of several projects is the target including 8 pilot sites.
2. It is not clear why they are "pilot-sites" for a technology that is very mature, though perhaps local demonstrations would encourage a greater rate of deployment if people can visit the sites or see cell phone photos and videos.
3. Care will be needed in selecting suitable sites to ensure the waterways run all year round without drying up regularly during drought periods. This is also the case for the four previously selected sites as outlined in the Table on page 7. In addition, in all installations the intake of water needs to be designed to withstand flood conditions. This may increase the cost for some installations.
4. Having a 12 V DC system is an interesting concept, though it should be noted that 12 V appliances (refrigerators, TVs etc) tend to be more limited in choice and relatively more expensive than their 110V or 240V equivalents due to lower levels of mass production. It is assumed they will need to be imported. The other option would be to invest in inverters to convert to 110 V or 240 V AC but these tend to be costly.
5. If pico-turbines are to be deployed and manufactured or assembled locally, one company that uses old washing machine motors to produce turbines of around 1 kW capacity could be worth emulating. See http://nzcen.com/listings/e/ecoinnovation-ltd.aspx and http://shop.powerspout.com/contact However, it is assumed that larger installations than this (20 to 200 kW) are the target for most sites at the village level if 2MW total capacity is the target.
6. The technology is relatively simple but experienced installers are essential, so capacity building is important, as well as training local people to maintain the system. Even cleaning leaves etc. off the water intake grill is a task that shouldn't be under-estimated. Avoiding the need for technical specialists to visit sites in remote areas for maintenance procedures should be the aim. In some cases where cell phone coverage exists, direct links to the manufacturer/installer should be established. This may not be possible in

the CAR but it is clear from the proposal that the challenge of training up local personnel is essential for long-term success.
7. The cost analysis is acceptable but it assumes all year round generation which may not always be the case where streams dry up. It is not clear whether the distribution costs have been included. These can be high if the turbine has to be located some distance away from the load.
8. The 165 kt CO2 avoided calculation seems OK but the emission factor of 786 g CO2/kWh is not referenced and could be low if emissions relating to the delivery of diesel fuel to remote areas is included. If installations are in remote villages currently without electricity or on existing mini-grids but with growing demand, it is assumed that the mini-hydro would be the preference over diesel-fueled generation.

STAP advisory response	*Brief explanation of advisory response and action proposed*
1. Concur	In cases where STAP is satisfied with the scientific and technical quality of the proposal, a simple "Concur" response will be provided; the STAP may flag specific issues that should be pursued rigorously as the proposal is developed into a full project document. At any time during the development of the project, the proponent is invited to approach STAP to consult on the design prior to submission for CEO endorsement.
2. Minor issues to be considered during project design	STAP has identified specific scientific /technical suggestions or opportunities that should be discussed with the project proponent as early as possible during development of the project brief. The proponent may wish to: (i) Open a dialogue with STAP regarding the technical and/or scientific issues raised. (ii) Set a review point at an early stage during project development, and possibly agreeing to 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 issues to be considered during project design	STAP proposes significant improvements or has concerns on the grounds of specified major scientific/technical methodological issues, barriers, or omissions in the project concept. If STAP provides this advisory response, a full explanation would also be provided. The proponent is strongly encouraged to: (i) Open a dialogue with STAP regarding the technical and/or scientific issues raised; (ii) Set a review point at an early stage during project development including an independent expert as required. The GEF Secretariat may, based on this screening outcome, delay the proposal and refer the proposal back to the proponents with STAP's concerns. 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.