

Scientific and Technical Advisory Panel

The Scientific and Technical Advisory Panel, administered by UNEP, advises the Global Environment Facility



STAP Scientific and Technical screening of the Project Identification Form (PIF)

Date of screening: 08th February 2010

Screener: Lev Neretin

Panel member validation by: N.H. Ravindranath

I. PIF Information

GEF PROJECT ID: **4004**

COUNTRY: **UNITED REPUBLIC OF TANZANIA**

PROJECT TITLE: **MINI-GRIDS BASED ON MICRO HYDROPOWER SOURCES TO AUGMENT RURAL ELECTRIFICATION**

GEF AGENCY: **UNIDO**

OTHER EXECUTING PARTNERS: **MINISTRY OF ENERGY AND MINERALS, RURAL ENERGY AGENCY, TANESCO**

GEF FOCAL AREA: **CLIMATE CHANGE**

GEF-4 STRATEGIC PROGRAM: **CC-SP3 - PROMOTING MARKET APPROACHES FOR RENEWABLE ENERGY.**

NAME OF PARENT PROGRAM/UMBRELLA PROJECT: **N/A**

II. STAP Advisory Response *(see table below for explanation)*

1. Based on this PIF screening, STAP's advisory response to the GEF Secretariat and GEF Agency(ies):
Consent

III. Further guidance from STAP

1. The project aims to promote a market based approach for small hydro-power (SHP) based mini-grids. Mini-grid for decentralized needs is a very important concept for promoting rural electrification in Tanzania, since the spread of the national grid is very low or almost absent in remote rural areas. Thus, renewable energy-based decentralized power generation and distribution provides opportunity for improving the quality of life in rural communities and also reducing GHG emissions (though may be only marginal). STAP welcomes this very important project for Tanzania, given its large potential for SHP. The following issues have to be addressed before the CEO endorsement.
2. **Market based approach:** This may be a challenge in rural Tanzania due to several factors and the support of the government will be necessary for large scale spread of SHPs. STAP recommends developing project interventions addressing the following barriers:
 - Small scale of the power system and lack of economies of scale for commercialization;
 - Dispersed and remote locations of SHP systems, away from potential demand centers, hence making it expensive to transmit power;
 - Potentially low demand and purchasing power in rural areas for any commercial scale operation;
 - Financial viability for private sector needs to be demonstrated.
3. The following "factors of success" of SHPs have to be considered in the project:
 - Matching the installed capacity to local demand;
 - Repayment capacity and appropriate repayment mechanisms;
 - Demand for electricity for commercial activities in the area to generate income for the entrepreneurs;
 - Clusters of SHPs to facilitate economies of scale, since dispersed and isolated systems are difficult to maintain and operate;
 - Guaranteed technical performance of the SHP systems;
 - Assured service, maintenance and supply of spare parts for decentralized systems;
 - Sale of surplus electricity to the national grid, if the local demand is not adequate (may be a technological challenge in remote areas).
4. **Scale-up from demonstration:** The project has an impressive target of installing 4 MW of SHPs. There is a need for clear strategy for scaling up. Strengthening of financial and institutional mechanisms to support SHP projects on a commercial scale may be a challenge as well. Firstly, there has to be a commercial demand from entrepreneurs or ESCOs for installing and operating decentralized systems in

rural areas, in the face of minimal commercial demand for electricity. Thus, government support will be required for any scaling-up of SHP systems beyond the demonstration units.

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