

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: November 06, 2017
Screener: Sunday Leonard
Panel member validation by: Ralph E. Sims
Consultant(s):

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

FULL-SIZED PROJECT	GEF TRUST FUND
GEF PROJECT ID:	9810
PROJECT DURATION:	5
COUNTRIES:	Angola
PROJECT TITLE:	Promoting Sustainable Energy Access for Rural Communities in South-Eastern Angola
GEF AGENCIES:	UNDP
OTHER EXECUTING PARTNERS:	Ministry of the Environment (MINAMB)
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 aim of this project is to develop distributed, small-scale renewable energy systems in rural communities of Angola to provide energy access through advanced cook stoves, solar PV home systems and solar systems and to provide micro-credit. USD11.9M of co-financing (mostly from the Ministry of Energy) is to be used to establish a national, energy service delivery model for around 50,000 households, initially targeting Moxico Province, then deployed nationally.
2. Only around 18% of rural households currently have access to electricity. The grid is unreliable, so many privately-owned diesel generators exist. Deforestation continues – partly to supply biomass for energy, mainly fuelwood for cooking by 92% of the population. Kerosene is widely used for lighting which also produces CO₂ and black carbon.
3. Targets for RE deployment in rural areas are in place under the National Renewable Energy Strategy. A Rural Electrification Agency is to be established, ideally in time to contribute to this 5-year project, but the timing appears uncertain.
4. There is a good potential for these small-scale RE technologies, but a lack of awareness and local technical capacity are barriers to be overcome. This GEF project will build on the existing Aldeia solar village project by focusing on domestic scale systems and link, if possible, using UNDP's small-scale derisking renewable energy investment (DREI) methodology that is currently evolving. Collaboration with Angolan financial institutions will be a key factor, as will the use of mobile payment systems.
5. Establishing 5 retail outlets is good. Not provided in the proposal is an economic case for replacing the kerosene (48l/yr on average) with a solar lantern, nor whether the cost of an advanced cook-stove will be considered worthwhile by the women folk because of saving time on fuelwood collection and avoiding smoke

inhalation. It would be expected that the awareness raising aspect of the project could help convince the women of the benefits.

6. What is not clear is whether any of the low-carbon technologies will be manufactured locally – at least in part, or imported. Capacity building might also be needed to train and support future manufacturers/assemblers, as well as installers and maintenance people. The project proponents could possibly learn from the successes and failures of other similar schemes to deploy these technologies elsewhere in Africa, and if appropriate, modify the approach to reduce the risks. One example that can be studied is the Inyenyeri Clean Cooking Solution in Rwanda (<https://www.inyenyeri.org/>). Another good resource is available at <https://sites.google.com/a/ncsu.edu/khopkarworldforestry/>

7. It is also important to consider the effectiveness of clean cookstoves as a solution for air pollution and climate change mitigation. Recent studies have shown that many existing stove designs do not deliver the promised air pollution and climate benefits. For example, an evaluation of a stove replacements program in India, approved under the Clean Development Mechanism (CDM), found that the proportion of black carbon in the emissions from the stoves was higher than emissions from the traditional stoves being replaced (see Aung et al., 2016 <http://pubs.acs.org/doi/abs/10.1021/acs.est.5b06208>). Three other studies show similar results (see: Wathore et al. 2017: <http://pubs.acs.org/doi/abs/10.1021/acs.est.6b05557>; Mortimer et al. 2016: [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(16\)32507-7/abstract](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(16)32507-7/abstract) and Tielsch et al., 2016: [http://www.thelancet.com/journals/langlo/article/PIIS2214-109X\(16\)30024-9/abstract](http://www.thelancet.com/journals/langlo/article/PIIS2214-109X(16)30024-9/abstract)). It is important therefore that the cookstoves selected for this project are rigorously tested for effectiveness in delivering the expected climate and health benefits before deployment. Furthermore, the stove should be a type that is easy to use for the people in rural areas (technically and practically). Where possible, alternatives to solid fuel cookstoves should be sought, for example, biogas cookstoves (see Anderman et al., 2015: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4584993/> and https://cleancookstoves.org/binary-data/TECHNOLOGY_FUELS/document/000/000/6-1.pdf); or solar cookstoves (<http://www.nature.com/news/sustainability-clean-cooking-empowers-women-1.17562>).

8. Around 120kt CO2 emissions will be avoided through the deployment of 2,000 solar home systems, 10,000 solar lanterns, and 10,000 improved cookstoves over the life of the project. With a further 400kt indirect savings due to project influence, the investment cost of around USD7.4 /t CO2-eq seems acceptable for GEF project financing, but when co-financing is included, this equates to over USD 40/t which is relatively high.

9. It is expected that the project will yield significant black carbon emissions reductions through improved cooking and displacement of kerosene lamps – two important sources of black carbon (see for example Lam et al., 2012: <http://pubs.acs.org/doi/abs/10.1021/es302697h>; http://news.illinois.edu/NEWS/12/1210kerosene_TamiBond.html; Jacobson et al., 2013: https://www.brookings.edu/wp-content/uploads/2016/06/04_climate_change_clean_energy_development_hultman.pdf) and Tedsen et al., 2013: <https://www.ecologic.eu/sites/files/publication/2014/black-carbon-and-kerosene-lamps-study.pdf>). However, estimates of these black carbon-related climate benefits were not accounted for in the section on GEBs.

<i>STAP advisory response</i>	<i>Brief explanation of advisory response and action proposed</i>
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: <ul style="list-style-type: none"> (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.

	<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>
<p>3. Major issues to be considered during project design</p>	<p>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:</p> <p>(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.</p> <p>The GEF Secretariat may, based on this screening outcome, delay the proposal and refer the proposal back to the proponents with STAP's concerns.</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>