

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 26, 2013

Screeners: Lev Neretin

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: 4790

PROJECT DURATION : 5

COUNTRIES : Egypt

PROJECT TITLE: Promoting Low-carbon Technologies for Cooling and Heating in Industrial Applications in Egypt

GEF AGENCIES: UNIDO

OTHER EXECUTING PARTNERS: Ministry of Industry & Foreign Trade

Egyptian Environmental Affairs Agency

New and Renewable Energy Authority

Ministry of Tourism

Academy of Scientific Research and Technology

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): **Major revision required**

III. Further guidance from STAP

This project aims to use renewable energy for heating and cooling applications. The title states "industrial applications" but commercial buildings are also a key component.

The proposal confuses solar thermal water heating, solar thermal building space heating, cooling using absorption chillers, tri-generation technologies, and generating electricity using renewables, (including solar PV systems and possibly concentrating solar power (CSP) systems), to run heat pumps for heating and/or cooling. This makes it difficult to follow the rationale when such terms as "solar technologies" and "solar energy" are used.

1. It is suggested the full project document narrative be broken into several themes under the various fixed sub-headings for sections B1, B2 etc.:

- a) solar thermal heating of water for buildings and industry, which is a mature technology, relatively low cost and involves a major part of the project proposal including support for local manufacturers and tourism;
- b) solar cooling based on absorption chillers and similar technologies, which is currently a developing technology nearing commercial viability but relatively costly and complex;
- c) renewable electricity generation based on hydro, wind, solar PV, CSP etc. with the power produced used to run heat pumps (air conditioning units) for space heating in winter and cooling in summer;
- d) the MATS project which it is intended to support though little information is provided. I assume this "tri-generation" technology is at an early stage of development and a demonstration plant would be the next stage.

2. The CO₂ avoided is calculated for solar water heaters assuming electricity is displaced - but no indication is given whether back-up electricity heating is needed or not. Is there really 5 hours of solar radiation every day of the year in Egypt?

3. For absorption chillers, are there 5 manufacturers already in place? If so why are only 100 units produced per year by each? It is not clear why these will operate for 8 hours a day - but only for 240 days. Is this because cooling is not required for the rest of the year?

4. The calculations show a cost of around USD 1.20 / t CO2 avoided for the whole project. This is difficult to believe given the current costs of solar cooling systems. Renewable electricity to run heat pumps is not included. This could be a confusing part of the proposal and perhaps reference to it throughout should be deleted. Detailed analysis of project cost-effectiveness is desirable during PPG stage.

5. Risks: Climate change impacts could impact on solar technologies in fact due to variations in cloud cover- though the science remains uncertain. Furthermore, the risk of such a new technology as tri-generation not delivering according to expectations in a scaled-up demonstration is surprisingly not included in section B4. Solar absorption chillers are not yet "widely used" so there are risks with these technologies too.

6. No indication is given on how the project will be monitored. Is it the number of systems in place and operating at the end of the 5 year period? And what will determine whether the near-commercial tri-generation plant is operating successfully or not? Robust M&E system is strongly recommended.

<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>