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 08, 2015 Screener: 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: 9081
PROJECT DURATION : 5
COUNTRIES : Turkey
PROJECT TITLE: Promoting Energy-Efficient Motors in Small and Medium Sized Enterprises (SMEs)
GEF AGENCIES: UNDP
OTHER EXECUTING PARTNERS: Turkey Ministry of Science, Industry and Technology Directorate General for Productivity
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

This project aims to improve the uptake of energy efficient electric motors by a wide range of end-users in industry. The project aims to ultimately replace around 7.7-9.5 million inefficient motors by more efficient designs (IE2, IE3 and IE4). It involves the training of staff in the end-user industries as well as those working for electric motor manufacturers. In addition, staff working in laboratory testing facilities will be up skilled.

The project proposal has benefited from comments previously made by STAP and council members on a similar UNDP-GEF project 5630, which was on achieving market penetration for energy efficient motors in China. The project will also build on the current UNDP-UNIDO-GEF project "Improving Energy Efficiency in Industry".

Around half of new motors purchased in Turkey are locally made and the other half imported. The Turkish Ministry of Science, Industry and Technology (MoSIT) has already identified the opportunity to reduce the emissions intensity of industry through electric motor upgrading. This involves both the manufacture of new high efficiency motors and re-manufacturing motors so they are more efficient than if simply rewired.

In this project, Turkish policies and regulations will be reviewed along with international best practice through standards such as IEC 60034-30 ("Electric motor efficiency labeling" revised in 2011 by the International Electrotechnical Commission (IEC) that defines energy efficiency classes for single-speed, three-phase, and 50 Hz and 60 Hz induction motors and is designed to unify motor testing standards, efficiency requirements, and product labeling requirements). The aim of the GEF project is to strengthen existing policies and regulations and also encourage the resolve for Turkey to adopt the EU regulations outlined under the European Commissions' EC Standard 640/2009.

The initial investment cost is a common constraint for a business replacing existent motors with more efficient ones, as is the lack of understanding that electricity savings will usually offset this cost (with a typical payback period of 1-3 years). A financial mechanism is proposed to overcome this barrier. The other barriers to uptake (Table 1) will also be addressed. These have been the reason for slow uptake of IE2, IE3 and IE4 motors to date (around 300 sales per year being the baseline, with this project targeting ~2500 per year).

To help meet this goal, creating the Turkish EE Motors Manufacturers industry Association (TEMMA) makes good sense as does upgrading the Turkish Standards Institute (TSI) testing laboratory and upskilling staff

there so they can test energy efficient motors for compliance with minimum energy performance standards (MPES).

STAP comments to be considered during further project development are as follows:

1. A large number of sectors and industries deploy electric motors. Thus, there is a need for identifying the sectors or industries where there are the greatest opportunities for improving energy efficiency in motors. The energy audit process of evaluating existing motors installed has already commenced.

2. Demonstration projects aimed at gaining the attention of end-users are planned to show the benefits of energy audits and financial support mechanisms. It is anticipated together "they will save approximately 15,000 MWh of electricity". (Is this per year, or over the 5 year project period, or over the lifetime of the motors?). The actual amount of electricity saved will depend on the choice of the 4 demonstration projects and the number and size of the motors involved with each.

3. Calculations of the GHG emission reductions of "450,000t CO2-eq" (PART I, section F) over the lifetime of the motors to be installed during the project period, and the assumptions made on continuing emission reductions over the life expectations for the motors, are difficult to reconcile and need revising. In Section A.1.5 it states: "9,075 tons of CO2eq or approximately 90,750-121,000 tons of CO2eq over the 15-25 year lifetime of investment.But if 9,075t is per year, then the range shown is for over a 10 to 13 year lifetime of investment, not 15-25 years. Also it states: Indirect emissions reductions of 453,750 tons CO2eq with 2,722,500 - 3,630,000 tons of CO2eq over the lifetime of investment." But if 453,750t is per year, then the lifetime is only 6 to 8 years. If it is the cumulative emissions over 2 years it would be 12-16 years lifetime; if 3 years, 18-24 years); and if 4 years (24-32 years). Once the actual demonstration projects have been determined, then the baselines for each can be assessed from the four energy audits. Then a more accurate assessment of target emission reductions and also their costs in terms of $/t CO2-eq avoided can be presented.

4. But how will the demonstration projects be selected? They will need to represent a wide cross section of the major end-users in order to be most relevant. Component 4 states: "Demonstration projects will provide examples in different types of industries". So there is awareness of the issue but how will the largest users of motors be identified before demonstrations are selected. Feasibility studies and business plans will be produced for all four, which, assuming they will need to be made public, assumes the selected businesses will be willing to divulge this information.

5. Since the project includes training courses for electric motor manufacturers and disseminating information on improved motor product design and production, it would be useful to integrate experiences and lessons learned on improving the efficiency of electric motors from other countries, for example through IEA's implementing agreement - http://www.iea-4e.org/ and https://www.motorsystems.org/.

6. One of the most important barriers identified in the project is the absence of domestic EE motor manufacturing. In this regard, it seems from the PIF, project activities are largely focused on removing information barriers (Components 3 and 5). Component 4 focuses on the financial support mechanism that will address replacement or re-manufacture of electric motors. It's not clear if any institutional, technical and most importantly, financial support will be provided to help establishing DOMESTIC manufacturing capacity for EE motors. STAP recommends that project proponents address this challenge during project preparation.

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.