

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 24, 2014

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: 5669

PROJECT DURATION : 3

COUNTRIES : China

PROJECT TITLE: Enabling Solid State Lighting Market Transformation Promotion of Light Emitting Diode Lighting

GEF AGENCIES: UNDP

OTHER EXECUTING PARTNERS: In China “ National Development and Reform Commission (NDRC)

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):
Minor revision required

III. Further guidance from STAP

The objective is to establish a market and policy framework to encourage the deployment of low energy, solid state lighting (SSL) and LED lighting systems. Government support has already been invested in product development. Demonstrations of manufacturing and city applications are now planned and this will utilise over half the total funding being sought. The balance is for market surveys, designing policies, achieving quality assurance through standards etc., writing up lessons learned from the R&D and demonstrations, and disseminating the results.

Improved lighting can significantly reduce the electricity demands in buildings and industry. The LED market is already fairly mature but barriers to increasing demand have been identified, for example, poor consumer awareness. The SSL is a less mature technology so additional barriers need to be overcome. The GEF project aims to increase the penetration rate from enhanced deployment by way of the demonstrations and supporting policies.

STAP has the following comments that could be addressed during project preparation:

1. Baseline: STAP has formed the impression that certain parts of this proposal were written sometime ago and could have become outdated. It is very difficult to ascertain whether the China SSL industry remains in "its fledgling stage". A 2012 report by the consultancy McKinsey "Lighting the way: Perspectives on the Global Lighting Market" estimates the total LED market in China at 10 billion Euro or about 20% of the world's value, forecasted to increase to almost one-third by 2015. China's LED lighting market revenue is expected to double from \$3.1 billion to \$7.4 billion in 2017, according to Lux Research. The LED lighting market in China is expected to double in size from 9.6 percent to 18 percent of all lighting used in the next four years. The growth will be spurred by falling prices, increased policy support and energy goals by government with China phasing out all incandescent lamps by 2016. This factor has already resulted in the domestic LED penetration rate of close to 12%, which is much higher than the 3% cited in the proposal. This relatively high LED penetration is driven by non-residential applications, but residential ones are picking up too.
2. Similarly, statements in the proposal that the promotion of SSL technologies in China "are limited, resulting in a somewhat "free-for-all" approach in the development of the local SSL industry and market"

have to be probably revised. It seems there has been substantial research in the recent several years on the size and potential of the LED market in China and it is difficult to see what particularly new information will be received in the proposed market that the proposal surveys.

3. STAP would like to see more careful and systematic than analysis presented in the proposal including the barriers for penetration of LED technology into the residential sector. In addition, although mercury free, careful analysis of the possible hazards from disposal of the old SSL and LED lights should be addressed together with the options for recycling or materials.

4. No details are provided of the differences between technologies of initial costs, life, energy use and quality of lighting for various applications. Efficient lighting is more complex than simply replacing one light bulb type with another lower wattage type, but this does not come across in the proposal. The set of quality and performance standards will possibly cover this issue.

5. The estimated 10 TWh of electricity savings and 9 Mt CO₂ reductions are not detailed, but would require an electricity emissions factor of around 900g/kWh which is correct for China. The additional 430M LEDs to produce the 10 TWh/yr of electricity savings equates to around 23 kWh savings a year per LED displacing, presumably, an incandescent light bulb. This in turn assumes the LED is turned on for around 250-300 hours per year on average. The abatement cost of US\$0.17/t CO₂ for GEF funding is closer to US\$ 4.2/tCO₂ for the total project funding though much of this can be spread over a longer period than the 3 year life of the project. The resulting indirect emissions could be highly significant given the global export potential of these technologies. Very low wattage systems will also enable lighting to reach the remote rural communities in many developing countries currently without electricity as smaller and cheaper solar PV generation and storage systems will be needed. Confirmation of what assumptions were actually used in the estimations would be useful and GHG calculations verified in the project document. In assessing GHG emission of the proposed interventions, STAP recommends using recently developed methodology for the GEF EE projects, particularly its standards and labelling model (available at: <http://www.stagef.org/revise-methodology-for-calculating-greenhouse-gas-benefits-of-gef-energy-efficiency-projects-version-1-0/>).

6. Proposal states that there is no fully developed and established standard set of SSL testing, quality control and certification system in China and in the world. This is difficult to accept. The China Compulsory Certification mark is one example. Similarly, the absence of the main certification institution in China, CNCA (Certification and Accreditation Administration) and the China Quality Certification Centre (CQC) as designated by CNCA to process CCC mark applications and defining the products that need CCC among project stakeholders would require some explanation.

<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>