

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: 6913

PROJECT DURATION : 5

COUNTRIES : Uzbekistan

PROJECT TITLE: Market Transformation for Sustainable Rural Housing Project

GEF AGENCIES: UNDP

OTHER EXECUTING PARTNERS: State Committee on Architecture and Construction of the Republic of Uzbekistan (Gosarchitectstroy)

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

The project's objective is to provide rural population in the country with the improved low-carbon housing using green mortgage financing, improvements in the domestic supply chain and several policy and regulatory reforms as well as public awareness campaigns. The existing standard house design (baseline) is to be improved by a) greater insulation levels and b) renewable energy installations of a solar hot water heater with heat exchanger, solar PV system for lighting, LED lamps, and a recuperative air exchanger. The project is well structured and defined including project boundaries and baselines. STAP would like to commend UNDP for introducing innovative green mortgage schemes that have potential to be scaled up in the country and replicated in other parts of Central Asia and elsewhere in the developing world thus supporting South-South knowledge exchange. Project is strong on sustainability aspects including embedding its activities in national institutions and linking its results with the future portfolio of the Green Climate Fund.

The project components, as clearly summarised in Table 5, make good sense and address major barriers to low-carbon rural housing in Uzbekistan. Improving energy performance building codes is commendable; mainly to reduce heating/cooling demands by higher insulation standards.

STAP has the following comments/suggestions:

1. PIF states on page 11: "The design for both EE and low-carbon houses will be prepared and tested under Component 2." There are several issues that should be answered during project preparation including: How long will this testing take?; Who will do it?; What exactly will be measured? Or will it be modelled?; How many houses will be assessed to determine statistically significant results?; What will determine whether or not the improved design parameters have been met?; If metrics are to be based on energy consumption (kWh/m²/yr) by families living in the new design homes compared with other designs, will allowances be made for whether it is an above or below average, hot or cold, or wet or dry year?; Will the costs for each individual item (insulation, solar water heater etc) be compared in terms of \$/t CO₂ avoided?
2. Table 6 shows the extra costs to the homeowner using green mortgage scheme, but where are the cost savings presented that are the estimates for reduced the energy bills? What are the likely payback periods

for the additional costs? These factors are important to consider in the longer term assuming that subsidies for green mortgage should be reduced over time not only because of deceasing costs of EE construction and equipment, but also because low-carbon housing will reduce consumer energy consumption costs.

3. Based on section 1.5, energy savings will be from reduced electricity demand. This assumes the baseline is that present houses are heated only with electricity. The intention is for government to build 2000 km more of gas pipeline in rural areas. Will this enable all the new houses in this project to be connected or will some use compressed gas delivered in bottles? Will the water be heated electrically or by gas? What sort of heating appliances are now used, electrical resistance, heat pumps, gas boilers? The choice available can make a significant difference to the analysis. Are there no wood stoves used today? Could pellet stoves be a future option where gas does not reach?

4. STAP recommends considering several factors in low carbon home designs including building orientation, larger south facing windows, thermal storage, double glazing, white roofs, and etc. The project document could provide cost-benefit analysis for different materials and technologies to understand how the priority will be given to the range of energy saving technologies. Are the houses likely to be located in areas of high solar radiation such that solar systems will be viable? Has the alternative water heating option of an air-to-water heat pump been considered? It could be more viable for some situations so a comparison should be made. The time of using the hot water affects the viability of a solar water heating system so behavioural issues need to be considered and these are not mentioned in the proposal. Regarding solar water heaters, solar PV and other renewable energy systems, a useful report would be IEA "Cities Towns and Renewable Energy" (<http://www.iea.org/publications/freepublications/publication/Cities2009.pdf>) that covers appropriate policies in detail and gives examples of the "Merton Rule" and Barcelona's solar water heater ordinance. In addition the IPCC 5th Assessment Report – Mitigation in Chapter 9 provides detailed analysis of energy efficiency options for buildings. The weak part of the project is the selection of options in the house design so this reference may help in terms of costs and potentials (<http://mitigation2014.org/report/publication/>). IEA also has a series of publications on energy efficiency standards in buildings that would be useful.

5. There is no mention of the rebound effect in the PIF whereby householders who save money from heating or cooling costs tend to use more energy to heat/cool more rooms in the house than was the original case. Is this to be considered during project implementation?

6. Uzbekistan's national electrification rate is 94.4%, but electrical supply to rural areas is "unreliable and of low quality". There are often power blackouts that last many hours per day. World Bank (2013) report: Uzbekistan Energy/Power Sector Issues Note suggests that changes in hydrology, air temperature and extreme events will likely affect national energy security in the long term, with expected measurable impacts on energy supply in 2030. It is assumed that these changes will impact particularly on rural areas with unreliable energy supply manifested potentially through higher frequency of black-out periods, higher energy tariffs, increases in electricity demand and changes in consumption patterns. Cooling loads are expected to increase as the climate warms, which will drive increases in electricity consumption. However, heating requirements in winter months are expected to decrease due to rising temperatures. Project proponents are recommended to consider these climate impacts on the choice of building designs and EE and RE technologies suggesting low-carbon rural housing more preferable and viable option than EE housing in the longer term.

<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: (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>
3. Major issues to be considered during project design	<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>