

# 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: September 24, 2015

Screeners: Virginia Gorsevski

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:** 9281

**PROJECT DURATION :** 5

**COUNTRIES :** Tanzania

**PROJECT TITLE:** Promotion of Bio-Ethanol as Alternative Clean Fuel for Cooking in the United Republic of Tanzania

**GEF AGENCIES:** UNIDO

**OTHER EXECUTING PARTNERS:** Other Executing Partner(s):  
1. Ministry of Energy and Minerals (MEM)  
2. First Vice presidents office, Department of Environment, Zanzibar  
3. Vice Presidents Office " Division of Environment

**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 objective of this project is to promote bio-ethanol as an alternative clean cooking fuel for Tanzania. Given that more than 80% of Tanzanians depend on biomass as their major energy source, this type of project is worthwhile.

Market development for this clean cooking fuel requires capacity building of staff from institutions and key government policy makers. Standards for producing the fuel and stoves are required given they will be manufactured locally. Partnerships, promotion and business networks will be encouraged.

A major share of the funding (around 70% of the total) is to come from ethanol producing distilleries. Yet these have not yet been identified, and therefore it can be assumed there is no commitment. There seems little benefit from proceeding with the project until these partners are in place.

There is no doubt that replacing fuelwood or charcoal with ethanol fuel will reduce deforestation (and hence national GHG emissions), improve health through cleaner burning stoves, and reduce the drudgery of fuelwood collection. The cost of charcoal or kerosene versus ethanol for cooking in urban areas is not known. Resulting reductions in black carbon " a short-lived climate pollutant " will also contribute to climate mitigation.

The sugarcane industry is mature and there has been some interest in producing ethanol, as well as sugar as co-products. Other sources of ethanol from the fermentation of sugars, exist, including from crop waste products such as cashew nut "apples". The production of ethanol is relatively straight-forward, though capacity building will be required, an integrated policy framework established and strict legal controls put in place in production plants to avoid the distilled ethanol being taken out of the plant and taken as an alcoholic drink. Having many micro-distilleries will be a challenge to police the potential harmful use of ethanol to both individuals and society. Local stove manufacture is also a commendable goal.

The project will only be successful if the ethanol stove designs are preferred by the women folk. Based on those who have used it in UNIDO's recent pilot study, there appears to be a positive response. Lessons have been learned from other improved solid fuel, cook-stove programmes. This study forms the baseline.

The engineering department of the University of Dar-es-Salaam will become the centre for capacity development programmes after staff have been provided with suitable training and a research and teaching centre established. Policy makers, sugar mill staff, bankers, financiers, and entrepreneurs will be offered training in both fuels and stoves. Technical standards will also be formulated. However, since ethanol stoves have been commercially available for a decade or more, much information exists elsewhere and this should be reviewed (eg [http://www.climatetechwiki.org/technology/cook\\_ethanol](http://www.climatetechwiki.org/technology/cook_ethanol))

On sustainability issues for the biomass, this may provide a useful guide even though it targets transport fuels (STAP, 2014): [http://www.stapgef.org/stap/wp-content/uploads/2015/04/Biofuels\\_March13\\_final.pdf](http://www.stapgef.org/stap/wp-content/uploads/2015/04/Biofuels_March13_final.pdf)

Although the projected stove price is given, there is no comparison of overall annual costs for a household between the options (charcoal, kerosene, fuelwood etc.). Surely this is a basic piece of information needed in order to produce policies. Also with mass production, will the present stove cost decline?

Overall GHG emission reduction of 2.4 Mt CO<sub>2</sub>-eq is sound based on assumptions given. Ethanol stove efficiency used of 43% is not referenced; it seems low. Also not included is the CO<sub>2</sub> emitted during the production of charcoal. As for all biomass, C emissions depend on whether the source of wood is replanted/replaced (in which case it can be assumed to be near C-neutral) or whether it arises from deforestation activities (which can result in double counting is include LULUCF assessment). Some clarification would be useful.

One risk included is from floods due to climate change. Possibly a greater risk is lack of biomass feedstocks due to future droughts “and hence a shortage of ethanol fuel. Will users be encouraged to keep their old wood burning stoves as an insurance against such an eventuality of insecure fuel supply?

Efforts to promote clean cookstoves have been going on for decades. There is a wealth of information in the scientific literature as well as through currently active, global networks such as the Global Alliance for Clean Cookstoves (see <http://cleancookstoves.org/>). Before embarking on this project, a thorough review should be made of past and current projects similar to the one proposed here in order to glean lessons learned, enhance South “ South cooperation, and ensure that information arising from this effort will be shared broadly throughout the global community in order to maximize efficiencies and avoid duplicating mistakes.

Ekouevi, K. and V. Tuntivate. (2012). Household Energy Access for Cooking and Heating: Lessons Learned and the Way Forward. Washington DC. World Bank.

STAP (2014) Optimizing the Global Environmental Benefits of Transport Biofuels. Scientific and Technical Advisory Panel of the Global Environment Facility, Washington, D.C. Authored and edited by Bierbaum R., Cowie A., Gorsevski V., Sims R. (STAP); Rack M., Strapasson A., Woods J. (Imperial College, London) and Ravindranath N. (Indian Institute of Science, Delhi).

<i>STAP advisory response</i>	<i>Brief explanation of advisory response and action proposed</i>
<b>1. Concur</b>	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.
<b>2. Minor issues to be considered during project design</b>	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.
<b>3. Major issues</b>	STAP proposes significant improvements or has concerns on the grounds of specified major

<b>to be considered during project design</b>	<p>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>
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