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 21, 2015 Screener: 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: 9210
PROJECT DURATION : 5
COUNTRIES : Uganda
PROJECT TITLE: NAMA on Integrated Waste Management and Biogas in Uganda
GEF AGENCIES: UNDP
OTHER EXECUTING PARTNERS: National Environment Management Authority (NEMA) as the lead agency, Directorate of Water Resources Management (DWRM), National Water and Sewerage Corporation (NWSC), Department of Fisheries Resources and the Directorate of Animal Resources (DAR) in the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), and Ministry of Energy and Mineral Development (MEMD).
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 aim of this project is to improve waste management in Ugandan towns including through the use of biogas digesters as part of the treatment system. Designing and operating the plants using municipal solid waste (MSW) and sewage sludge feedstocks will be enhanced by capacity building.

It is not clear whether the choice of anaerobic digestion of MSW as a feedstock has resulted after consideration of alternatives such as bio-methane gas collection from sealed landfills (landfill gas) and the other available option for treating MSW by incineration and using the heat generated for power generation or meeting direct heat demands. Why is anaerobic digestion the preferred option of the three?

Being fairly small towns for hosting the 1 MW scale demonstration plants, the volume of MSW involved may prohibit these other options, but they should not necessarily be discounted for treating MSW in larger cities. Treating wastewater usually involves biogas production, but sewage sludge can either be digested or dried and then combusted with MSW.

Three demonstration plants are planned that will result in scale-up and increased renewable electricity imported into the grid as well as improved treatment of wastewater discharges as a co-benefit. Are heavy metals being monitored? How will the digested effluent/sludge be utilised? If for soil conditioning and nutrient recycling as mentioned (page 13), the heavy metal content becomes critical.

There is a mention of using waste heat from the gas engines used to power the generators in the "Environmental benefits" section where it states "GHG benefits from methane recovery and heat production will be calculated during the PPG." This could be a useful low-grade heat source for small industry.

Finance availability for this type of projects should be increased once the systems are successfully demonstrated.

Given the problems of waste disposal as outlined, each demonstration project should incorporate waste management, recycling, reduction, avoidance, collection and education as part of the overall waste system. Biogas production should be the outcome for only the residual organic wastes remaining.

Many MSW â€“ biogas plants exist worldwide and it is likely that the GEF has funded many similar projects. It would be useful to review these projects and learn from the experiences, both successful and failures. Collaborating with Makerere University is good, but designing and constructing biogas plants should only be undertaken after liaison with manufacturers in Germany, Denmark, UK etc. that have had many years of experience. This includes understanding the corrosive nature of raw biogas and the possible need to remove H2S (as well as CO2 to reduce storage volume). A useful overview is provided by Task 37 of IEA Bioenergy (see http://www.ieabioenergy.com/task/energy-from-biogas/).

One potential way to ensure sustainability that is not mentioned is by more fully engaging with local communities. In Uganda, community participation in waste management is mainly informal with no clear avenues for active, formal participation (Okot-Okumu, 2011). However, as municipal waste is highly visible and dangerous for urban dwellers, it is crucial to actively engage local citizens to get their buy-in and support for projects to ensure long term success. One recent study in Busia, Uganda illustrates the high level of concern that community members have regarding MSW and their willingness to actively improve the situation (Lederer, 2015). This project proposal could be improved by better incorporating local communities â€“ perhaps through the establishment of formal channels for their active participation.

Since methane is a short-lived climate pollutant covered by the CCAC and waste is such a monumental issue in Ugandan cities (and getting worse), perhaps it would be worth exploring potential partnership opportunities â€“ see http://new.ccacoalition.org/en/initiatives/waste. This could fall under the category of Knowledge Management, as there are many developed and developing countries participating in this initiative, which could improve the flow of information and exchange of ideas.

Lederer, J., A. Ongatai, D. Odeda, H. Rashid, S. Otim and M. Nabaasa. (2015). The generation of stakeholder's knowledge for solid waste management planning through action research: A case study from Busia, Uganda. Habitat International 50: 99-109.

Okot-Okumu, J. and Nyenje, R. (2011). Municipal solid waste management under decentralisation in Uganda. Habitat International 35. 537-543

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.