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: April 09, 2014 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: 5704
PROJECT DURATION : 4
COUNTRIES : South Africa
PROJECT TITLE: Promoting Organic Waste-to-Energy and other Low-carbon Technologies in Small and Medium-scale Enterprises (SMMEs): Accelarating Biogas Market Development

GEF AGENCIES: UNIDO
OTHER EXECUTING PARTNERS: Ministry of Water and Environmental Affairs (DEA), Ministry of Energy- SANEDI, Ministry of Trade and Industry (DTI), Ministry of Agriculture, Forestry and Fisheries (DAFF), Council of Scientific and Industrial Research (CSIR) and National Cleaner Production Center (NCPC)
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): **Consent**

III. Further guidance from STAP

1. The aim of this project is to promote biogas plants using organic waste feedstocks in contrast to large-scale waste-to-energy plants that use incineration of MSW, but not always with heat recovery. Capacity building is a key part as is developing market and regulatory frameworks, but the main component of the project is supporting demonstration power generation plants and then scaling up. The aim is to reduce organic wastes to landfills and to discourage fly tipping of rubbish.

2. The baseline is described but not quantified.

3. Component 1: For capacity building and technology support, the project will carry out a detailed inventory of waste streams from industry to establish volumes, characteristics, location of landfills, etc. that will be used to support the identification of potential sites for biogas energy projects. What tools will be used to carry out this analysis? It lends itself well to the use of geographic information systems (GIS) in support of multi-criteria decision making for spatial decisions (e.g. site location). Other data would be useful (and maybe even required) such as information about slope, proximity to roads, etc. (see Yal, G.P. and H. AkgÃ¼n. 2013. Landfill site selection and landfill liner design for Ankara, Turkey. Environmental Earth Science, 70: 2729-2752; Kara, C. and Doratli, N. 2012. Application of GIS/AHP in siting sanitary landfill: a case study in Northern Cyprus. Waste Management & Research, 30(9): 966-980.)

4. Component 2 talks of two demonstration plants totalling around 3 MW whereas in Table B it states four plants as it does lower in the paragraph. Which is it â€“ 2 or 4 demo plants? How much funding is to be allocated to each plant? Total funding sought for this component is around $8M and, if for 3MW total plant, that equates to approximately $2700/ kW. This seems high for biogas plants. Also what is learned from 1 MW scale plants may not be so relevant to small scale domestic plants as is implied.

5. The assessment of mitigation potential is OK but the main question is whether all the useful heat available will be utilised. This depends on the location of the plants and nearby heat loads. It is agreed that

the co-value of the effluent is critical for project success, but no comment is given on the potential price and offset of total costs.

6. The risks state the technologies "are relatively new" whereas it is a mature technology. Even so the skill of the plant operator is imperative. Maintenance is mentioned, but this can be a major cost for biogas plants due to managing the bacteria and over-coming corrosion problems due to the hydrogen sulphide gas.

7. There is already much experience and knowledge concerning 1 MW scale biogas plants as in Germany, Denmark, UK etc. It would pay for the proposers and developers to first learn from their long-term experiences. One way is through the IEA Bioenergy biogas task group â€“ see http://www.iea-biogas.net/

STAP advisory response	*Brief explanation of advisory response and action proposed*
1. Consent	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. 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.
2. Minor revision required.	STAP has identified specific scientific or technical challenges, omissions or opportunities that should be addressed by the project proponents during project development. 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.
3. Major revision required	STAP has identified significant scientific or technical challenges or omissions in the PIF and recommends significant improvements to project design. 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.