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:	October 24, 2017
Screener:	Guadalupe Duron
Panel member validation by:	Annette Cowie
Consultant(s):	

I. PIF Information *(Copied from the PIF)*

FULL-SIZED PROJECT	**GEF TRUST FUND**
GEF PROJECT ID:	9793
PROJECT DURATION:	4
COUNTRIES:	Madagascar
PROJECT TITLE:	Conservation and Improvement of Ecosystem Services for the Atsinanana Region through Agroecology and the Promotion of Sustainable Energy Production
GEF AGENCIES:	UNEP
OTHER EXECUTING PARTNERS:	Ministry of Environment, Ecology and Forestry (General Directorate of Environment and General Directorate of Ecology) and the National Association of Environmental Action (ANAE)
GEF FOCAL AREA:	Multi Focal Area

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 issues to be considered during project design

III. Further guidance from STAP

STAP acknowledges UNEP's proposal in Madagascar "Conservation and improvement of ecosystem services for the Atsinanana region through agroecology and the promotion of sustainable energy production". The project seeks to generate multiple benefits in sustainable land management, climate change mitigation, and biodiversity conservation through agro-ecology. STAP appreciates the description of the threats and barriers for implementing agroecology in the Atsinanana region. STAP also welcomes the definition of agroecology at the beginning of the PIF, which provides a clear understanding of how the concept of agroecology is applied in the project.

To strengthen further the project design, STAP recommends addressing the following points:

1. Clearly express the project theory of change, that is, the problem being addressed, its drivers, and how the planned interventions will address the problem, as a coordinated logical strategy. Focus on the specific region to be targeted. The proposal presents a number of environmental issues, with multiple causes, and a wide range of solutions. STAP suggests that this wide range is quite ambitious and presents a greater risk than acknowledged on page 17. STAP suggests applying a two-pronged approach that addresses land degradation through the introduction of SLM practices and land restoration, and alternative cooking technologies, to relieve pressure on forests. Bioenergy crops can play a role in both components. The Resilience Adaptation Pathways and Transformation Assessment (RAPTA) Framework provides guidance on applying a participatory process to identify key aspects to prioritize. RAPTA guidelines are described in: O'Connell, D., et al (2016). "Designing Projects in a Rapidly Changing World – Guidelines for embedding resilience, adaptation and transformation into sustainable development", available at: http://www.stapgef.org/rapta-guidelines

2. STAP appreciates the intention to use energy crops in the rehabilitation of eroded land, and to use biomass efficiently as an energy source. The proposal mentions using exotic bamboo species. STAP urges the proponent to undertake a comprehensive environmental impact assessment: to evaluate alternative energy crop species; to be aware of the potential biodiversity impacts on monocultures of exotic bamboo; and to recognize that exotic or local bamboo, like any other crop, requires water and nutrients to produce high yields. The project developers could take a look at this paper for further information: Bowyer, J. et al. (2014). "Bamboo Products and Their Environmental Impacts". Dovetail Partners, Inc. http://www.dovetailinc.org/report_pdfs/2014/dovetailbamboo0314.pdf

Eucalyptus are rejected on the basis of allelopathy, plus potential impacts on water table, biodiversity and soil nutrients. While bamboo does not have the same allelopathic risk, the hydrological, biodiversity and soil fertility impacts must be considered.

3. For component 3, it would be useful to detail the evidence of using bamboo as a bioenergy source in conditions similar to the project site. The sentence about carbon sequestration rate (page 6) needs rewording, providing evidence of likely growth rate at the project site. These studies may be useful: Chin, et al. (2017). "Bioenergy Production from Bamboo: Potential Source from Malaysia's Perspective". BioResources. Vol. 12, No 3; and Darabant et al., 2014. Bamboo biomass yield and feedstock characteristics of energy plantations in Thailand. Energy Procedia, 59, pp.134-141, available at http://www.sciencedirect.com/science/article/pii/S1876610214017263.
It also would be valuable to consider how to advance knowledge on the use of bamboo for bioenergy, or for carbon sequestration. The description of carbon neutrality (Annex 1) requires rewording: bioenergy is carbon neutral if the biomass combusted is subsequently regrown, sequestering the same amount of carbon that was released.

4. STAP appreciates that the proponent has presented an analysis of alternative renewable energy options. STAP suggests that this analysis should be expanded to acknowledge that some of these options supply heat for household cooking, and some provide electricity for the distribution system. Explain the displaced fuel source in the electricity case. Consider the barriers to adoption of cookstoves using solid biomass such as: additional fuel preparation time; perception that it is less convenient and "modern" than gas; and the need for operator skill to avoid smoke. Consider the potential to generate biogas from biosolids, animal manure, food waste as an alternative form of energy for household cooking. With respect to the proposed gasifier, the analysis should compare with conventional combustion technology, considering also costs, emissions and the skills, and the capacity to use and maintain the gasification generator once the project ends.

5. The proposal mentions use of waste as a biomass source for energy. STAP suggests that the source of waste, and the current disposal method be detailed to ensure that the bioenergy technology is suitable, and that the full GHG impacts are included in the calculation of climate change mitigation.

6. Provide details about the relationship with the National ethanol fuel program, which is nominated as a risk on page 8, and a baseline project on page 9. Will the project reduce the risk of inappropriate expansion of sugar cane? STAP suggests that it would be desirable to apply a landscape scale integrated approach to land use planning, to determine the optimal location for sugar cane and other crops, in conjunction with planning SLM and land rehabilitation actions (see also point 7).

7. To complement agro-ecological principles and the application of IUCN's Restoration Opportunities Assessment Methodology that the project will use, STAP recommends applying the UNCCD's "Scientific Conceptual Framework for Land Degradation Neutrality (LDN)". The LDN framework provides guidance to inform identification of target areas for SLM and rehabilitation activities, and monitoring of land-based ecosystem services. The LDN framework is applied at landscape scale, encompasses social-ecological dynamics, and emphasizes adaptive learning and knowledge management. Therefore, the LDN approach can guide stakeholders' decisions to adapt to future changes, including climate change. The framework can be accessed through this link: http://knowledge.unccd.int/knowledge-products-and-pillars/land-degradation-neutrality-ldn-conceptual-framework/land

8. Key features of social-ecological systems approach resemble those of agroecology. These features include: connectivity across scales, strong governance arrangements, and cohesive links between social and ecological variables. Project proponents should consider these features in the project design. The following resources can help the project proponents consider these social-ecological system elements when designing the project: 1) RAPTA Guidelines: O'Connell, D. et al. (2016). "Designing Projects in a Rapidly Changing World – Guidelines for embedding resilience, adaptation and transformation into sustainable

development": http://www.stapgef.org/rapta-guidelines; and, 2): Fischer, J. et al (2017). "Reframing the food-biodiversity challenge". Trends in Ecology & Evolution Volume 32, Issue 5, May 2017, Pages 335-345.

9. STAP appreciates that the types of SLM technologies cannot be detailed at this point in the project cycle. Thus, STAP encourages UNEP to define the criteria that will be used to identify the selection of SLM technologies (Component 2). It also will be important to detail how stakeholders' knowledge of SLM and integrated land management will be included in the analysis and selection.

10. STAP suggests that further detail is required of the linkages with the baseline projects in the agriculture sector, clarifying the nature of the relationship, and how they support the project.

11. A study in the Itasy region of Madagascar offers evidence that agro-ecological practices have an impact on climate change mitigation. The project proponents may want to refer to the paper to strengthen the knowledge base of agro-ecological practices in Madagascar while identifying the appropriate caveats – for example, the scale in the study may be different than the project scale. Rakotovao, N. et al. (2017). "Carbon footprint of smallholder farms in Central Madagascar: The integration of agro-ecological practices". Journal of Cleaner Production 140 (2017) 1165e1175

12. The following paper may be useful in providing recent data on biomass amounts, and data on annual consumption of wood in Madagascar. It also provides information on other sources of renewable energy, and their potential use in Madagascar, as well as details on the energy sector policy in Madagascar that may be used to complement the project description: Praene J.P., et al. (2017). "Electricity generation from renewables in Madagascar: Opportunities and projections". Renewable and Sustainable Energy Reviews 76 (2017) 1066–1079.

13. Finally, please provide further detail on the assumptions used to calculate the potential mitigation benefits of bioenergy. The calculations provided on page 23 lack clarity on the assumed reduction in fuelwood requirement of improved cookstoves. Correct the statement "every grain of atomic carbon" which presumably should say "gram".

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.