

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: February 13, 2018
Screener: Guadalupe Duron
Panel member validation by: Annette Cowie
Consultant(s):

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

MEDIUM-SIZED PROJECT	GEF TRUST FUND
GEF PROJECT ID:	9993
PROJECT DURATION:	3
COUNTRIES:	Global (Burkina Faso, Brazil, Ethiopia, India, Morocco, Senegal, South Africa)
PROJECT TITLE:	AVACLIM : Agro-ecology, ensuring food security and sustainable livelihoods while mitigating climate change and restoring land in dryland regions
GEF AGENCIES:	FAO
OTHER EXECUTING PARTNERS:	CARI
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):
Concur

III. Further guidance from STAP

STAP welcomes FAO's medium-sized proposal on "Agro-ecology, ensuring food security and sustainable livelihoods while mitigating climate change and restoring land in dryland regions". The project will be implemented in seven countries, addressing dryland ecosystems in Africa, Asia, and Latin America. The project hypothesizes that agro-ecological approaches in drylands can restore degraded land, mitigate climate change, and improve food security. In this regard, the project seeks to strengthen stakeholders' capacities on agro-ecology, and support the integration of agro-ecology into development planning, and policies. The project is committed to disseminating best practices and learning to scale-up agro-ecological practices and technologies in a community of practice.

STAP is cognizant of the potential for agroecology to deliver multiple environmental, social and economic benefits, while contributing to the sustainability of food systems. Knowledge generated from this project will be valuable to the GEF as it strives to implement systems thinking to address drivers of environmental degradation, and encourage further action on food systems.

STAP is pleased to be invited to join the project's technical committee, and looks forward to receiving further information about its role. As the project enters its preparation phase, STAP offers the following recommendations to strengthen the project design:

1. The project references FAO's framework on agroecology, and FAO's experience in implementing agro-ecological approaches at the regional level. However, it is unclear to what extent FAO's framework will inform the assessment of the agro-ecological practices described in component 2, or the selection of indicators. STAP believes that a conceptual framework needs to be developed to underpin the identification of suitable practices in each specific context, and the selection of suitable indicators. To inform the development of the framework, it is important to detail a working definition of agro-ecology. Based on

articulated principles (eg from FAO framework), the working definition will help to clarify what an agro-ecological approach, or practice, encompasses, and what it excludes.

2. The practices encouraged by agro-ecology must be scientifically-based, not governed by ideology. A blanket avoidance of chemical fertilisers, for example, is unwarranted; there may be contexts where correction of a macro or micro nutrient deficiency with judicious application of chemical fertilisers is desirable, to enhance productivity, prevent land degradation and support food security.

3. The project is committed to establishing monitoring systems, and strengthening stakeholders' capacities on agro-ecology. STAP believes these elements are important for fostering learning and innovation – two critical elements for meeting the project's objective. Thus, STAP suggests emphasizing learning and knowledge management in component 4 – and possibly renaming the component to include "learning and knowledge management" in the title. This will reinforce the need to develop an elaborate theory of change, rely on it to monitor and assess progress, and support learning and adaptive management. Revisiting and refining the theory of change will be critical in enabling project stakeholders to reflect on progress, validate assumptions, and identify possible constraints that require adaptive management.

4. In addition, as the theory of change is refined, a systematic consideration of the options for incremental change, or transformational change can assist stakeholders focus efforts on where interventions will be most effective. This process considers temporal and spatial scales, drivers of change, including climate change, and possible tipping points of the agro-ecological system that may possibly impact negatively the project's sustainability. Applying resilience thinking will assist the project team to closely monitor stresses (e.g. reduced rainfall during the growing season) that can impact the agro-ecological system (e.g. reduced crop productivity); identify key variables of resilience (e.g. amount of soil organic matter); and determine how the project can influence those variables it can control (e.g. use of cover crops). Managing for resilience is an important enabler of scaling-up practices. FAO is encouraged to use the "Guidelines for embedding resilience, adaptation and transformation into sustainable development projects" to assist with resilience thinking in the project design and implementation: <http://www.stagef.org/rapta-guidelines>

5. The project team should consider strengthening the evidence-base of agro-ecological practices and their impact on the global environment (e.g. carbon sequestration through integrated nutrient management), and livelihoods (e.g. improved social and economic livelihoods). The following papers elucidate some knowledge gaps, which the project team may want to tackle, as it learns and collects evidence from agricultural practices: 1) Graham, R. et al (2017). "Comparison of Organic and Integrated Nutrient Management Strategies for Reducing Soil N₂O Emissions." *Sustainability* 2017, 9, 510; <http://doi:10.3390/su9040510> 2) Raffaele D'Annolfo, et al. (2017). "A review of social and economic performance of agroecology" *International Journal of Agricultural Sustainability*, 15:6, 632-644. <http://dx.doi.org/10.1080/14735903.2017.1398123>

6. STAP encourages the project team to provide a more thorough rationale for the target sites based on the countries' potentials to achieve multiple benefits, and advance learning on agro-ecology as a sustainability approach. Several case studies elucidate on the positive effects of agro-ecology in Africa, Asia, and Latin America. However, these situations can be context specific. STAP recommends detailing the risks of pursuing agro-ecology if the enabling conditions (e.g. appropriate skills and sufficient labor) are not present. The project team should also define the assumptions associated with the project's intentions to horizontally scale-up (i.e. disseminate agro-ecology to more stakeholders), and vertically scale-up (i.e. influence policymakers, national and international agro-ecological partners). Each of these scaling-up efforts is possibly associated with preconditions, such as good access to markets, support to extension services or farmer to farmer learning, storage facilities, and other elements. The project proponents may want to refer to the following paper when considering further the assumptions and risks on agro-ecology: Bernard, B. et al. (2017). "How to feed the world sustainably: an overview of the discourse on agroecology and sustainable intensification" *Environ Change* (2017) 17:1279–1290. DOI 10.1007/s10113-016-1027-y.

7. The project aims to address climate change, which is expected to impact drylands severely. Remaining cognizant of climate change impacts in drylands (e.g. increased temperatures, reduced water availability, increased frequency of extremes, especially drought) is important for planning agricultural practices, and determining changes to the agro-ecological system (e.g. shifting agriculture to areas receiving more reliable rain). Thus, the project team is encouraged to describe the projected impacts of climate change on drylands. The following papers may be valuable in this regard: 1) Schlaepfer, D. et al. (2017). "Climate change reduces extent of temperate drylands and intensifies drought in deep soils". *Nature Communications*. 8:14196. DOI: 10.1038/ncomms14196; 2) Bradford, J. (2017). "Future soil moisture and temperature extremes imply expanding suitability for rainfed agriculture in temperate drylands". *Nature, Scientific Reports*. 7: 12923. DOI:10.1038/s41598-017-13165-x

8. In the project preparation phase, STAP recommends that the project team collect climate data for each of the project sites to support interpretation of results. When reporting on climate data, the project team will need to provide basic information that is critical to improving understanding on the impacts of climate change in drylands. The project team is recommended to follow these practices for presenting climate data:

"1) Include an appropriate citation or other clear attribution to the source of the climate data; 2) Include information about the timeframe over which the climate data were collected and used as the basis for long-term averages; 3) If using weather station data, include information on the station location; 4) Include information on how to access the original climate data and the information on how the data were cleaned. 5) Use language appropriate to the period to which the climatic data relate. For example, always use the past tense when describing climate values based on historical records (recent or distant past)." Morueta-Holme, N. et al. (2018). "Best practices for reporting climate data in ecology". Nature Climate Change. Vol 8. February 2018. 92–94.

Further information about how to report climate data is available in Moureta-Holme, N. et al (2018).

9. STAP suggests that the project proponents should justify how the agro-ecology database is different from, and will complement, the World Overview of Conservation Approaches and Technologies (WOCAT). WOCAT is a global database on approaches and technologies for sustainable land management. WOCAT also is UNCCD's primary database for SLM best practices, including measures of adaptation. WOCAT can be accessed at: <https://www.wocat.net/>

<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	<p>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:</p> <p>(i) Open a dialogue with STAP regarding the technical and/or scientific issues raised.</p> <p>(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> <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>