REVISED STAP SCREENING TEMPLATE

GEF ID	**11068**
Project title	**Guarantee Mechanism for Renewable Biogas in India**
Date of screen	**11 June 2023**
STAP Panel Member	**Ngonidzashe Chirinda**
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1. Summary of STAP's views of the project

This NGI project aims to support India's transition to biogas energy production. The project has two key components: *(1)* a US$150 million IBRD guarantee and the requested US$13.76 million GEF-8 NGI guarantee to mobilize private capital to scale up the generation of biogas and *(2)* the provision of technical assistance financed through a US$5 million donor-funded grant to support the bankability of the entire biogas value chain.

The project proponents seek to use the requested funding to develop a risk-sharing mechanism for credit enhancement and risk mitigation of the biogas value chain to mobilize financial resources to support the development of 100 large-scale biogas plants. The success of the first 100 large-scale plants is expected to catalyze commercial sector investments in large-scale biogas plants to realize the government of India's goal of 5000 large-scale biogas plants. Early-stage large-scale biogas projects must grapple with high-interest rates and collateral requirements due to perceived high risks, lagging de-risking policy implementation, and feedstock disruptions that may make them unattractive to investors. The GEF NGI instrument will ensure these temporary issues do not negatively impact the broader target for private capital mobilization.

The project is well thought out. Several stakeholder engagement activities have been carried out, which is encouraged to continue as the project is further developed. The gender dimension has also been considered in the project development. The proposal presented the expected GEBs (GHG emission reduction, land and ecosystem under restoration, and landscapes under improved practices). It also highlighted some co-benefits, including air quality improvement, better waste management, and job creation.

Though small-scale biogas plants are common in India, this project focuses on increasing the number of large-scale biogas plants characterized by high initial investment costs and facing several risks linked to the seasonality of feedstocks and drudgery associated with waste separation. Before using the biogas digestate in agricultural land, the project proponents must reflect on and institute quality control mechanisms to prevent soil pollution. In addition, it is essential to institute mechanisms to monitor pipe leakages.

The proposal will benefit from considering the different ways the future could play out under different drivers of change outside the project's control, such as population, economics related to the price of competing energy sources, and demands and markets market for biogas, climate change (e.g., impact on agro-residues), investors' continued interest, etc. Also, the theory of change needs to be improved by considering the assumptions between activities, outputs, and outcomes. Further, analyzing the country's current policy and regulatory environment will be helpful to ensure that no conflicting policies could derail the project's objective.

STAP's assessment*

- ✓ **Concur - STAP acknowledges that the concept has scientific and technical merit.**
  Minor - STAP has identified some scientific and technical points to be addressed in project design
  Major - STAP has identified significant concerns to be addressed in project design

Please contact the STAP Secretariat if you would like to discuss.

2. Project rationale, and project description – are they sound?

The proposal focuses on establishing risk-mitigation instruments to support establishing 100 biogas plants in India. There is a potential for commercialization of the biogas value chain. However, market, financial, and technical barriers and feedstock uncertainty limit this. The envisaged provision of technical assistance by the project proponents will be essential for the project's success. Considering the diversity of sources for organic feedstocks, for instance, in municipal solid waste (MSW), there is a need to establish a quality control mechanism to avoid contaminating the soil when the digestate is applied on agricultural land.

Unlocking private finance to implement large-scale biogas plants will enable India to maximize the utilization of organic resources generated in cities, industry, and agricultural land. Hence this project will demonstrate the chosen approach's viability (and potential scalability and replicability). Good baseline information on the energy situation in the country was provided and systematically connected to other sectors and issues, including air quality, climate change, waste management, urban management, transportation, and social concerns.

There is a need to consider the drivers of change and associated uncertainties, for example, population, economics related to the price of competing energy sources and demands and markets market for biogas, climate change (e.g., impact on agro-residues), investors' continued interest, etc., in designing the interventions. Specifically, the proposal would benefit from developing a narrative of plausible futures that considers the potential effects of these and other drivers and associated uncertainties on achieving the project's goal. This could inform the design of robust intervention options to the different ways the future could play out. See STAP's primer on future narratives for more guidance.

The project is aligned with current government environmental policies and international commitments and will develop regulations to support achieving the project objectives. But there is also a need to consider overall policy coherence within the country. It is essential to ascertain that current policies do not contradict the project's goal (e.g., policies or incentives that could make other non-environmentally friendly energy sources more attractive than biogas). Good policy coherence should ensure that no national policy undermines the outcomes of the country's environmental policies and the objective of GEF projects (see STAP, 2022). Hence, mapping policies across the different sectors to identify gaps and incoherencies will be needed when developing the project further.

The financial investment challenges are clearly explained. The GEF funds will leverage actions in a larger project that includes components aimed at *(1)* mobilizing private capital to scale up the generation of biogas and *(2)* the provision of technical assistance along the biogas value chain. The technical assistance activities should include quality control of the biogas, feedstock, and digestate. While the GEF funding will be used for part of component 1, these two components are aligned and should be implemented in a way that ensures that GEF's objectives of generating GEBs and catalyzing transformational change.

The proposal includes a theory of change outlining the activities, expected outputs, short- medium- and long-term outcomes, and the causal pathway to achieving project objectives. However, the underlying assumptions were not presented. The underlying assumptions must be included and should acknowledge the challenges and uncertainties of deploying large-scale biogas plants.

The project targets multiple GEBs, including GHG emission reduction, land and ecosystem under restoration, and landscapes under improved practices. The proposal explained how these GEBs were estimated, including the scientific basis and underlying assumptions. The proposal also noted that the project would create an ecosystem on the circularity of plastics. However, the expected plastic GEB was not presented, although this is one of GEF's core indicators. The proposal also noted the environmental and socioeconomic co-benefits that could accrue from the project, including air quality improvement, better waste management, and job creation.

The innovative element of the proposal is linked to risk-mitigating financial instruments. These instruments should support scaling as they create a sense of security in investors. While biogas production is a dated innovation, implementing it at scale remains a significant challenge in developing countries. Removing financial barriers can contribute to scaling and facilitate the transformation of the energy sector in the country.

3. Specific points to be addressed, and suggestions

To further strengthen this project, STAP recommends the following:

1. Consider developing a narrative of plausible futures that considers the potential effects drivers of change and their associated uncertainties on achieving the project's goal and use this to inform intervention options. See STAP's primer on future narratives for more guidance.
2. Strengthen the theory of change to include the underlying assumptions building on knowledge from the narrative of plausible future above.
3. Consider undertaking a policy gap analysis to understand where conflicting policies can hinder the achievement of the expected outcomes and ensure these are addressed appropriately. See STAP's paper on policy coherence for more guidance.
4. Instituting mechanisms to monitor feedstock and biogas digestate quality and pipeline leakages.
5. Provide GEB details for avoided residual plastic waste (GEF Core Indicator 9.8).
6. Include provisions to measure, track, and report the co-benefits (air quality improvement, better waste management, and job creation) to be achieved through the project. Please see STAP's recent paper on incorporating co-benefits in GEF's investments for guidance.

*categories under review, subject to future revision

ANNEX: STAP'S SCREENING GUIDELINES

1. How well does the proposal explain the problem and issues to be addressed in the context of the **system** within which the problem sits and its drivers (e.g., population growth, economic development, climate change, sociocultural and political factors, and technological changes), including how the various components of the system interact?

2. Does the project indicate how **uncertain futures** could unfold (e.g. using simple **narratives)**, based on an understanding of the trends and interactions between the key elements of the system and its drivers?

3. Does the project describe the **baseline** problem and how it may evolve in the future in the absence of the project; and then identify the outcomes that the project seeks to achieve, how these outcomes will change the baseline, and what the key **barriers** and **enablers** are to achieving those outcomes?

4. Are the project's **objectives** well formulated and justified in relation to this system context? Is there a convincing explanation as to **why this particular project** has been selected in preference to other options, in the light of how the future may unfold?

5. How well does the **theory of change** provide an "explicit account of how and why the proposed interventions would achieve their intended outcomes and goal, based on outlining a set of key causal pathways arising from the activities and outputs of the interventions and the assumptions underlying these causal connections".

   - Does the project logic show how the project would ensure that expected outcomes are **enduring** and resilient to possible future changes identified in question 2 above, and to the effects of any conflicting policies (see question 9 below).
   - Is the theory of change grounded on a solid scientific foundation, and is it aligned with current scientific knowledge?
   - Does it explicitly consider how any necessary **institutional and behavioral** changes are to be achieved?
   - Does the theory of change diagram convincingly show the overall project logic, including causal pathways and outcomes?

6. Are the project **components** (interventions and activities) identified in the theory of change each described in sufficient detail to discern the main thrust and basis (including scientific) of the proposed solutions, how they address the problem, their justification as a robust solution, and the critical assumptions and risks to achieving them?

7. How likely is the project to generate global environmental benefits which would not have accrued without the GEF project (**additionality**)?

8. Does the project convincingly identify the relevant **stakeholders**, and their anticipated roles and responsibilities? is there an adequate explanation of how stakeholders will contribute to

the development and implementation of the project, and how they will benefit from the project to ensure enduring global environmental benefits, e.g. through co-benefits?

9. Does the description adequately explain:

   - how the project will build on prior investments and complement current investments, both GEF and non-GEF,
   - how the project incorporates **lessons learned** from previous projects in the country and region, and more widely from projects addressing similar issues elsewhere; and
   - how country policies that are contradictory to the intended outcomes of the project (identified in section C) will be addressed (**policy coherence**)?

10. How adequate is the project's approach to generating, managing and exchanging **knowledge**, and how will lessons learned be captured for adaptive management and for the benefit of future projects?

11. **Innovation and transformation:**
    - If the project is intended to be **innovative:** to what degree is it innovative, how will this ambition be achieved, how will barriers and enablers be addressed, and how might scaling be achieved?
    - If the project is intended to be **transformative:** how well do the project's objectives contribute to transformative change, and are they sufficient to contribute to enduring, transformational change at a sufficient scale to deliver a step improvement in one or more GEBs? Is the proposed logic to achieve the goal credible, addressing necessary changes in institutions, social or cultural norms? Are barriers and enablers to scaling be addressed? And how will enduring scaling be achieved?

12. Have **risks** to the project design and implementation been identified appropriately in the risk table in section B, and have suitable mitigation measures been incorporated? (NB: risks to the durability of project outcomes from future changes in drivers should have been reflected in the theory of change and in project design, not in this table.)