

GEF-8 REQUEST FOR CEO ENDORSEMENT/APPROVAL

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General Project Information

Project Title	
Guarantee Mechanism for Renewable Biogas in India	
Region	GEF Project ID
India	11068
Country(ies)	Type of Project
India	FSP
GEF Agency(ies):	GEF Agency Project ID
World Bank	P179178
Project Executing Entity(s)	Project Executing Type
Small Industries Development Bank of India (SIDBI)	Others
GEF Focal Area (s)	Submission Date
Climate Change	1/25/2024
Type of Trust Fund	Project Duration (Months)
GET	180
GEF Project Grant: (a)	GEF Project Non-Grant: (b)
0.00	13,761,468.00
Agency Fee(s) Grant: (c)	Agency Fee(s) Non-Grant (d)
0.00	1,238,532.00
Total GEF Financing: (a+b+c+d)	Total Co-financing
15,000,000.00	765,000,000.00
PPG Amount: (e)	PPG Agency Fee(s): (f)
0.00	0.00
Total GEF Resources: (a+b+c+d+e+f)	
15,000,000.00	
Project Tags	
CBIT: No NGI: Yes SGP: No Innovation: No	
Project Sector (CCM Only)	
Renewable Energy	

Taxonomy

Innovation, Capacity, Knowledge and Research, Knowledge Generation, Training, Focal Areas, Chemicals and Waste, Land Degradation, Climate Change, Climate Change Mitigation, Renewable Energy, Influencing models, Strengthen institutional capacity and decision-making, Transform policy and regulatory environments, Demonstrate innovative approach, Stakeholders, Private Sector, SMEs, Individuals/Entrepreneurs, Civil Society, Non-Governmental Organization, Academia, Local Communities, Gender Equality, Gender results areas, Learning, Capacity Development, Knowledge Exchange, Enabling Activities, Sustainable Land Management, Restoration and Rehabilitation of Degraded Lands, Deploy innovative financial instruments

Rio Markers

Climate Change Mitigation	Climate Change Adaptation	Biodiversity	Land Degradation
Principal Objective 2	No Contribution 0	No Contribution 0	Significant Objective 1

Project Summary

Provide a brief summary description of the project, including: (i) what is the problem and issues to be addressed? (ii) what are the project objectives, and if the project is intended to be transformative, how will this be achieved? (iii), how will this be achieved (approach to deliver on objectives), and (iv) what are the GEBs and/or adaptation benefits, and other key expected results. The purpose of the summary is to provide a short, coherent summary for readers. (max. 250 words, approximately 1/2 page)

The Guarantee Mechanism for Renewable Biogas for India project aims to support India's energy transition by focusing on reducing greenhouse gas (GHG) emissions, ensuring energy security, restoring degraded land, and promoting sustainable management of agricultural residue and organic waste. The project aligns with India's policies and budget interventions related to compressed biogas and aims to produce 15 million tonnes per annum of biogas, resulting in a GHG emission reduction of about 70.59 MtCO₂e per annum across the biogas value chain.

To unlock the potential of the nascent biogas sector, the project offers a unique market-based solution through the Risk Sharing Facility (RSF). The World Bank will provide a guarantee of \$150 million to capitalize the RSF, which will then provide guarantees in local currency equivalent to \$150 million to commercial banks. Based on the initial size of the RSF, it is expected that approximately INR (Indian Rupee) 5,000 Crores (US\$610 Million Equivalent) of total Private Sector Investment (includes Equity contribution of \$185 Million from Biogas Developers) could be mobilized for up to 70 RE Biogas Projects. This will mobilize commercial financing and accelerate the development of up to 70 biogas plants. The project also provides Technical Assistance (TA) to strengthen the biogas value chain and improve the industry's commerciality.

- The project will focus on the following specific **analytical (TA) work and trainings** to support the bioenergy sector:

Analytical work (4)

- **Enabling climate finance** by establishing an institutional structure for biogas projects to access carbon credit markets and pathway to develop a national framework for project registration and aggregation of biogas carbon credits.
- **Addressing feedstock challenges** by building capacity of state governments to implement policies on agro-residue collection through mechanized equipment, storage and aggregation through cooperative models; support municipalities in capacity building and developing the value chain for waste segregation practice; advocacy across a diverse stakeholder for improved utilization of organic waste as energy resource.

- **Support on biogas offtake** will be provided by conducting analytical assessment to assess pipeline infrastructure and investment required to connect plants located in remote areas with the demand centers.
- **Support towards offtake of Fermented Organic Manure (FOM)** by conducting field-trials to test efficacy of FOM, followed by identification of policies for FOM product development & utilization.

Trainings and capacity building workshops (8 during the duration of the RSF availability period)

- **Institutional capacity development** by imparting training to build capacities of stakeholders a) PFIs to improve project appraisal skills; b) state nodal agencies and regulators to design informed policies and implementation, and c) entrepreneurs to diversify themselves for better linkages of the Biogas products, among others.

The project focuses on five key interventions that generate significant global environmental benefits. These interventions include decarbonization of the mobility and industrial sectors, restoration of degraded agricultural land, management of industrial and urban waste, and agricultural residue management to reduce GHG emissions and address air quality concerns. By addressing these areas, the project directly aligns with the Global Environment Facility's focal areas of Climate Change Mitigation (CCM) and Land Degradation (LD).

In addition, the RSF emphasizes capacity building for the development of Gender-Responsive Bioenergy Policies to promote women's participation in the evolving biogas sector. The project aims for the success of the first 70 plants to catalyze investments in the sector and help India reach its target of 5,000 plants with private financing. Overall, the project offers a comprehensive approach to support India's energy transition while addressing environmental concerns and promoting sustainable development. The proposed funding in the GEF-8 NGI proposal has high levels of additionality, making it a significant initiative for India's renewable biogas sector.

Summary of the core indicators

Area of land and ecosystem under restoration:

A compressed biogas (CBG) plant not only produces renewable gas but also generates fermented organic manure (FOM), which is beneficial for soil carbon content. The project supports a total CBG production capacity of 633 TPD, with an associated potential to generate 6,326 TPD of FOM. Annually, this amounts to 2.31 million tons of FOM, with 25% (0.577 million tons) effectively utilized.

The average soil organic carbon (SOC) sequestration rate is between 0.2 to 0.3 tC/ha/year. To match these rates, 12.3 tons of FOM per hectare is required, which results in a realized SOC of 0.25 tC/ha/year. This leads to an estimation that 46,908 hectares are under restoration annually, and over 15 years, this will total 703,627 hectares.

Additionally, 15 CBG projects will be developed using organic municipal solid waste (OMSW), which will help restore landfills, contributing an additional ~600 hectares. Thus, the total area under land and ecosystem restoration is 704,227 hectares.

Area of landscapes under improved practices:

Regarding landscapes under improved practices, the RSF facility aims to support paddy straw-based biogas projects, which will help avoid paddy straw burning, a practice with negative environmental impacts. The focus areas for these projects are in the states of Punjab and Haryana, where paddy straw burning is prevalent. The

facility is expected to support a biogas production capacity of 50 TPD, which will prevent 185,000 TPA of paddy straw from being burned in agricultural fields. Over 15 years, this will result in improved practices over approximately 568,875 hectares of land.

People benefiting from GEF-financed investments disaggregated by sex (count)

The GEF-financed investments in CBG plants will create direct and seasonal employment opportunities. The program aims to ensure that 10% of the employment in these plants is allocated to women, contributing to gender inclusivity in the workforce. On average, each CBG plant will employ 40 individuals, with 4 being women and 36 being men. With a total of 70 plants under consideration, this results in 280 women and 2520 men in direct employment. Additionally, seasonal employment is created for the aggregation of feedstocks like paddy straw and press mud. Specifically, 100 seasonal jobs are created per plant for paddy aggregation and 10 for press mud, with 4 plants focusing on paddy straw and 40 on press mud. This leads to a total of 800 seasonal jobs. In summary, the total employment generated by the program includes 3240 men and 360 women.

Greenhouse Gas Emissions Mitigated:

The greenhouse gas (GHG) emission mitigation potential of compressed biogas (CBG) plants supported by the Renewable Sector Financing (RSF) facility. The RSF aims to develop 70 CBG plants, equivalent to 633 TPD of CBG production.

The GHG mitigation assessment, based on UNFCCC guidelines, considers various feedstocks and estimates a national GHG abatement potential of 70.59 MtCO₂e, with a biogas generation potential of approximately 15.12 MTPA. The average GHG savings per ton of biogas produced range from 4.5 to 5.0 tCO₂e, with this project achieving 6.475 tCO₂e saved per ton.

With these methodology under consideration and estimated configuration of CBG plants, the cumulative GHG savings are 5.11 million tCO₂e over the 8-year life of the RSF facility and 23.92 million tCO₂e over the 20-year lifespan of all projects.

Project Description Overview

Project Objective

To increase the installed capacity of compressed biogas generation through the mobilization of sustainable and affordable commercial financing and strengthening the capacity of relevant institutions.

Project Components

Guarantee Mechanism for Renewable Bioenergy

Component Type	Trust Fund
Investment	GET
GEF Project Financing (\$)	Co-financing (\$)
13,761,468.00	760,000,000.00

Outcome:

Access to affordable financing for renewable biogas project developers

Improved sustainability of organic feedstock supply for municipal waste biogas projects

Output:

Partial credit guarantees provided to commercial banks and Non-Banking Financial Companies (NBFCs) to scale up generation of biogas (70 projects supported)

PCM including debt financing and equity contribution from industrial scale biogas project sponsors (US\$ million) – 610

Greenhouse Gas Emissions Mitigated (million metric tons of CO₂e) – 23.92

Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment: Direct Employment Generation

- Male: 3240
- Female: 360

Area of land restored (Hectares) - 704,227

Area of landscapes under improved practices (excluding protected areas) (Hectares) - 568,875

Technical to support the bankability of the entire Biogas value chain

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing (\$)	Co-financing (\$)
	4,500,000.00

Outcome:

Enhanced bankability of the entire Biogas value chain

Output:

(i) Capacity building of municipalities in streamlining the upstream value chain of source segregation of waste for biogas projects

(ii) development of regulations to support access to retail gas infrastructure by biogas plants;

(iii) capacity building in terms of managing the agri-residue and development of a robust value chain with state nodal agencies; and

(iv) training and capacity building of the participating financial institutions for assessment of biogas technologies and plant evaluation. Stakeholder engagement & training (eight) to be implemented across the life of the facility.

(v) Online technical knowledge products – web presence (1 website to be created) to be developed within two years

(vi) Technical reports including documentation of lesson learnt (two) within three years

M&E

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing (\$)	Co-financing (\$)
	500,000.00

Outcome:

Development of impact management/monitoring systems and reporting processes

Output:

Environmental and social safeguards monitoring

Component Balances

Project Components	GEF Project Financing (\$)	Co-financing (\$)
Guarantee Mechanism for Renewable Bioenergy	13,761,468.00	760,000,000.00
Technical to support the bankability of the entire Biogas value chain		4,500,000.00
M&E		500,000.00
Subtotal	13,761,468.00	765,000,000.00
Project Management Cost		
Total Project Cost (\$)	13,761,468.00	765,000,000.00

Please provide Justification

The Project management cost (i.e. the administrative and staffing costs for the operation of the RSF) is \$7.32 million for the full 15 years. This cost will be paid from the revenues generated under the RSF (the RSF sub-guarantee fees have been sized to cover this).

The KM activities, budget and implementation timeline has been attached separately

PROJECT OUTLINE

A. PROJECT RATIONALE

Describe the current situation: the global environmental problems and/or climate vulnerabilities that the project will address, the key elements of the system, and underlying drivers of environmental change in the project context, such as population growth, economic development, climate change, sociocultural and political factors, including conflicts, or technological changes. Describe the objective of the project, and the justification for it. (Approximately 3-5 pages) see guidance here

India is one of the most vulnerable countries to climate change, facing some of the highest disaster risk levels globally. It was ranked seventh according to the Germanwatch Global Climate Risk Index 2021. More than 80 percent of India's population lives in districts highly vulnerable to extreme hydro-met (floods, droughts, cyclones) disasters.^{[2]¹} Climate-induced disasters combined with resource stress affects people disproportionately, threatening lives and livelihoods, human security, and sustainable development.

India's energy mix remains disproportionately reliant on high-carbon fossil fuels, with huge import dependency. About 75 percent of the total primary energy demand^{[3]²} is fossil fuel based, that not only emits GHG emissions but also high concentrations of pollutants including Nitrogen oxides, Sulphur oxides and particulate matter (PM) 2.5.^{[4]³} The carbon intensity of its power sector is well above the global average. Additionally, particulate matter emissions are a major factor in air pollution, which has emerged as one of India's most sensitive social and environmental issues: in 2019, there were well over one million premature deaths related to ambient and household air pollution.^{[5]⁴} The energy sector contributes roughly 83 percent of the country's GHG emissions.^{[6]⁵} Among the different energy consuming sectors, power, industry, and transport account for over 85 percent of the total GHG emissions.^{[7]⁶} India already imports around 40 percent of its primary energy, with about 85 percent of crude oil and 50 percent of its annual natural gas consumption.

According to the Global Methane Initiative (GMI), India is currently the world's fourth largest methane emitter after China, the United States and Russia. Methane emissions accounted for about 14.5 percent of India's total GHG emissions. The agriculture sector accounts for most of the methane emissions with about 74 percent, followed by waste at about 15 percent, and remaining from energy and industrial processes. ^{[8]⁷} In the agriculture sector, the two predominant sources of methane emissions are enteric fermentation and paddy cultivation. In the waste sector — solid waste and wastewater — is responsible for 18 percent of global anthropogenic methane emissions, with municipal solid waste (MSW) contributing 11 percent to the total emissions.^{[9]⁸} In India too, the MSW contributes to the major share of methane emissions from the waste sector.

India is also the second largest agriculturally-based economy globally and generates a large amount of agricultural waste including crop residue. Approximately 92 million metric tons of crop is burnt in the country every year that contributes to excessive particulate matter emissions and air pollution, particularly exacerbating the air pollution challenge in north India in the winter months.^[10]⁹ In the Indo-Gangetic Plain, the annual mean PM_{2.5} exceeds 110 microgram per cubic meters, whereas it exceeds 170 microgram per cubic meters in the winter season^[11]¹⁰—several times higher than the safe limits prescribed by the World Health Organization.^[12]¹¹

Against this backdrop, and with a goal to adopt a climate-friendly and cleaner path for economic development, at COP 26, India announced plans to mitigate climate change by achieving net-zero carbon emissions by 2070. According to the updated Nationally Determined Contribution (NDC), India is now committed to reducing the emissions intensity of its GDP by 45 percent by 2030, compared to 2005 levels, and to achieving approximately 50 percent of cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030.^[13]¹² The updated NDC also represents the framework for India's transition to cleaner energy for the period 2021-2030. Besides the ambitious renewable energy targets, India targets to increase the share of natural gas in the country's energy mix from the current 6 percent level to 15 percent by 2030.

Renewable biogas or compressed biogas (CBG) or biogas^[14]¹³ provides an alternate domestic renewable fuel that reduces natural gas import dependency. It drives resource efficiency, while simultaneously reducing air pollution as it replaces fossil fuels, mitigates GHG emissions including methane and creates new economic value chains. Foremost, it contributes to curbing air pollution by creating an alternate monetary stream for the waste that otherwise is burnt in open fields or sent to landfills. Moreover, biogas offers a sustainable and, renewable energy alternative by; displacing natural gas consumption in key sectors such as transportation and industry. It further lowers GHG emissions where feedstocks are sourced. Biogas is produced by anaerobic decomposition of organic waste including agricultural waste, municipal waste, and other industrial waste streams such as sugarcane press mud. It can be used as a fuel for automobiles^[15]¹⁴ or co-mingled with natural gas in the city gas distribution (CGD) network.

Despite decade of long history of Biogas use within India, biogas production remains largely a nascent industry in comparison to the scaling up taking place globally. The Government of India envisions 5,000 larger-scale biogas plants being built. Within India, this is a complex development problem, while favorable energy prices now make biogas commercially competitive, it is estimated that approximately 30 larger scale plants are progressing to commissioning, in addition to the 70 plants already commissioned.

However, financial institutions have a high risk-perception of the sector more broadly, which is reflected in a combination of higher interest rates and collateral requirements. Therefore, commercial loans remain unaffordable for many borrowers that would otherwise contribute to the scaling up of the sector, but unable to do so, due to burdensome collateral requirements and high interest rates. Market feedback suggests that perhaps up to 70 additional plants under consideration meet most conditions necessary for commercial viability across different states and feedstock types; but remain in need of an early intervention to address the prohibitive collateralization issue.

Despite strong biogas prices and some early successes, a large majority of potential projects face a broader set of persistent market barriers, in terms of uncertainties around sustained availability of feedstocks at reasonable prices, guaranteed offtake of biogas, and offtake of bio-fertilizer coproducts. These market barriers vary by sub-sector and state, and include the following:

- (a) **Weak Financial and Technical Expertise.** *Despite more than 4000+ Letters-of-Intent (LOI) being issued, many LOI holders lack the financial and technical expertise to achieve commercial production. Weak regulatory processes to address these poorer performing LOI holders impedes development in even highly prospective areas.*
- (b) **Weak policy framework to incentivize the offtake of biogas and bio-manure.** *Policy weaknesses around offtake of biogas and bio-manure co-products impart higher investment risk, contributing significantly to the cost-of-capital (capex) being offered to project sponsors. This manifests through excessive collateralization requirements on borrowers, effectively exhausting the financial ability of successful operators to replicate that success in additional projects.*
- (c) **Uncertainty in feedstock supply.** *The management of feedstock supply presents additional risks, with seasonal variation and in the sourcing of biomass leading to a need for segregation (most dominantly within municipal solid waste sector) and aggregation (most dominantly within bio-agriculture sector) which introduces associated facility considerations adding to project risk.*

The project pathway is strictly focused on generation of bioenergy produced by anaerobic decomposition of organic waste including agricultural waste, municipal waste, and industrial waste streams such as sugarcane press mud. Such waste to bioenergy production offers a decentralized, renewable alternative to displace fossil fuels while significantly reducing methane (a potent GHG) emissions, creating an alternate monetary stream for the waste that otherwise is burnt in open fields or sent to landfills. As such, these project interventions proposed through this NGI proposal will not only contribute to GEF's global environmental benefits (GEBs) cutting across CCM and LD, but also help in directly addressing India's long-standing problems linked with air pollution and waste management.

The proposed operation will seek to provide support to women and increase their participation across the entire value chain based on a gap analysis. The energy sector in India remains one of the least gender diverse sectors in India. Gender inequality can prove to be a hindrance in economic growth, and in areas like energy where there is great scope of innovation and entrepreneurship, it is essential that the gender gap is eliminated. Women participation in the energy sector in India is merely 8 percent, with the global figure being 22

percent.^{[16][15]} This share is even less for the Biogas industry. Socio-cultural factors, lack of safety and security, and the current unstructured nature of the Biogas industry act as deterrents for women participation. There is also a lack of access to opportunities and misconceptions about the suitability of women in male-dominated roles. Though women's participation in the entire value chain of Biogas is negligible in India, some women are involved in the initial stages of the supply chain, i.e., feedstock supply, for example, accumulating and loading trolleys with cow dung, informal aggregation of agricultural residues, segregation of the waste and many more, although the involvement is still highly location specific. Financing programs could therefore be tailored specifically for women, instead of applying the same set of criteria for both genders.

The RSF will create an enabling framework to promote lending to women or women owned enterprises for the development of Biogas plants. It is important to note that compressed biogas sector is capex intensive, and the associated value chain may require high working capital. While the efforts through SIDBI (and participating FIs) will be to attempt assessing projects that are led by women or women-based enterprises and that they receive concessional guarantee conditions (e.g., pricing) from the RSF. Due to the nature of this sector, the gender participation in the program will not be limited to the women led enterprises but will also aim to prioritize projects with high gender ratio. In addition, efforts will also be to impart trainings to women employees of SIDBI / PFIs on the compressed biogas sector.

[1] [Global Climate Risk Index, 2021, GERMANWATCH](#)

[2] <https://www.ceew.in/publications/mapping-climate-change-vulnerability-index-of-india-a-district-level-assessment>

[3] <https://www.iea.org/reports/india-energy-outlook-2021/energy-in-india-today>

[4] PM2.5 describes fine inhalable particles with diameters that are generally 2.5 micrometers and smaller. They are often a cause of respiratory diseases and therefore an important matter for public health.

[5] India Energy Outlook 2021, International Energy Agency, 2021

[6] <https://www.ghgplatform-india.org/economy-wide/>

[7] India Energy Outlook 2021, International Energy Agency, 2021

[8] Figures are from 2016 and translates to 409 million tons CO₂e. Ministry of Environment, Forests and Climate Change, Government of India, Unstarred Question No: 2478, Lok Sabha, December 13, 2021. (<https://loksabhaph.nic.in/Questions/QResult15.aspx?qref=30895&lsno=17>)

[9] Eburn Ayandele, Kenzie Huffman, Matt Jungclaus, Eugene Tseng, Riley Duren, Daniel Cusworth, and Bryan Fisher, Key Strategies for Mitigating Methane Emissions from Municipal Solid Waste, RMI, 2022, <https://rmi.org/insight/mitigating-methane-emissions-from-municipal-solid-waste/>.

[10] Kawaljeet Kaur and Preetpal Singh, Crop Residue Burning in India: Potential Solutions, Intech Open, October 2022

[11] Mhawish et al., Estimation of High-Resolution PM_{2.5} over the Indo-Gangetic Plain by Fusion of Satellite Data, Meteorology, and Land Use Variables, National Library of Medicine, 2020.

[12] The World Health Organization (WHO) guidelines on outdoor (ambient) air pollution levels stipulate that the annual average concentrations of PM_{2.5} should not exceed 5 µg/m³, while 24-hour average exposures should not exceed 15 µg/m³ more than 3 - 4 days per year. µg is micrograms. (Source: [https://www.who.int/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health))

[13] Gol, Press Information Bureau (PIB), 2022. Cabinet approves India's Updated Nationally Determined Contribution to be communicated to the United Nations Framework Convention on Climate Change,

<https://pib.gov.in/PressReleaseframePage.aspx?PRID=1847812>

^[14] Biogas, a renewable fuel, constitutes roughly 60 percent of methane, carbon dioxide 40 percent, and traces of hydrogen sulfide. It can be burned directly as a fuel or purified and upgraded by removing carbon dioxide (CO₂), hydrogen sulfide (H₂S) and compressed to make Compressed Biogas (CBG). CBG has methane content of more than 90 percent, which is like the commercially available natural gas in composition and energy potential.

^[15] In January 2015, the Ministry of Road Transport and Highways allowed use of CBG in motor vehicles as an alternate composition of Compressed Natural Gas (CNG)

^[16] <https://www.ongcindia.com/wps/wcm/connect/en/media/topstories/director-hr-encourages-women>

B. PROJECT DESCRIPTION

This section asks for a theory of change as part of a joined-up description of the project as a whole. The project description is expected to cover the key elements of good project design in an integrated way. It is also expected to meet the GEF's policy requirements on gender, stakeholders, private sector, and knowledge management and learning (see section D). This section should be a narrative that reads like a joined-up story and not independent elements that answer the guiding questions contained in the guidance document. (Approximately 3-5 pages) see guidance here

Project Description Summary

The proposed World Bank Project in India, totaling US\$765 Million including Co-Financing has the following two components: (a) an IBRD Guarantee to support an RSF to address the priority market barrier to mobilize private capital, and (b) technical assistance to continue addressing remaining market barriers. The RSF (i) enables commercial banks to lower the collateral requirements of developers and interest rate on loans, (ii) unlocks domestic private capital, and (iii) catalyzes a commercially viable industrial biogas sector. The TA framework focuses on addressing the remaining market barriers throughout the value chain, reinforcing the RSF by supporting “early movers” and thereafter new incoming investors. Together with further policy reforms and investments currently being considered by the government, the proposed Project will help India to commence actions to harness its biogas potential of 15 MTPA^{[1]16} and reduce the country's import dependency on natural gas by two-thirds of the 2020-21 import levels.

Component 1 – RSF: US\$150 million IBRD Guarantee and US\$13.76 million Global Environment Facility (GEF) Non-Grant Instrument (NGI).

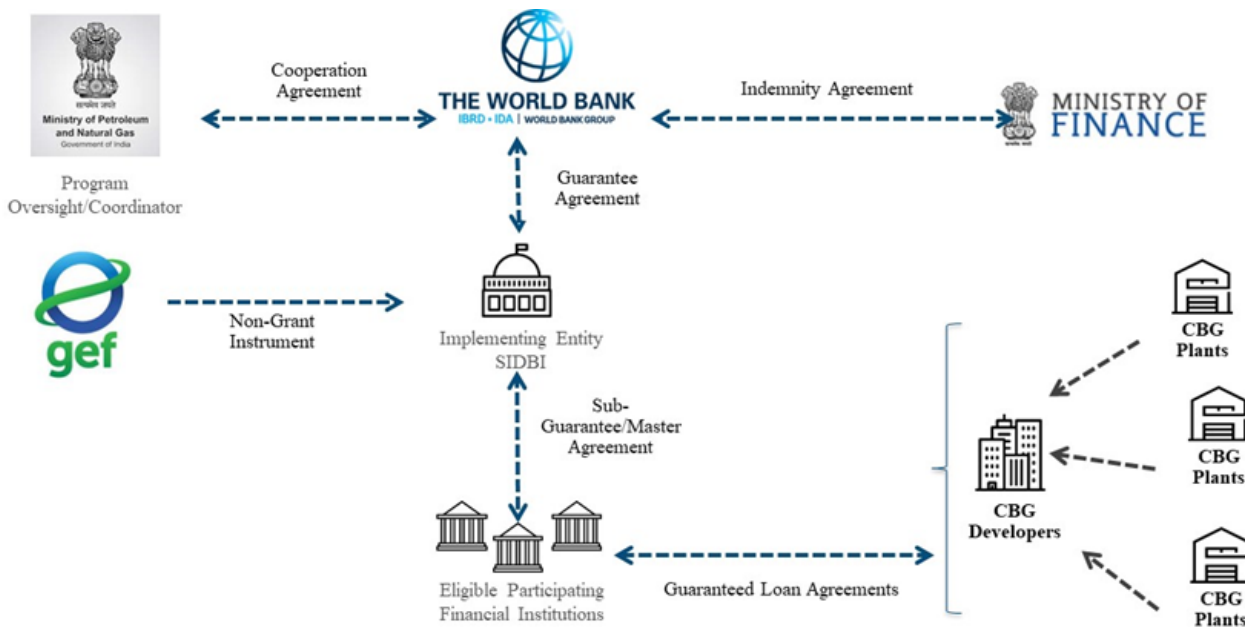
SIDBI is the Project Implementing Agency (PIA) and owner of the RSF. Under the RSF, partial credit guarantees will be offered to commercial banks and Non-Banking Financial Companies (NBFCs)—jointly called Participating Financial Institutions or (PFIs)—who are providing commercial loans to biogas developers for biogas investments in selected states^{[2]17}. The RSF has been structured as a self-sustaining, standalone facility. The revenues of the RSF will be generated through RSF guarantee fees charged to PFIs. These fees will be sized to cover operating costs (including the cost of SIDBI to manage the RSF), GEF, IBRD and Ministry of Finance (MoF) Guarantee Fees, and a base-case level of losses.

Component 2 – Institutional Strengthening and Implementation Support: US\$ 4.5 million Energy Sector Management Assistance Program (ESMAP) grant ^{[3]18} (co-financing of USD 0.5 million by the World Bank)

This subcomponent will finance TA activities aimed at enabling sector development throughout the value chain. Of the US\$5 million, US\$2 million will be recipient executed (RE) and the remaining US\$3 million

will be bank executed (BE)^{[4]19}. The RE funds for SIDBI and PFIs focus on supporting implementation of the RSF, including raising consumer awareness and aggregating RSF demand/pipeline. ESMAP funds will also support the strengthening of SIDBI procedures, frameworks, and policies including environmental and social (E&S) structures, gender-specific actions, and development of impact management/monitoring systems and reporting processes. The BE funds support analytical work through programmatic TA activities and to address market barriers in medium- to high-risk subsectors in specific geographies to support the government in policy implementation to benefit the biogas sector. The project is a high-profile, first-candidate for additional grant financing under the World Bank’s new blueprint for methane reduction, having an aim to reduce methane emissions across waste management, rice production, and livestock operations.

Proposed Risk Sharing Facility and Guarantee Structure for Biogas



[1] If the market demand exceeds expectations currently framing the RSF, a top up could be sought.

[2] The selected states are Haryana, Punjab, Uttar Pradesh, Maharashtra, Gujarat, Tamil Nadu, and Madhya Pradesh. Additional states may be added during Project implementation based on agreement with the Bank.

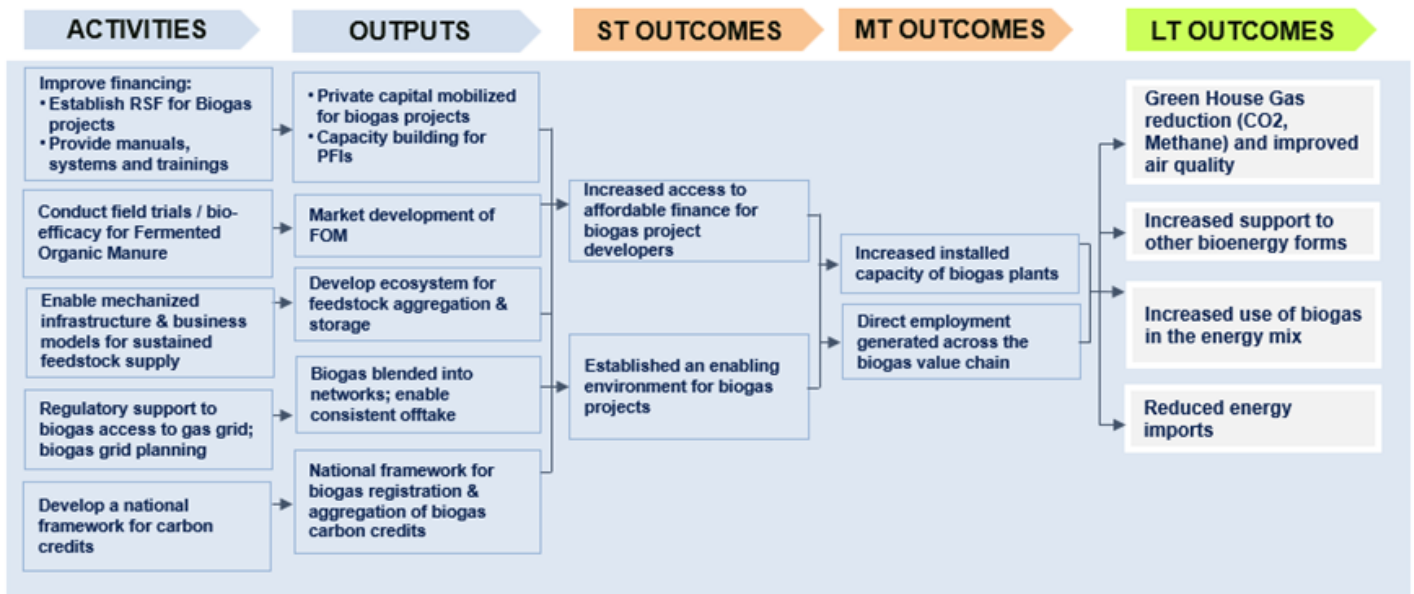
[3] Because of limitations in grant size, the TA will only be applied initially to selected states. As additional TA funds are secured, they will be applied to additional states, increasing the overall impact.

[4] All BETF-related activities are reported here are for completeness and will be processed separately by the task team working directly with the TF funding unit.

Theory of Change (ToC) Summary

The Theory of Change for this project presented in Figure 4 below, displays the high-level objective of increasing the installed capacity of biogas generation through Activities that generate Outputs including Short-, Medium-, and Long-Term Outcomes as

follows:



Critical Assumptions

- Project pipeline remains robust with over 70 biogas projects currently in various stages of design and development, and this subset needs assistance with the collateralization market barrier.
- PFIs will develop the necessary institutional capacity and will be willing to finance biogas projects based on the strength of the RSF.
- TA is sufficient to inform and complement possible government measures to further address upstream and downstream market barriers in selected states, thereby creating an enabling environment to take the biogas sector to scale.

Private Sector Angle

From a private sector perspective, industrial-scale production of biogas in India is still a nascent industry, having a complex value-chain, characterized by uncertainties. Analytical studies and market sounding undertaken by the World Bank over the last two years identified a set of important market barriers in the upstream and downstream of the biogas value chain as well as project sponsors' access to affordable, commercial capital.

Project sponsors with existing industrial-scale plants as well as new market entrants (with prior operational experience providing goods & services within the biogas value chain) face an important challenge to access commercial debt financing for this market. Consequently, project sponsors have to collateralize project related financing using personal land or corporate property non-related to the underlying biogas-plant investment. Active and prospective project sponsors, categorized as small and medium sized^[1], are reporting having either exhausted their own funds or not having ability to provide high collateral as required by lenders for additional biogas plants.

The Project therefore aims to mobilize private capital and more enterprises into the biogas sector in India. Specifically, the proposed Risk Sharing Facility (RSF) through credit enhancement for Biogas Project Sponsors would enable the necessary risk reduction and instill confidence in the financial institutions to support lending to the biogas industry. Furthermore, targeted technical assistance (TA) will

strengthen technical capacities and inform upon interventions and necessary reforms^[2] to address other remaining upstream and downstream market barriers.

In terms of mobilizing private capital, the RSF is designed to provide guarantees to backstop debt financing from Indian Commercial Banks to RE Biogas Project Developers. Based on the initial size of the RSF, it is expected that approximately INR (Indian Rupee) 5,000 Crores (US\$610 Million Equivalent) of total Private Sector Investment (includes Equity contribution of \$185 Million from Biogas Developers) could be mobilized for up to 70 RE Biogas Projects. This is estimated based on a project size of between US\$8-9 Million, a Debt-Equity split of 70:30, and a Guarantee % coverage of up to 65% on the Commercial Debt financing portion.

[1] As defined by and eligible for financing from the Small Industries Development Bank of India (SIDBI).

[2] MoPNG is currently drafting proposed schemes to catalyze investments in upstream aggregation and downstream last mile connectivity infrastructure.

Stakeholder Engagement

The Biogas Sector in India involves a value chain which covers a diverse set of stakeholders that range from gas distribution companies, farm and rural economy (aggregation of agriculture & animal waste), to municipalities and other such institutions. A study was conducted to understand the viewpoints of these various stakeholders involved in India's Biogas value chain. The stakeholders covered in the study included project developers (60+), off-takers, technology and engineering companies, feedstock aggregators, village-level entrepreneurs, policy makers, academic & social institutions, and financing institutions. The key objective for conducting these stakeholder consultations were to understand the challenges towards developing an ecosystem as well as the types of financial instruments that would be needed to support the sector. The stakeholder consultations under the project covered different geographies as the market conditions varied across the value chain. They were also conducted primarily as one-to-one consultations along with some trainings and workshops organized for similar groups of stakeholders, because the interventions required for each stakeholder category needed to be different to encompass the entire Biogas ecosystem. The insights from various stakeholder discussions and workshops were instrumental in assessing the bottlenecks being faced by the project developers i.e., high collateralization requirements expected from project developers in order to access financing for biogas projects through commercial banks. The identification of such bottlenecks led to understanding key solutions needed to unlock the market by providing better financing terms. In addition, these discussions have helped define the TA and the interventions required.

The stakeholder engagement plan will include the direct and indirect beneficiaries of the project, as outlined below:

a. Role and involvement of indigenous people and local communities: In the biogas value chain, indigenous people and local communities contribute vital feedstock—animal manure, agricultural waste, and forest residues—crucial for biogas production. This not only fosters business opportunities but also provides employment, as individuals can be trained to operate and maintain the plant. This involvement ensures the efficient functioning of the biogas plant, with the added benefit of positively impacting community health through effective agro-residue waste management, reducing crop burning in specific states. The specific

stakeholder consultation will be on annual basis limited to specific location of biogas sub-projects under the RSF. This will help assess the benefits arising from the value chain created through investments in the biogas sub-projects.

b. Role and involvement of private sector: The private sector involvement is towards project developers, technology providers, mechanized equipment providers and oil and gas marketing companies. The value chain helps towards development of infrastructure needed for production and distribution of biogas produced from these plants. The specific stakeholder will be consulted annually to understand the benefits the Risk Sharing Facility has been able to provide, or if there is a need for a course correction to be integrated in the Project.

c. Role and involvement of Civil Society Organizations (CSOs): The Biogas plant development value chain in India, focused on unorganized sectors like municipal solid waste, agri-residue, and animal waste, crucially involving CSOs. Their role ensures program responsiveness to rural community needs, equitable sharing of feedstock, biogas production, and organic manure benefits among stakeholders. CSOs contribute valuable insights in the program design, and addressing challenges in the upstream value chain. With technical assistance, CSOs enhance local capacity, fostering effective participation. They play a key role in building partnerships among stakeholders (including government agencies, private sector actors, and community-based organizations) for program sustainability. While this program emphasizes large-scale plants, CSOs unite communities for collective progress toward broader capacity development goals in specific areas. While this Project supports large scale plants, the CSOs can support in bringing these communities together to work towards attainment of a larger goal for developing large capacity in any specific area. The CSOs will be consulted during capacity development support to specific states under the technical assistance program and will be an ongoing activity in the defined states.

Gender Strategy

The biogas industry falls under the MSME sector and while women’s participation throughout the value chain is negligible in India, some women are involved in the early stages of feedstock supply. A survey of representative industrial scale biogas plants found less than 3 percent women employees (7 out of 222), with many of the plants having only men staff. This is lower than the energy sector average in India, with only 8 percent women’s participation. The proposed operation will support gender diversity in the biogas sector by helping to (a) mitigate the creditworthiness risks for lenders that provide concessional loans (subsidy or waiver of guarantee fee charged by SIDBI²⁶) to women-owned biogas developers and biogas projects with high female to male gender ratio (>10 percent), (b) establish a help desk with agents who are trained to provide extra support to women applicants and provide clear information on application procedures. These interventions will help address information and financial barriers to women-owned biogas developers. Biogas developers benefiting from the project would be incentivized to hire more women and improve their gender policies/facilities. The Project will target at least around 5 percent of the total number of underlying loans to be issued to women-led and/or gender diverse biogas developers. There will also be efforts to train women officers at SIDBI who will evaluate the biogas projects sent for appraisal by the PFIs.

Knowledge Management Program

The large-scale biogas plants in India are a relatively new development specifically after the SATAT initiative was launched in 2018, by Ministry of Petroleum and Natural Gas. As of date there are close to 70 large scale biogas projects which are commissioned in India. The biogas and its associated value chain sector in India involves various ministries in India i.e.:

Government Stakeholders	Areas under consideration
Ministry of Petroleum and Natural Gas	Offtake of Biogas – SATAT Scheme and blending mandate obligation with natural gas
Ministry of Chemical and Fertilizers	Offtake of organic manure – PM PRANAM ^[1]
Ministry of Agriculture and Farmers Welfare	Mechanization for aggregation

Ministry of New and Renewable Energy	Central Financial Assistance for Biogas Plants
Ministry of Housing & Urban Affairs	Swachh Bharat Mission (scientific waste management)

Due to multiple stakeholders, there is a need for a strong Knowledge Management Plan so that the value chain understanding from one stakeholder can be transmitted to the others and there is an adequate exchange of information between different type of stakeholders.

Through the Technical Assistance component as well as through the RSF, this project intends to provide various Knowledge Management products and activities. Some of the identified service lines are:

- (a) Due to limited technical knowhow of the sector, development of an online platform for both the ministry stakeholders and the financial institutions is important. The online platform will have information on technology and cost benchmarking of the biogas plant which will assist in technical appraisal of the project and provide information related to new developments in the sector.
- (b) Technical support to develop web presence for RSF projects, such web presence could be with the existing platforms (<https://satat.co.in/satat/>) in place or a new system can be created depending on the need.
- (c) As part of knowledge management, a strategic communication plan will be developed by identifying the target audience, defining communication objectives, developing key messages, selecting appropriate communication channels, and monitoring and evaluating the effectiveness of the plan.
- (d) Workshops, study tours and conferences will be conducted to bring together all stakeholders.
- (e) Knowledge exchanges between various projects and providing platforms promote peer-to-peer learning.
- (f) Targeted training workshops addressing common capacity building needs for PFIs and other stakeholders and their partners.
- (g) Development of products to capture experiences and results, through videos as well as through written products, such as the experience notes and showcasing of the results framework achieved.
- (h) Engagement with local communities within different ecosystems and or disciplines.
- (i) Documentation of lessons learned in the preparation of each RSF project.

The knowledge program intends to contribute significantly to raising awareness among experts and policymakers about Biogas RSF projects and their outcomes, thus indirectly contributing to new investments and providing a linkage to other global processes, frameworks, and initiatives on biogas and associated value chain development. Below please find a list of KM activities, proposed budget, and the implementation timeline:

- 1) KM activity: Online technical knowledge products, web presence (1 website to be created), budget: USD 50,000, implementation timeline: Two years
- 2) KM activity: Stakeholder engagement & training (eight), budget: USD 200,000, implementation timeline: Ongoing across the life of the facility
- 3) KM activity: Technical reports including documentation of lessons learned (two), budget: USD 150,000, Timeline: Three years

[1] PRANAM: Promotion of Alternate Nutrients for Agriculture Management Yojana

Risks to project implementation:

The Sector Strategies and Policy and Environmental and Social risks are both substantial and hence the overall residual risk for this project is rated 'Substantial'. The Bank team will continue to monitor project risks over the course of implementation and seek to address any risks that may arise.

The environmental and social risk associated with the Project is ranked as 'substantial' not based on the management of the biogas digestate but as the biogas sector is nascent, and the potential impacts of environmental risks and their probability are not fully known at this early stage. The environmental risks will be continuously evaluated during project implementation. To mitigate these risks will require the implementing agency to have a suitable Environmental and Social Management System (ESMS) to manage the E&S risks in the Project. The biogas sector is new to SIDBI and capacity and staffing to support PFIs that finance biogas value chain operators is currently limited. These risks can be minimized through the operationalization and enforcement of SIDBI's enhanced ESMS and staffing within SIDBI needs to be augmented to manage the E&S requirements of the Project. These aspects are further illustrated in the Environmental and Social section of the PAD submitted.

A summary of the two substantial risks is provided below:

The risk related to the Sector Strategies and Policy for the Project is 'substantial.' This risk arises from the gaps that the sector is still developing. While the Ministry of Petroleum and Natural Gas (MoPNG) is taking the lead in creating an environment conducive to the development of biogas plants and has introduced policies around setting-up a benchmark price and offtake of gas, the development of biogas requires coordination among different policies and stakeholders, including different ministries. The Component 2 of the Project aims to address the risks related to Sector Strategies and Policy by providing technical assistance to ministries responsible for addressing specific upstream and downstream market barriers. For example, the technical assistance aims to support the Ministry of Chemicals and Fertilizers and the Ministry of Agriculture and Farmer's Welfare by conducting necessary field trials of the bio manure generated from biogas plants. Similarly, for municipalities, the technical assistance aims to support MoHUA to build capacities for bid processing and management for establishing biogas plants under various business models. In particular, the technical assistance will provide an inter-ministerial convening platform led by MoPNG to engage and manage these varying work streams crucial for establishing an enabling ecosystem for scaling the biogas sector.

The environmental and social risk associated with the Project is also rated as 'substantial.' The biogas sector in India is still nascent and the potential impacts of environmental and social risks and their probability are not fully known at this early stage. These risks could include; (a) Occupational health and safety (OHS) issues associated with construction and operation of new plants, labour management, safety issues related to transportation and storage of feedstock, as well as transportation of biogas; (b) community health and safety issues associated with the potential for nearby communities to be impacted during the construction and operation phases of biogas plants; and (c) The risks from improper storage, transportation and handling of biogas leading to fugitive emissions. These environmental and social risks will be further evaluated during project implementation and revised accordingly. The identified environmental and social risks will be managed by upgrading SIDBI's existing ESMS to cover biogas-sector specific screening procedures, exclusion criteria and due-diligence processes commensurate with the related impacts and risk. These updated

procedures will be cascaded down to PFIs to ensure sub-projects' compliance with the ESF and applicable laws.

Institutional Arrangement and Coordination with Ongoing Initiatives and Project.

Please describe the Institutional Arrangements for the execution of this project, including financial management and procurement. If possible, please summarize the flow of funds (diagram), accountabilities for project management and financial reporting (organogram), including audit, and staffing plans. (max. 500 words, approximately 1 page)

SIDBI will be the Implementing Agency for the proposed project. Medium-sized enterprises^{[1]²⁰} and entrepreneurs are expected to form a large portion of the developers for industrial scale biogas plants. SIDBI is the principal government-owned financial institution for the promotion, financing, and development of the Micro, Small and Medium-size Enterprise (MSME) sector. The proposed project is in line with SIDBI's experience and mandate to bring government intervention to the development of nascent markets and mobilize local commercial banks and NBFCs. As an NBFC, SIDBI has direct experience in managing similar risk-sharing facilities in other sectors (such as the PRSF) and in the biogas sector (such as the GIZ-funded risk-sharing facility for municipal solid waste biogas plants). It is not expected for the GEF Agency to play an execution role on this project.

Financial Management (FM)

*The RSF will be operationalized as per operational procedures agreed with the World Bank and to be documented in the POM. Considering SIDBI's long-standing experience in lending and guarantee operations and its partnership with the World Bank over the last 10+ years and its demonstrated capacity to implement agreed financial management arrangements in a satisfactory manner, the FM risk for the proposed operation is rated as **Low**.*

***Procurement:** Under Investment Project Financing involving the provision of an IBRD guarantee, the Bank's Procurement Regulations will not be applicable. The World Bank "Procurement Regulations for Investment Project Financing (IPF) Borrowers" govern the procurement of goods, works, non-consulting services, and consulting services financed by the Bank (in whole or in part) through IPF operations. As per Section 2.2.a of the Procurement Regulation, procurement under Bank guarantees is excluded from these. However, the Bank's Anti-Corruption Guidelines (ACG) for World Bank Guarantee operations apply to the Project. As such, SIDBI will prepare the OM during the Project preparation and will include ACGs. While the RSF will not be subject to World Bank procurement regulations, the World Bank procurement regulations will apply to the TA component.*

[1] As per the Ministry of Micro, Small and Medium Enterprises definition, a medium enterprise is where the investment in Plant and Machinery or Equipment does not exceed INR 50 crore (US\$ 6.1 million) and turnover does not exceed INR 250 crore (US\$ 30.5 million). Large-scale project sponsors are likely to undertake Balance Sheet Financing (per communication from Adani Total Gas Limited).

Will the GEF Agency play an execution role on this project?

Yes

If so, please describe that role here and the justification.

Yes, the GEF Agency will play an execution role on this project towards execution and implementation of analytical work under technical assistance as follows:

- **Enabling climate finance** by establishing an institutional structure for biogas projects to access carbon credit markets and pathway to develop a national framework for project registration and aggregation of biogas carbon credits.
- **Addressing feedstock challenges** by building capacity of state governments to implement policies on agro-residue collection through mechanized equipment, storage and aggregation through cooperative models; support municipalities in capacity building and developing the value chain for waste segregation practice; advocacy across a diverse stakeholder for improved utilization of organic waste as energy resource.
- **Support on biogas offtake** will be provided by conducting analytical assessment to assess pipeline infrastructure and investment required to connect plants located in remote areas with the demand centers.
- **Support towards offtake of Fermented Organic Manure (FOM)** by conducting field-trials to test efficacy of FOM, followed by identification of policies for FOM product development & utilization.
- **Structuring, implementation and execution of the IBRD Guarantee:** The GEF agency is also actively involved in the structuring, implementation and execution of the IBRD Guarantee with SIDBI.

Also, please add a short explanation to describe cooperation with ongoing initiatives and projects, including potential for co-location and/or sharing of expertise/staffing (max. 500 words, approximately 1 page)

Bioenergy is an underutilized energy transition opportunity that could be transformative for India. It is estimated that the technical potential for industrial scale biogas capacity from various feedstocks (crops residues, animal manure, municipal solid wastes, municipal and industrial wastewater) is about 15 million tons^{[1]²¹} per annum (MTPA), which is equivalent to 65 percent of the current liquified natural gas (LNG) imports in India.^{[2]²²} The government views bioenergy^{[3]²³} as a sustainable and renewable alternative to fossil fuels. India, Brazil, and the United States are founding members of the Global Biofuels Alliance. The World Bank endorsed the Foundational Document in July 2023^{[4]²⁴}.

More than five million small-scale and community-scale biogas plants have been established in India over the past decades; however, their limited size cannot support India's bioenergy ambition. While large companies such as Reliance, commercial public companies like Indian Oil Corporation Limited (IOCL), and Suzuki Motors, are developing biogas plants, financed through their own resources to serve captive demand. The gap remains

within the development of industrial-scale biogas plants with much larger capacities of over two tons per day, which require commercial financing, and thus adequate risk allocation and contract standardization. The government is strongly committed to supporting the bioenergy sector through new policies such as the National Policy on Biofuels and the Sustainable Alternative Towards Affordable Transportation (SATAT) scheme.

With ensured offtake of production and market-based pricing, biogas has a sizeable potential for consumption in the transport and industrial sectors. This will reduce petroleum product imports by promoting domestic renewable biofuel production. The key market barriers include sustainable provision of feedstock supply in the upstream value chain and establishing a robust biogas offtake market in the downstream value chain. Since the introduction of SATAT in 2018, 70 industrial-scale biogas plants have been commissioned to date^[5]. These initial investments provide important learning regarding viability of technologies, operating models and investment opportunities across agricultural residue, municipal, and industrial organic waste streams.

[1] Tons in the document should be referred to as metric tonnes.

[2] Petroleum Planning and Analysis Cell, Ministry of Petroleum and Natural Gas, Total LNG Imports (Long Term and Spot) 23.4 MTPA (year 2021-22).

[3] Bioenergy is an overarching term and depending on the biomass treatment process it could take the form of biofuels (1G/2G ethanol), biogas or compressed biogas (CBG) or biomethane, drop-in biofuels, bio-hydrogen, bio-methanol, sustainable aviation fuel etc.

[4] As part of this initiative, the Ministry of Petroleum and Natural Gas (MoPNG), GoI, has requested the World Bank to prepare a concept note dealing with broader upstream and downstream lending support that would further stimulate the bioenergy sector.

[5] <https://gobardhan.co.in/> as on 6th November 2023

Core Indicators

Indicate expected results in each relevant indicator using methodologies indicated in the GEF-8 Results Measurement Framework Guidelines. There is no need to complete this table for climate adaptation projects financed solely through LDCF and SCCF.

Indicator 3 Area of land and ecosystems under restoration

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
975965	704227	0	0

Indicator 3.1 Area of degraded agricultural lands under restoration

Disaggregation Type	Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
Cropland	975,965.00	704,227.00		

Indicator 3.2 Area of forest and forest land under restoration

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 3.3 Area of natural grass and woodland under restoration

Disaggregation Type	Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
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Indicator 3.4 Area of wetlands (including estuaries, mangroves) under restoration

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 4 Area of landscapes under improved practices (hectares; excluding protected areas)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
4500000	568875	0	0

Indicator 4.1 Area of landscapes under improved management to benefit biodiversity (hectares, qualitative assessment, non-certified)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 4.2 Area of landscapes under third-party certification incorporating biodiversity considerations

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Type/Name of Third Party Certification

Indicator 4.3 Area of landscapes under sustainable land management in production systems

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
4,500,000.00	568,875.00		

Indicator 4.4 Area of High Conservation Value or other forest loss avoided

Disaggregation Type	Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
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Indicator 4.5 Terrestrial OECMs supported

Name of the OECMs	WDPA-ID	Total Ha (Expected at PIF)	Total Ha (Expected at CEO Endorsement)	Total Ha (Achieved at MTR)	Total Ha (Achieved at TE)
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Documents (Document(s) that justifies the HCVF)

Title

Indicator 6 Greenhouse Gas Emissions Mitigated

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO₂e (direct)	11630000	23929000	0	0
Expected metric tons of CO₂e (indirect)	0	0	0	0

Indicator 6.1 Carbon Sequestered or Emissions Avoided in the AFOLU (Agriculture, Forestry and Other Land Use) sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO₂e (direct)	11,630,000	23,929,000		
Expected metric tons of CO₂e (indirect)				
Anticipated start year of accounting	2023	2024		
Duration of accounting	15	15		

Indicator 6.2 Emissions Avoided Outside AFOLU (Agriculture, Forestry and Other Land Use) Sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO₂e (direct)				
Expected metric tons of CO₂e (indirect)				
Anticipated start year of accounting				
Duration of accounting				

Indicator 6.3 Energy Saved (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Total Target Benefit	Energy (MJ) (At PIF)	Energy (MJ) (At CEO Endorsement)	Energy (MJ) (Achieved at MTR)	Energy (MJ) (Achieved at TE)
Target Energy Saved (MJ)				

Indicator 6.4 Increase in Installed Renewable Energy Capacity per Technology (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Technology	Capacity (MW) (Expected at PIF)	Capacity (MW) (Expected at CEO Endorsement)	Capacity (MW) (Achieved at MTR)	Capacity (MW) (Achieved at TE)
Biomass	170.00	130.00		

Indicator 11 People benefiting from GEF-financed investments

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female	510	360		
Male	4,590	3,240		
Total	5,100	3,600	0	0

Explain the methodological approach and underlying logic to justify target levels for Core and Sub-Indicators (max. 250 words, approximately 1/2 page)

Please see the document attached for additional explanations on targets. It is labeled: India biogas supplemental information - Assessment of Core Indicators.

Please also see below the explanation on changes on select Core Indicators:

With the integration of the upstream and downstream value chain in the compressed biogas project, there has been an increased capital cost which is considered and therefore there is an overall reduction in the total biogas project capacities being developed under this program. In addition, the World Bank has carried out multiple market soundings from the project developers and developed understanding of the current state towards offtake of co-product i.e., fermented organic manure. With these inputs, the Project Core Indicators have been revised and the assumptions including the methodology and calculations is provided under Annex attached. Specific justification for each indicator is as follows:

Indicator 3: Area of land and ecosystems under restoration (hectare): As mentioned in the paragraph above, with an increased capital cost due to upstream and downstream integration, the total installed capacity of sub-projects is reduced from 0.3 MTPA to 0.23 MTPA (reduction from 100 project to 70 projects). With the reduction in overall capacity of biogas plants there is a reduction in the production of the FOM and hence reduction in the implementation of FOM for land and ecosystem under restoration. Hence the indicator has been decreased from 975,965 hectares to 704,227 hectares. The details on the methodology and calculations for the said indicator is mentioned in the write up attached.

Core Indicator 4: At the PIF stage the project under discussion was a multi phase approach, wherein the USD 250 million was divided into two Components. Component 1 was specific to the guarantee mechanism while Component 2 was envisaged to cover other areas such as support to the existing policies for offtake of fermented organic manure including others. Because of a specific policy support envisaged under Component 2 towards utilization of fermented organic manure, the impact towards Core Indicator was high. With Component 2 not a part of the program, there is a drastic reduction of the number under Core Indicator 4.

Indicator 6 – Greenhouse Gas Emissions Mitigated: They key difference under the methodology for assessment of this indicator is the life of project being considered. During the PIF stage the GHG emissions assessment was evaluated considering only the risk sharing facility (RSF) availability and maturity period. However, considering that the life of the CBG project (for around 20 years) will go beyond the RSF availability period, the assessment of GHG emissions has been done accordingly considering the life of CBG projects. Hence the GHG emissions mitigated has been increased from 11.63 million metric tons of CO₂ to 23.92 million metric tons of CO₂. The methodology and calculations for the said indicator is mentioned in the write up attached.

Indicator 11 – People benefiting from GEF-financed investments disaggregated by sex (count): Using the similar analogy as described above, with the reduction in the overall capacity and number of plants, the number of people directly benefiting from GEF financed investments has been decreased from 5100 number of direct and indirect employment to 3600. The methodology and calculations for the said indicator is mentioned in the Annexure attached.

Note on Indicator 6.4: Considering that the utilization of renewable biogas or biomethane is majorly used for transportation or industrial sector (and not the power sector), the best representation of the renewable energy capacity is in terms of million tons per annum of biogas production. With the reduction in the guarantee size, the overall capacity targeted is 0.23 million tons per annum. However, in case the requirement is to list in MW terms, the renewable energy capacity will be close to 130 MW.

NGI (only): Justification of Financial Structure

Please describe the financial structure and include a graphic representation. This description will include the financial instrument requested from the GEF and terms and conditions of the financing passed onto the Beneficiaries.

The S-curve below showcases the nascent stage of the Biogas sector in India. Currently the projects are focused on aggregated industrial waste (i.e., press mud) and some municipalities which are ahead of curve in deploying waste segregation practices. However, a larger potential of biogas is from disaggregated feedstocks like agricultural-residue, animal manure and other high-rate digestion technology for processing other industrial wastes. The World Bank Group with the programmatic approach (credit enhancement, sectoral interventions, and technical assistance) would enable the transition to harder to develop segments to realize the overall biogas potential.

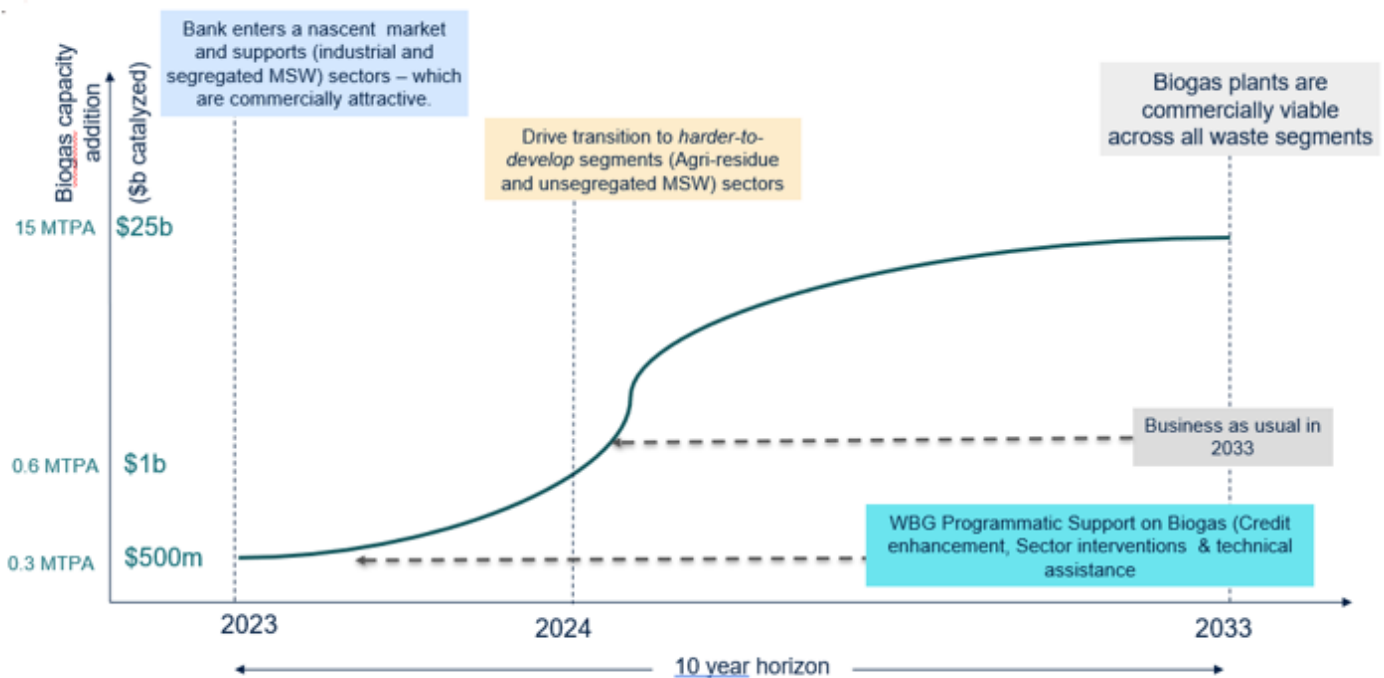


FIGURE 4: S CURVE ON BIOGAS SECTOR DEVELOPMENT

A US\$150 million IBRD Guarantee from the World Bank combined with a US\$13.76 million Non-Grant Instrument (NGI) Guarantee from the Global Environment Facility to mobilize private capital to scale up the generation of biogas. The RSF seeks to assist the country in the mobilization of commercial financing in Indian Rupees (INR) for the development of biogas projects. Through the RSF, SIDBI will design and offer partial credit guarantees (sub-guarantees) to commercial banks and Non-Banking Financial Companies (NBFCs) (jointly called Participating Financial Institutions or (PFIs), providing commercial loans to biogas developers. SIDBI will establish and operationalize the RSF, in accordance with operational procedures agreed with the World Bank. The sub-guarantees will be structured to provide guarantee coverage of up to 65 percent on loans that are classified as non-performing assets (NPAs) as per Reserve Bank of India (RBI) regulations. The RSF will be capitalized using the US\$150 million IBRD Guarantee and supported with a proposed US\$13.76 million Non-Grant Instrument (NGI) Guarantee at attractive concessional terms from the Global Environment Fund (GEF). The RSF will charge sub-guarantee fees to commercial banks which will be sized on

a cost recovery basis with an additional buffer through the NGI Guarantee. In the event of a default by a Biogas developer on an underlying sub-guaranteed loan, the lending institution will call on SIDBI for a payment under the sub-guarantee agreement. The payment for such a call will be made from pools of funds comprised of initially, a) net income of the RSF used to pay out, followed by b) the US\$13.76 million GEF NGI being drawn (inclusive of fees), and finally, c) the IBRD guarantee. PFIs would be required to enter into sub-guarantee agreements with the Facility Manager (SIDBI) based on eligibility criteria.

The Risk Sharing Facility (RSF or Facility) is designed to be a self-sustaining facility housed within SIDBI i.e. all the operating costs of the facility are covered by the sub-guarantee fee charged by SIDBI to the PFIs who are using the guarantees as a credit enhancement or extra security for loans offered by PFIs to Biogas developers. SIDBI's role is to work with the WB to set up the facility, use their own staff to run the facility, build the pipeline, and manage the portfolio and make sure the losses are managed appropriately. There is no direct recourse to SIDBI's own balance sheet under the RSF model. However, after the 15 year period of the RSF, SIDBI and GoI could choose to extend the RSF through their own capital. The following are the revenues and costs of the RSF:

Revenues:

- Sub-Guarantee fees charge by SIDBI to PFIs (who in turn add or pass-down as fees or cost of borrowing to the biogas project developers)
- Interest from deposits

Costs

- Overhead and Admin costs of SIDBI to run the facility: Net of costs covered through the Technical Assistance from grant funding
- Guarantee fees to IBRD: these are standard fees as per IBRD policies
- Guarantee fees to Government of India (as per current regulations)
- Guarantee fees to GEF
- Payment of sub-guarantee calls under the facility

The sub-guarantee fees charged to the PFIs and ultimately passed down to the borrowers has to be affordable to the Biogas developers so the benefits in terms of interest rate reduction and collateral savings have to be greater than the fee. Market soundings indicate that the maximum recurring sub-guarantee fee would be 150bps, while the maximum upfront fee would be 100bps. The fee has also been optimized to cover any payments of losses and ensure some reflows back to the GEF NGI.

Payment of Losses or Non-Performing Assets (NPAs)

As per Reserve Bank of India (RBI) regulations, loans become NPAs after 90 days of continuous non-payment as per the loan agreement. Given the nascency of the biogas sector, there is no sector specific date on losses, defaults, or credit quality. As a result, the team used NPA data following credit ratings of MSMEs from CRISIL to estimate a base case level of losses. The ratings and corresponding cumulative loss levels are as follows:

Default Rate Assumptions

Rating Category	AAA	AA	A	BBB	BB	B	C
CRISIL Default Rates	0.00%	0.03%	0.13%	0.69%	3.43%	8.43%	21.77%

The project eligibility criteria will require the credit rating of borrowers to be at a level BB or above. From discussions with commercial banks, they are unlikely to lend to borrowers under distress (falling in the B or C category).

The base case model assumes that the maximum expected losses would be 10.00%, which includes a large buffer from the BB default rate built in due to potential sector risks that may arise, particularly in the first 3 years of the facility. The most optimal scenario is a situation with no calls on the guarantee. The Partial Risk Sharing Facility for energy efficiency, designed in a similar manner also run by SIDBI since 2012, has had over 40 sub-guarantees issued and zero defaults.

In the event of an NPA, and a sub-guarantee being called, the first pool of funds utilized would be the cash balance available through the risk sharing facility (RSF) itself. If there are insufficient funds in the cash balance of the RSF to meet the NPA calls, SIDBI would then draw on the GEF NGI funds (US\$ 13.76 million) as a second payout source of funds. If the combination of the cash balance, and the balance of the GEF NGI becomes insufficient to payout the PFIs due to NPAs of Biogas project developers, then, SIDBI would call on the IBRD Guarantee as the third and last resort. In this structure, the GEF NGI would not be a cash injection into the facility like a typical grant, but rather act as a guarantee (i.e. a first loss guarantee). However, a call on the GEF NGI funds is mitigated by the cash reserves SIDBI will have built up from sub-guarantee fees and interest from deposits. Hence when it comes to the payment of losses, the cashflow waterfall would include 1) payment from the RSF cash reserves; followed by 2) the GEF NGI funds; and finally 3) IBRD Guarantee. The sub-guarantees are provided on the back of the IBRD Guarantee. Given the nascency of the sector there is a risk that some early-stage projects could have calls as the policy measures on de-risking the value chain are implemented. As the IBRD Guarantee is not reinstatable as per World Bank policy, early stage calls on the RSF Guarantee that have to do with temporary issues such as lagging policy implementation, feedstock disruptions etc., that result in a call on the IBRD Guarantee, would reduce the overall corpus of guarantees SIDBI can issue and thus negatively impact the private capital mobilized (PCM). The GEF NGI instrument is an important tool to ensure these temporary issues do not impact the broader target for PCM. Thus, the additionality from the GEF NGI is critical to the success and sustainability of this critical project with significant potential for delivering multiple Global Environmental Benefits (GEBs).

The best case scenario default is no losses which has been the experience for the PRSF project thus far. The worst case scenario for the GEF investment would be 13% losses at which point all of the GEF NGI would be drawn. This

is more than double the current default rate of 5.4% for sub-investment grade MSMEs. To mitigate this worst-case scenario, the operations manual for the project would specify a minimum credit rating threshold of BB or higher which is only one notch below investment grade according to CRISIL.

Risk Management and Portfolio Governance:

One of the key risk management elements of the project is to issue the IBRD Guarantee of US\$150 million in three allotments. Each allotment is expected to be US\$50 million with the first one released once all the conditions to effectiveness of the guarantee have been met. The subsequent allotments are expected to be released as the project pipeline develops and expected to be at 12 to 18-month intervals. Each US\$50 million will have some preconditions to effectiveness including but not limited to: (i) proof of project pipeline; (ii) loss levels below a predetermined level below the base case assumption of 10.0%; (iii) management of environmental and social safeguards; (iv) projects meeting other monitoring and evaluation requirements. The breaking up of the IBRD Guarantee effectiveness allows for the RSF to have distinct check points during which the project progress and risks can be assessed. If the losses are deemed too high, this structure allows for a braking mechanism to be employed prior to more losses materializing, which pauses the issuance of new guarantees until sector issues and other factors resulting in higher-than-expected losses are addressed. This also limits the risk of depleting the GEF NGI, while ensuring the long-term sustainability of the RSF.

Even once the full guarantee amount is effective, the World Bank team would continue to get regular monitoring reports of the facility, and will closely monitor the facility revenue stream, the number of NPAs the projects are facing, and ultimately the ending cash balance of the facility. As a part of their responsibility as implementing entity, SIDBI will have to ensure performance of the sub-guarantee portfolio. If the NPAs are too high SIDBI can either cease to issue new guarantees (thereby limit the exposure of both GEF and the World Bank) and/or deploy more stringent project credit ratings and risk management practices. While the objective of the RSF is to mitigate credit risk so more private capital can flow to Biogas projects, the operations manual will also include measures to pause and flag and systemic or sectoral issues that need to be addressed that would result in excessive losses.

Illustration of Waterfall Approach in RSF Sub-Guarantee Claims Processing

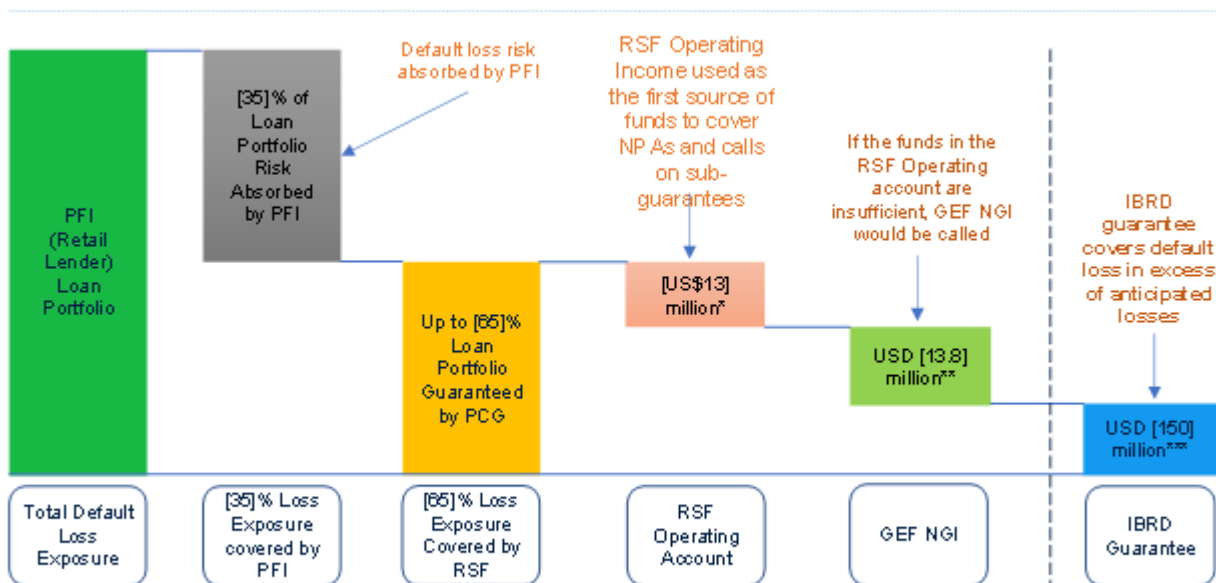


FIGURE 5: ILLUSTRATION OF WATERFALL APPROACH WITH THE 3 LOSS POOLS PROVIDED BY THE RISK SHARING FACILITY DESIGNED

The GEF-8 NGI funds (US\$13.76 million) will form a critical element of the structure to ensure long term sustainability of the facility as it provides SIDBI an additional layer of defense prior to the IBRD Guarantee being called. The project has an eight-year availability period in which new guarantees can be issued for new projects.

The proposed GEF NGI funding will have an impactful additionality into the project. Without this GEF-8 NGI guarantee, the annual sub-guarantee fee to be charged to the PFIs would have to increase to [2.70]% from [1.50]% which will substantially increase the burden on the PFIs and in turn the Biogas plant developers, and ultimately affect the achievement of the project development objectives.

As indicated above, the Risk Sharing Facility (RSF) is designed to be self-sustaining, meaning that the sub-guarantee fee charged to PFIs, alongside other revenues to the Project (e.g. income from money market instruments on cash balance), are deemed sufficient to cover all losses. To evaluate the adequate level of the GEF-8 NGI fee, the World Bank team considered its additionality towards the affordability and competitiveness of the RSF and seek only the required minimum level of concessionality to enhance the effectiveness of the RSF. **As a result, this proposal submission relies on a GEF-8 NGI priced at 10 bps recurring annual fee and no upfront charge fee.** The rationale of this pricing follows the following elements:

- **No upfront charge:** During the early years of the project, the sub-guarantees are expected to be deployed gradually over a period of 8 years (ramp-up period) which will impact the project's income generation capacity, and any upfront fee would negatively affect the RSF financials. Therefore, to help the Project scale-up in the initial years, the GEF-8 NGI will come with no upfront cost.
- **Annual recurring fee of 10 bps:** An affordable GEF-8 NGI is significantly important for lowering the RSF cost to the PFIs as they are deemed to pass the sub-guarantee fee through their loan pricing. Having a lower RSF cost implies that borrowers (the Biogas plant developers) will face lower sub-guarantee fees and a lower all-in cost of financing for the development of Biogas plants. Current Government of India and World Bank Policies have limited scope to reduce fees as each institution is charged a recurring fee of 60bps. Therefore, the high concessionality of the GEF is an important tool in making the facility sustainable.
- **Reflows:** in the base case, the RSF will reflow any remaining funds back to GEF at the end of the 15 year project period. The risk management and portfolio governance measures indicated above, will help reduce the losses and allow for maximum reflows back to GEF for the amounts of the GEF NGI utilized.

The GEF NGI is proposed with the following features:

- **Type of instrument and seniority:** GEF NGI serving as risk mitigation
- **Amount:** USD 13.76 million (excluding agency fees – total is USD 15 million)
- **Reimbursement agreement:** In case of a draw on the GEF NGI, the Program Manager reimburses (at the end of the Project's life, i.e. 15 years) any utilized GEF NGI's cumulative amounts drawn up to the maximum cash balance amount available after servicing any outstanding IBRD called amount, and other operating expenditures for the closure of the RSF.

- **Maturity:** fifteen years (duration of the RSF)
- **Fees:** 10 bps recurring annual fee; no additional upfront charge

The GEF NGI will be part of the total financing provided to the Project. With the USD 150 million secured from WB, the leverage ratio for the GEF NGI (USD 13.76 million) to WB financing for the RSF alone is 1:11. As previously mentioned, the Project will unlock commercial loans worth approximately USD 610 million, resulting in a leverage ratio for the GEF NGI to total commercial financing of 1:44. The below figure depicts the leveraging of the GEF NGI.

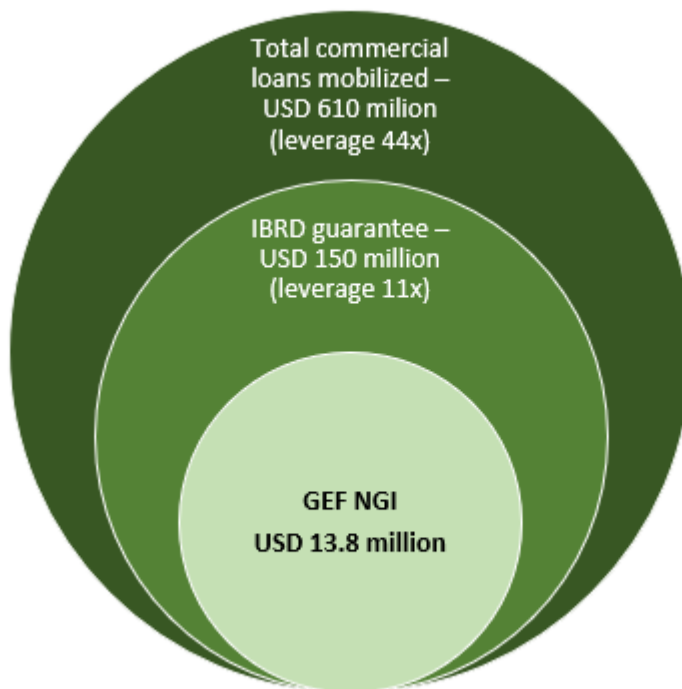


FIGURE 6: LEVERAGING OF THE GEF GUARANTEE

The RSF will be established by the Small Industries Development Bank of India ('SIDBI'), a financial institution established by the Government of India. The RSF seeks to assist the country in the mobilization of commercial financing in Indian Rupees (INR) for the development of renewable biogas projects. Through the RSF, SIDBI will design and offer partial credit guarantees to commercial banks and non-banking financial companies ('NBFC') (together, 'Participating Financial Institutions' or 'PFIs') providing commercial loans to biogas developers. SIDBI will establish and operationalize the RSF, in accordance with operational procedures agreed with the World Bank. The implementation agency assessment has been included as part of the annexes of this proposal.

As per Reserve Bank of India (RBI) regulations, PFIs can only call on the sub-guarantee after the loans have been classified as a Non-Performing Loan (NPA) which requires 90 days of on-going non-payment. PFIs will be required to report to SIDBI and SIDBI to the World Bank on the first instance of a non-payment, so there will be sufficient time to address any broader concerns related to the non-payment. The design of this operation will also consider various lessons learned from similar risk sharing facility operations. Similar operations include, the Partial Risk Sharing Facility for Energy Efficiency in India funded by the Clean Technology Fund (CTF) and, the Vietnam Scaling Up Energy Efficiency Project funded by the Green Climate Fund (GCF).

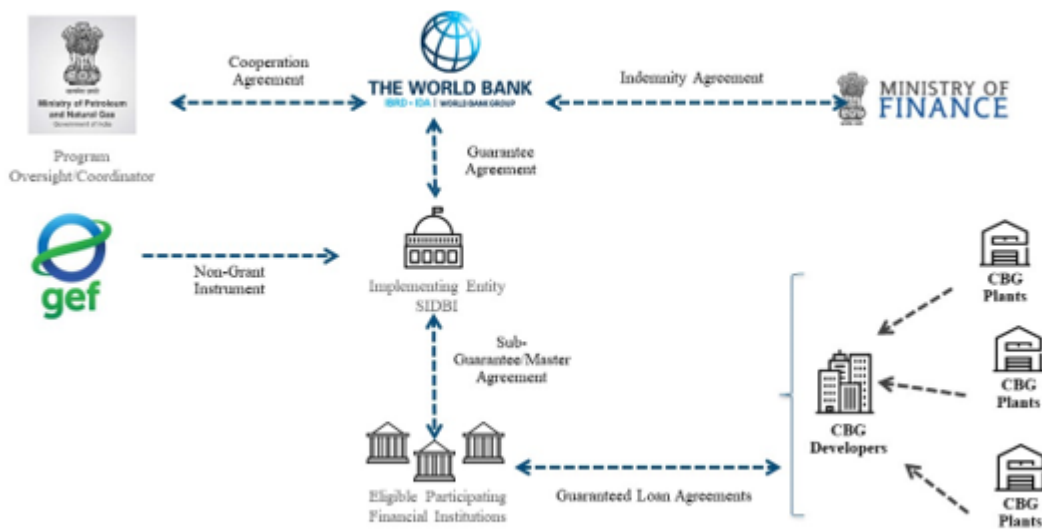


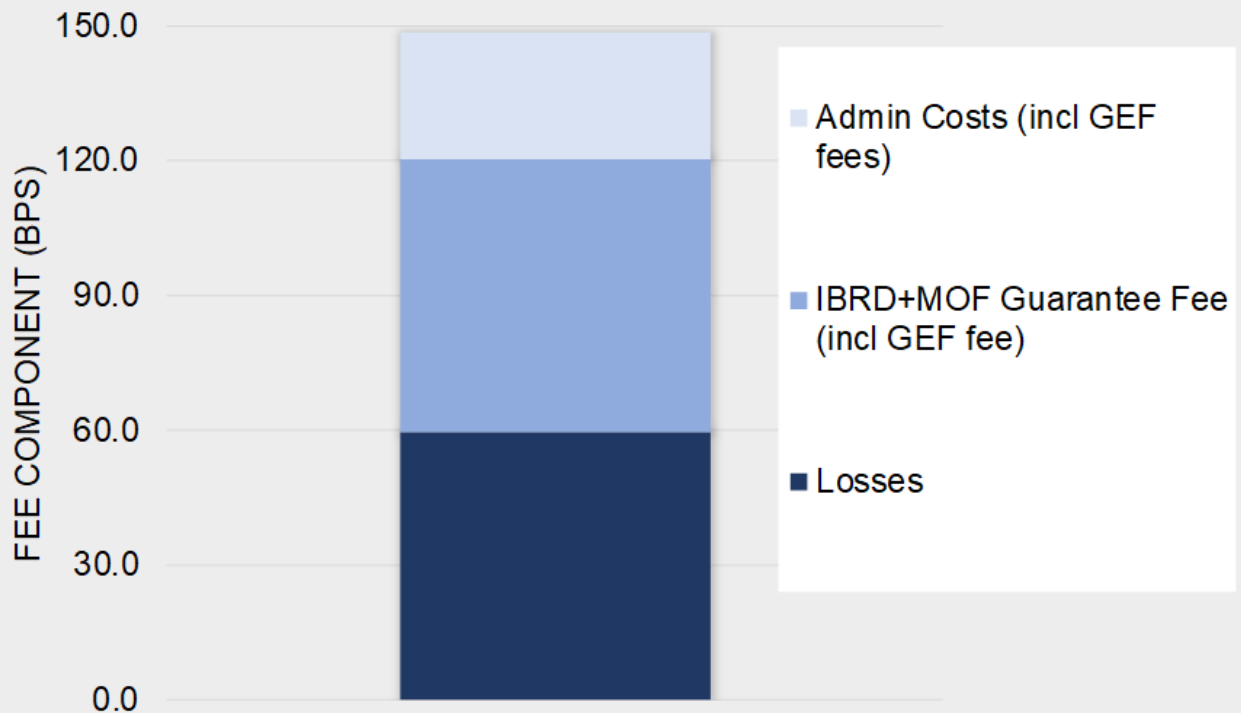
FIGURE 7: PROPOSED RISK SHARING FACILITY AND GUARANTEE STRUCTURE FOR BIOGAS

A detailed analysis of the fee structure, estimate default rate, and reflow analysis can be found below:

Fee Structure:

The sub-guarantee fee has been set to ensure the facility is self-sustaining and can therefore generate sufficient revenue to cover the following costs: the IBRD guarantee fees, fees to Ministry of Finance, admin fees to SIDBI, and payment of up to 10% of cumulative non-performing loans on the facility itself (i.e. losses). The graph below shows the breakdown of the 150bps recurring sub-guarantee (or RSF guarantee) fee:

BREAKDOWN OF COSTS COVERED BY FACILITY GUARANTEE FEE



Estimated Default Rate:

The base case default rate has been estimated at a level of 10% of cumulative portfolio losses, which translates to a 1.43% of the total guarantees issued in every year of the facility (assuming a 7-year average life of each loan, 10%/7 years equals 1.43% per year). The calculation is as follows:

Cumulative Expected Loss = (Outstanding Loan Portfolio (Principal)) x (Cumulative Default Rate) / Life of Facility (yrs)

CRISIL is formerly known as the Credit Rating Information Services of India Limited. It is an Indian analytical company providing ratings, research, and risk and policy advisory services and is a subsidiary of American company S&P Global. Based on CRISIL's annual default rate assumptions for corporates in India, this corresponds to a project and borrower credit rating of lower than B. This is a highly conservative base case as the borrower and project eligibility criteria will impose a credit rating floor of BB (for which the corresponding default rate is approximately a third of the assumed base case) as anything lower is at high risk of debt distress.

Reflow Analysis:

As a result of the assumptions above on the revenue and costs of the facility, and the default rate assumption, it is expected that approximately \$7 million will be reflowed back to GEF at the end of the facility life. However, the facility design allowed for reduction in sub-guarantee fee to incentivize uptake of the facility if demand in the early years is slower than expected. It is also possible that default rates could be lower than the expected amount given it is a conservative assumption, which would increase the amount reflowed back to GEF at the end of the facility life.

At the end of the investment period (which is the 15-year life of the RSF and the IBRD Guarantee), the IBRD will no longer be effective, any remaining GEF funds from the GEF account will be reflowed back to

GEF. SIDBI can continue the RSF but only with the funds in the RSF operating account or another form of capital injection (its own balance sheet, other donors/grants etc.)

The exchange rate depreciation of 4.13% was calculated using a 10 year compounded annual growth rate calculation for USD-INR from 2012-2022. A further depreciation in the exchange rate or strengthening of USD vs INR, implies that less of the GEF NGI would be used for every INR call on the RSF Guarantee.

Key Risks

	Rating	Explanation of risk and mitigation measures
CONTEXT		
Climate	Moderate	Adaptive management practices will be required as climate change impacts the volume of waste generated. Biogas plants will adjust their practices by substituting one waste stream to another in response to climate impacts.
Environmental and Social	Substantial	The identified environmental risks will be managed by upgrading SIDBI's existing ESMS to cover biogas-sector specific screening procedures, exclusion criteria and due-diligence processes commensurate with the related impacts and risk. The environmental risks will be further evaluated during project implementation and revised accordingly.
Political and Governance	Low	The Government of India through MoPNG has demonstrated a strong commitment to continue the policy support either directly to the biogas plants or indirectly through supporting infrastructure to offtake renewable biogas through renewable blending obligation being made mandatory from FY 2025-26 starting

		from 1% and reaching 5% 2028-29 onwards.
INNOVATION		
Institutional and Policy	Substantial	The development of biogas requires coordination between different policies and stakeholders, including the Ministry of Chemicals and Fertilizers, MoHUA, and Ministry of Agriculture and Farmer's Welfare (refer Technical Note on Technical, Economic, and Financing Analysis for additional information). While this level of integration is undoubtedly a strength of the sector, it also poses a risk to ensuring that all stakeholders work together to achieve a common goal. The technical assistance work will enable to bring the concerned stakeholders together for implementation.
Technological	Moderate	As a nascent industry, there is still opportunity for additional EPC contractors and other SME's providing goods and services including new technologies. The Ministry of Skill Development and Entrepreneurship is responsible for co-ordination of various skill development efforts across the country, including building the vocational and technical training framework and up-gradation for new sectors such as biogas.
Financial and Business Model	Substantial	The financial risk against the loss for the GEF tranche is substantial as it is acting as a first loss pool to support any calls on the RSF Guarantees once the RSF operating account has been depleted. However, GEF is also sharing the risk of a call with PFIs, given that the call on the RSF Guarantee is capped at 65% of the loan size so the PFIs would incur the loss on the remaining amount. GEF is also sharing the risk with facility

		<p>itself as any calls are made first with cash in the RSF operating account and only if those funds are insufficient, only then would GEF be drawn. The World Bank would be notified by SIDBI as any RSF guarantee calls materialize. Since the RSF operating accounts would be used first and the RSF Guarantee fee has been sized to cover 10% of losses, there would be enough warning signals to know that a draw on the GEF NGI will happen. Furthermore, the technical assistance will include support to continue assessing the financial viability of the plants and disseminating learnings to industries and PFIs.</p>
EXECUTION		
Capacity for Implementation	Moderate	<p>Biogas is a new sector, and the risk rating reflects the nascency. The Project is underpinned by strong technical assistance with both recipient executed and bank executed technical assistance to build institutional capacities within the value chain along with the PFIs and SIDBI respectively. Sustainability will also come from the technical assistance targeting carbon market developments which will introduce additional drive in the sector.</p>
Fiduciary	Low	<p>With experience of implementing the Partial Risk Sharing Facility (PRSF) by SIDBI, they have developed adequate fiduciary and procurement capabilities. Considering the similarities of the two projects i.e., PRSF and Biogas Risk Sharing Facility, the risk rating is considered low which is built on that experience.</p>
Stakeholder	Moderate	<p>The project has a stakeholder engagement plan that will remain a</p>

		living document and will guide implementation of the project.
Other	Moderate	At the outset the terms of RSF are based on World Bank experience. i.e., • risk coverage of up to [65%]; is based on past World Bank experience. As the projects proceeds with continuous market feedback will inform upon whether revision of [65%] is required. • Upfront fees have also been set in accordance with other RSF projects. Market feedback will indicate if the upfront fee needs to be adjusted / phased and accordingly additional actions will be taken. • Losses have been conservatively estimated so there is an additional buffer for a downside scenario. Furthermore, the IBRD guarantee will be released in tranches with certain breaks and conditions to ensure the projects are well performing and policy measures are implemented as planned.
Overall Risk Rating	Substantial	As a nascent industry the overall risk rating reflects the unknown within the environmental and social performance of the sector. Additionally, most of the other risks are rated moderate.

C. ALIGNMENT WITH GEF-8 PROGRAMMING STRATEGIES AND COUNTRY/REGIONAL PRIORITIES

Explain how the proposed interventions are aligned with GEF- 8 programming strategies and country and regional priorities, including how these country strategies and plans relate to the multilateral environmental agreements.

For projects aiming to generate biodiversity benefits (regardless of what the source of the resources is - i.e., BD, CC or LD), please identify which of the 23 targets of the Kunming-Montreal Global Biodiversity Framework the project contributes to and explain how.

Confirm if any country policies that might contradict with intended outcomes of the project have been identified, and how the project will address this. (max. 500 words, approximately 1 page)

The project supports the GEF-8 CCM Programming Directions objective 1.1, efficient use of raw materials and circular economy by supporting technologies that better utilize biomass waste resources, lower fugitive methane emissions and generate lower-carbon products (i.e., fermented organic manure (FOM)) and renewable biogas

as a substitute for fossil fuels in transport and industrial applications. The project investments strictly prioritize generation of bioenergy produced by anaerobic decomposition of organic waste including agricultural waste, municipal waste, and industrial waste streams such as sugarcane press mud.

The project is closely aligned with the Government of India (GoI) priorities and commitments to multilateral environmental agreements, including the United Nations Framework Convention on Climate Change (UNFCCC) and United Nations Convention to Combat Desertification (UNCCD). With a goal to adopt a climate-friendly and cleaner path for economic development, at UNFCCC COP26, India announced plans to mitigate climate change by achieving net-zero carbon emissions by 2070. According to the updated Nationally Determined Contribution (NDC), India is now committed to reducing the emissions intensity of its GDP by 45 percent by 2030, compared to 2005, and to achieving approximately 50 percent of cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030. In addition, India's Land Degradation Neutrality (LDN) target is to achieve a state of no net land degradation and restoration of 26 million hectares of degraded land by 2030.

Demonstrated by several initiatives under National Biofuels Policy, a program specific to industrial scale biogas projects i.e., Sustainable Alternative Towards Affordable Transportation ("SATAT") has been developed to support development of 5000 biogas plants which is also supported by blending targets (5%) of bio-methane in gas grid replacing fossil fuel usage. In addition, the entire scheme is focused on utilizing waste to produce energy and therefore it helps urban waste management, reduce crop burning and manure management which are contributors towards fugitive GHG emissions.

D. POLICY REQUIREMENTS

Gender Equality and Women's Empowerment

We confirm that gender dimensions relevant to the project have been addressed during Project Preparation as per GEF Policy and are clearly articulated in the Project Description (Section B).

Yes

1) Does the project expect to include any gender-responsive-measures to address gender gaps or promote gender equality and women's empowerment?

Yes

If the project expects to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment, please indicate in which results area(s) the project is expected to contribute to gender equality:

Closing gender gaps in access to and control over natural resources;

Improving women's participation and decision-making; and/or

Yes

Generating socio-economic benefits or services for women.

Yes

2) Does the project's results framework or logical framework include gender-sensitive indicators?

Yes

Stakeholder Engagement

We confirm that key stakeholders were consulted during Project Preparation as required per GEF policy, their relevant roles to project outcomes has been clearly articulated in the Project Description (Section B) and that a Stakeholder Engagement Plan has been developed before CEO endorsement.

Yes

Select what role civil society will play in the Project

Consulted only;

Member of Advisory Body; Contractor;

Co-financier;

Member of project steering committee or equivalent decision-making body ;

Executor or co-executor;

Other (Please explain) **Yes**

Private Sector

Will there be private sector engagement in the project?

Yes

And if so, has its role been described and justified in section B project description?

Yes

Environmental and Social Safeguards

We confirm that we have provided information regarding Environmental and Social risks associated with the proposed project or program, including risk screenings/ assessments and, if applicable, management plans or other measures to address identified risks and impacts (this information should be presented in Annex E).

Yes

Please provide overall Project/Program Risk Classification

Overall Project/Program Risk Classification

PIF	CEO Endorsement/Approval	MTR	TE
Medium/Moderate	High or Substantial		

E. OTHER REQUIREMENTS

Knowledge management

We confirm that an approach to Knowledge Management and Learning has been clearly described during Project Preparation in the Project Description and that these activities have been budgeted and an anticipated timeline for delivery of relevant outputs has been provided.

Yes

Socio-economic Benefits

We confirm that the project design has considered socio-economic benefits to be delivered by the project and these have been clearly described in the Project Description and will be monitored and reported on during project implementation (at MTR and TER).

The project brings in socio-economic benefits as the waste management triggered by investments in the biogas capacity will benefit the local population at large who face challenges with waste management. The IBRD guarantee provides along with GEF NGI provides an assurance to PFIs that any potential calls under the RSF guarantees will be honored. This allows PFIs to use the RSF guarantees to proportionally reduce the collateral requirement on biogas project sponsors and improve interest rates leading to increased investments in the sector. SIDBI and the PFIs will benefit significantly from institutional strengthening to assess biogas projects and an increased lending portfolio in the biogas sector to allow for a new business segment with climate benefits.

Indirect beneficiaries include a broad range of stakeholders from communities with biogas operations to municipalities, state nodal agencies, the central government, and the people of India. Increased biogas intake in the energy mix will help reduce India's subsidy and foreign exchange burden through reduced LNG imports. The proposed Project is also expected to contribute to creating jobs for rural communities, including for youth and women, during the construction and operations of biogas plants. In addition, as the market grows there is likely to be employment creation throughout the biogas value chain. This will also help develop village level entrepreneurs which can ensure the development of a robust value chain for aggregation and supply of feedstock to such biogas plants. Management of waste across a variety of feedstocks such as municipal waste, agro-residue, animal, and industrial waste will provide benefit to the local stakeholders who are directly impacted due to mismanagement of such wastes—for instance, crop residue burning in North India and landfills in various municipalities. The Project will provide clear signals to the private sector about the size of the future market, incentivizing local industrial development and capacity building. The GoI and associated ministries will also benefit from the Project, as it will help them come closer to reaching their NDC targets. The people of India will benefit from cleaner air, less pollution, cleaner cities with enhanced waste management systems, and renewable domestically produced clean energy. The world will indirectly benefit from reduced GHG emissions.

ANNEX A: FINANCING TABLES

GEF Financing Table

Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Programming of Funds	Grant / Non-Grant	GEF Project Grant(\$)	Agency Fee(\$)	Total GEF Financing (\$)
World Bank	GET	India	Climate Change	NGI	Non-Grant	13,761,468.00	1,238,532.00	15,000,000.00
Total GEF Resources (\$)						13,761,468.00	1,238,532.00	15,000,000.00

Project Preparation Grant (PPG)

Was a Project Preparation Grant requested?

false

PPG Amount (\$)

PPG Agency Fee (\$)

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Programming of Funds	PPG(\$)	Agency Fee(\$)	Total PPG Funding(\$)
Total PPG Amount (\$)					0.00	0.00	0.00

Please provide Justification

Sources of Funds for Country Star Allocation

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Sources of Funds	Total(\$)
Total GEF Resources					0.00

Focal Area Elements

Programming Directions	Trust Fund	GEF Project Financing(\$)	Co-financing(\$)
CCM-1-2	GET	13,761,468.00	765000000
Total Project Cost		13,761,468.00	765,000,000.00

Confirmed Co-financing for the project, by name and type

Please include evidence for each co-financing source for this project in the tab of the portal

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount(\$)
GEF Agency	World Bank	Guarantee	Investment mobilized	150000000
GEF Agency	World Bank	Grant	Investment mobilized	500000
Donor Agency	ESMAP	Grant	Investment mobilized	4500000
Private Sector	Participating Financial Institutions	Loans	Investment mobilized	425000000
Private Sector	Project Developers	Equity	Investment mobilized	185000000
Total Co-financing				765,000,000.00

Please describe the investment mobilized portion of the co-financing

THE RISK SHARING FACILITY (RSF) WHICH THE GEF-NGI SUPPORTS IS DESIGNED TO PROVIDE GUARANTEES TO BACKSTOP DEBT FINANCING FROM INDIAN COMMERCIAL BANKS TO BIOGAS DEVELOPERS. BASED ON THE INITIAL SIZE OF THE RISK SHARING FACILITY, IT IS EXPECTED THAT APPROXIMATELY INR (INDIAN RUPEE) 5,000 CRORES (US\$ 610 MILLION EQUIVALENT) OF TOTAL PRIVATE INVESTMENT (INCLUDING EQUITY CONTRIBUTION FROM BIOGAS DEVELOPERS) COULD BE MOBILIZED FOR UP TO 70 PROJECTS. THIS IS ESTIMATED BASED ON A PROJECT SIZE OF BETWEEN US\$ 8-9 MILLION, A DEBT-EQUITY SPLIT OF 70:30, AND A GUARANTEE PERCENTAGE COVERAGE OF UP TO 65% ON THE COMMERCIAL DEBT FINANCING PORTION.

The co-financing letter equivalent documents for private sector financing will be provided during implementation. Per GEFSEC advice, the following language has been added to the IBRD co-financing letter: "The World Bank Guarantee will be deployed only if the debt and equity from private sector financing would materialize." The letter is attached.

ANNEX B: ENDORSEMENTS

GEF Agency(ies) Certification

GEF Agency Type	Date	Project Contact Person	Phone	Email
GEF Agency Coordinator	1/18/2024	Angela Armstrong		aarmstrong@worldbank.org
Project Coordinator	1/22/2024	Prajakta Ajit Chitre		pchitre@worldbank.org

Record of Endorsement of GEF Operational Focal Point (s) on Behalf of the Government(s):

Please attach the Operational Focal Point endorsement letter(s) with this template.

Name of GEF OFP	Position	Ministry	Date (MM/DD/YYYY)

NGIs do not require a Letter of Endorsement if beneficiaries are: i) exclusively private sector actors, or ii) public sector entities in more than one country. However, for NGI projects please confirm that the agency has informed the OFP of the project to be submitted for Council Approval

Yes

ANNEX C: PROJECT RESULTS FRAMEWORK

Please indicate the page number in the Project Document where the project results and M&E frameworks can be found. Please also paste below the Project Results Framework from the Agency document.

*PLEASE REFER TO PAD PAGES 20-24

** The World Bank Project Appraisal Document (PAD) has undergone multiple internal reviews and is being finalized to be submitted to the Board for final approval (as of 2/26/2024). With that taken into consideration, while it may not be possible to incorporate the GEF core indicators in the key results framework; however, these indicators can be later made a part of monitoring and evaluation framework and be reported through Implementation Status and Results Reports (ISRs).

With the integration of the upstream and downstream value chain in the compressed biogas project, there has been an increased capital cost which is considered and therefore there is an overall reduction in the total biogas project capacities being developed under this program. In addition, the World Bank has carried out multiple market soundings from the project developers and developed understanding of the current state towards offtake of co-product i.e., fermented organic manure. With these inputs, the Project Core Indicators have been revised and the assumptions for the same is provided under Annex H along with the worksheet on core indicators.

PDO Indicators	Unit	Baseline	End Target (Cumulative after 8 years)
Installed capacity of biogas under the Project	MTPA	0	0.23
Reduction of GHG emissions (CO ₂ and methane) saved from waste management and switching from fossil fuels to biogas	MtCO ₂ ^U	0	5.11 (23.92 across the life of biogas sub-projects)
Intermediate Results Indicators by Components			
Indicator Name	Unit	Baseline	End Target (Cumulative after 8 years)
Operationalization of RSF (Finalization of Operations Manual: Detailed Operations Manual, including technical, operational, governance framework of the Facility as well as empanelment criteria for PFIs, to be finalized and made public)			
PCM including debt financing and equity contribution from industrial scale biogas project sponsors	Million US\$	0	610
The institutional and personnel set-up of the RSF is finalized and accessible for PFIs		0.00	One time
Number of staff assigned to manage environmental and social aspects within the RSF		0.00	2

Minimum number of women officers assigned by SIDBI to manage the RSF		0.00	2
Empanelment of PFIs: Number of Financial Institutions empaneled with the RSF		0.00	10
Number of municipalities with improved waste management practices by converting waste to energy	(count)	0	5
Paddy straw burning avoided	TPA	0	185,000
Learning Agenda: Learning performance indicators			
Analytical work to support a state in developing / implementation of a biogas policy		0.00	One state
Analytical work to support municipalities in developing biogas projects		0.00	Two municipalities
Gender: Biogas project development led by Females or Female entrepreneurs are supported by the RSF			
Direct Employment Generation disaggregated by sex	(count)		Male: 3240 Female: 360
Annual training of at least five (5) women employees of SIDBI / participating financial institutions on the compressed biogas sector.		0.00	At least [5]
Women-led (or biogas projects with at least 10% women employees with a minimum threshold of 05 women employee to qualify) developers receive concessional guarantee conditions (e.g., pricing) from the RSF		0.00	5 percent of the total number of underlying loans
Open a help desk for loan applicants – the help desk agents will be gender sensitized and help to connect borrowers with appropriate lenders for the biogas loans.		0.00	One time help desk set up
Citizen Engagement: Grievances related to the RSF are satisfactorily redressed			
Percentage of grievances related to the Facility satisfactorily addressed within one month of having received the grievance (%)		0.00	90%

Based on certain assumptions on yearly roll out of guarantees for 8 years timeframe during the period of issuance of guarantees under the RSF (defined in the worksheet). However, the project will have a life of 15+ years which will lead to a cumulative GHG emission savings of 29.19 million tons.

Monitoring & Evaluation Plan: PDO Indicators					
Indicator Name	Definition/Description	Frequency	Data Source	Methodology for Data Collection	Responsibility for Data Collection
Generation capacity of biogas under SATAT (MTPA)	Total capacity of various biogas projects installed by developers with loans supported by a guarantee coverage from RSF	Annual	Report commissioned by SIDBI to estimate the capacity installation	Report commissioned by SIDBI to estimate the capacity installation	SIDBI

Private capital mobilized for biogas projects under SATAT (USD million)	Total private capital mobilized, including total debt financing from PFIs and equity contribution from Biogas developers	Annual	Data collected by SIDBI from various PFIs	SIDBI would receive quarterly / half yearly reports from PFIs on the status of loans (disbursement, debt servicing, potential issues)	SIDBI
Reduction of GHG / emissions saved from waste management and switching from fossil fuels to compressed biogas. (Million tCO ₂ /year)	Total amount of avoided CO ₂ emissions because of displacement of consumption from fossil-fuel generation to compressed biogas generation	Post 1 year of commissioning of biogas projects supported by the Facility; and every year thereafter	Report commissioned by SIDBI that will use an internationally recognized methodology to estimate GHG emission reduction	Report commissioned by SIDBI that will use an internationally recognized methodology to estimate GHG emission reduction	SIDBI
Monitoring & Evaluation Plan: Intermediate Results Indicators					
Indicator Name	Definition/Description	Frequency	Data Source	Methodology for Data Collection	Responsibility for Data Collection
Operationalization of RSF					
Institutional and personnel set-up of the RSF	Detailed Operations Manual, including technical, operational, governance framework of the Facility as well as empanelment criteria for PFIs, to be finalized and made public. The institutional and personnel set-up of the RSF is finalized and accessible for PFIs	One-time	Operations Manual document agreed by all parties (WB, SIDBI); personnel set-up for the RSF	Finalized Operations Manual; Confirmation from SIDBI on personnel set-up	SIDBI
Staffing for RSF	Number of staff assigned to manage environmental and social aspects within the RSF	Annual	Report from SIDBI	Confirmation provided by SIDBI as per Project progress reports	SIDBI

Women staffing for RSF	Number of women officers assigned by SIDBI to manage the RSF	Annual	Report from SIDBI	Confirmation provided by SIDBI as per Project progress reports	SIDBI
Empanelment of PFIs	Number of Financial Institutions who have entered into Master Guarantee Agreement or relevant documents as part of empanelment process with the RSF	Annual	Report from SIDBI	SIDBI would provide copies of Master Guarantee Agreements executed with PFIs	SIDBI
biogas projects	Number of municipalities with improved waste management practices by converting waste to energy	Annual	Report from SIDBI	SIDBI would provide the details of the biogas projects based on municipal solid waste	SIDBI
biogas projects	Number of biogas projects based on paddy straw	Annual	Report from SIDBI	SIDBI would provide the details of the biogas projects financed under RSF using paddy straw as a feedstock	SIDBI
Learning Agenda: Learning performance indicators					
Technical assistance	Number of engagements with state to support developing / implementation of a biogas policy	Annual	Report from The World Bank	World Bank to provide details of the state level engagement	World Bank
Technical assistance	Number of engagements with municipalities in developing biogas projects	Annual	Report from The World Bank	World Bank to provide details of the engagements with municipal corporations	World Bank
Gender: biogas project development led by Females or Female entrepreneurs are supported by the RSF					
Annual training of at least five (5) women	The institutional strengthening to improve implementation	Annual	Report submitted by SIDBI	SIDBI would collate data from the agency for	SIDBI

employees of SIDBI / participating financial institutions on the compressed biogas sector.	capacities will target to train at least five (5) women employees of SIDBI / participating financial institutions			training of women employees under the TA executed by SIDBI and share outcomes achieved from the training program	
Women-led biogas developers receive concessional guarantee conditions from the RSF	RSF shall provide guarantees on at least one concessional condition for women-led enterprises	Annual	Report submitted by SIDBI	SIDBI would track the information on guarantees issued to support women-led enterprises and report the same in the progress reports	SIDBI
Open a help desk for loan applicants – the help desk agents to be gender sensitized to connect borrowers with lenders for the biogas loans.	Help desk agents will be gender sensitized to help to connect borrowers with appropriate lenders for the biogas RSF loans	Annual	Report submitted by SIDBI	SIDBI would ensure that the helpdesk is gender sensitized	SIDBI
Citizen Engagement					
Percentage of grievances related to the Facility satisfactorily addressed (%)	Grievances related to the RSF are satisfactorily redressed	Annual	Report submitted by SIDBI	SIDBI shall share the details of grievances related to RSF as well as evidence of satisfactory redressal as received from PFI and at SIDBI	SIDBI

ANNEX D: STATUS OF UTILIZATION OF PROJECT PREPARATION GRANT (PPG)

Provide detailed funding amount of the PPG activities financing status in the table below:

Project Preparation Activities Implemented	GETF/LDCF/SCCF Amount (\$)		
	Budgeted Amount	Amount Spent To date	Amount Committed
Total	0.00	0.00	0.00

ANNEX E: PROJECT MAP AND COORDINATES

Please provide geo-referenced information and map where the project interventions will take place

Location Name	Latitude	Longitude	GeoName ID
Haryana	30.7333	76.7794	

Location Description:

Activity Description:

Location Name	Latitude	Longitude	GeoName ID
Punjab	30.7333	76.7794	

Location Description:

Activity Description:

Location Name	Latitude	Longitude	GeoName ID
Uttar Pradesh	26.8467	80.9462	

Location Description:

Activity Description:

Location Name	Latitude	Longitude	GeoName ID
Maharashtra	19.0760	72.8777	

Location Description:

Activity Description:

Location Name	Latitude	Longitude	GeoName ID
Gujarat	23.2156	72.6369	

Location Description:

Activity Description:

Location Name	Latitude	Longitude	GeoName ID
Tamil Nadu	13.0827	80.2707	

Location Description:








Activity Description:

Location Name	Latitude	Longitude	GeoName ID
Madhya Pradesh	23.2599	77.4126	

Location Description:

Activity Description:

Please provide any further geo-referenced information and map where project interventions are taking place as appropriate.

 <p><u>Punjab</u></p>	 <p><u>Haryana</u></p>	 <p><u>Gujarat</u></p>	 <p><u>Uttar Pradesh</u></p>
 <p><u>Maharashtra</u></p>	 <p><u>Tamil Nadu</u></p>	 <p><u>Madhya Pradesh</u></p>	<p>Under the RSF, partial credit guarantees will be offered to Participating Financial Institutions who are providing commercial loans to biogas developers for biogas investments in selected states. The selected states are Haryana, Punjab, Uttar Pradesh, Maharashtra, Gujarat, Tamil Nadu, and Madhya Pradesh. The exact districts / coordinates within the states are not identified, as it will depend on site specific feasibilities of biogas sub-projects. The capital of these states are earmarked however the actual project locations could be anywhere in the abovementioned states.</p>

ANNEX F: ENVIRONMENTAL AND SOCIAL SAFEGUARDS SCREEN AND RATING

Attach agency safeguard datasheet/assessment report(s), including ratings of risk types and overall project/program risk classification as well as any management plans or measures to address identified risks and impacts (as applicable).

Title

ESRS P179178 PSDRBI_19122023

ANNEX G: BUDGET TABLE

Please upload the budget table here.

Indicative Project Budget Template

Expenditure Category	Detailed Description	Component (USDeq.)				Total (USDeq.)	Responsible Entity (Executing Entity receiving funds from the GEF Agency)[1]
		Component 1	Sub-Total	M	P		
				& E	M C		
		Outcome 1.1					

Revolving funds/ Seed funds / Equity	Support for Risk Sharing Facility: the GEF funds will ensure affordability and sustainability of the RSF in order to mobilize private capital for the development of biogas projects.	\$13,761, 468	\$13,761 , 468		\$13,761, 468	e.g. Small Industries Development Bank of India
Grand Total		\$13,761, 468	\$13,761, 468		\$13,761, 468	

[1] In exceptional cases where GEF Agency receives funds for execution, Terms of Reference for specific activities are reviewed by GEF Secretariat

Please explain any aspects of the budget as needed here

ANNEX H: NGI RELEVANT ANNEXES

Please use the most up to date templates per the most recent call for proposals.

ANNEX H.1: Template for Indicative Financial Termsheet

Instructions. This termsheet to be submitted with the PIF/PFD should include sufficient details to allow a financial expert to understand and judge the financial viability of the proposed investments. Indicative terms and conditions should be used when specific details are not yet available. An equivalent termsheet used for internal Agency purposes is acceptable but must include sections on Currency Risk, Co-financing Ratio and Financial Additionality.

Project/Program Number title	GUARANTEE MECHANISM FOR RENEWABLE BIOGAS IN INDIA
Project/Program Number	WB Project ID P179178 / GEF Project ID 11068
Project/Program Objective	The Project Development Objective is to increase the installed capacity of compressed biogas generation in India through the mobilization of sustainable and affordable commercial financing and strengthening the capacity of relevant institutions
Country	India
Agency presenting the Project	The World Bank
Project Financing	<p>The project consists of US\$150 million IBRD Guarantee, US\$5 million ESMAP Grant, and US\$13.76 million donor funds (to be secured from GEF) to mobilize private capital to scale up the generation of biogas.</p> <p>Through this proposal, the World Bank is seeking the GEF NGI to serve as risk mitigation support to the Risk Sharing Facility.</p> <p>The project will mobilize US\$610 million from local commercial banks (Commercial banks and Non-Banking Financial Companies (NBFCs) - jointly called Participating Financial Institutions or PFIs. The RSF will offer partial credit guarantees to PFIs, providing</p>

	commercial loans to Biogas developers (or project sponsors). The credit guarantees will be structured to provide guarantee coverage of up to 65 percent on loans that are classified as non-performing assets (NPAs) as per Reserve Bank of India (RBI) regulations. These regulations imply consistent overdue payments of more than 90 days. Payments for losses on account of such commercial loan defaults will be made from pools of funds comprised of a) initially net income of the RSF b) subsequently, the GEF NGI funds c) finally, the IBRD guarantee. PFIs would be required to enter into sub-guarantees with the Facility Manager (SIDBI) based on eligibility criteria well designed to minimize the risk of default.
Currency of the Financing	The NGI instrument sought is a USD 13.76 million (excluding agency fee) risk mitigation support. If actionable, proceeds will be released by GEF in USD dollars and converted by the Program Manager into INR at ongoing rate to cover the losses registered.
Currency risk	<p>Payments made by GEF will be in US\$ only.</p> <p>In the event NPAs materialize that are above the cashflows of the RSF, the amount required to cover these NPAs will be converted from INR to US\$, at the exchange rate at the time to determine the amount to be drawn from the GEF NGI. At the end of the facility life, if there are sufficient funds in the RSF, the drawn amounts in US\$ will be due back to GEF in the form of reflows in US\$.</p> <p>The RSF pricing has been based on the base case model which assumes an exchange rate depreciation of 4.13% based on the 10-year compounded annual growth rate from 2012-2022. GEF would only be exposed to currency risk if the INR strengthens vs USD so that each call on an INR basis translates to a larger GEF USD portion.</p>
Co-financing ratio	<p>The project will benefit from USD 150 million of IBRD guarantee and with a USD 13.76 million GEF NGI, the co-financing ratio is 1:11.</p> <p>The project leads to the development of 70 plants worth USD 610 million^{26[1]}. Based on this, the GEF NGI Private Capital Mobilized ratio is 1:44.</p>
Financial additionality and minimum concessionality of GEF resources	<p>GEF NGI is an integral part of the Program serving to the affordability and the competitiveness of the Program.</p> <ul style="list-style-type: none"> The GEF NGI is critical to ensuring the long-term sustainability and affordability of the RSF. While the model accounts for a certain level of losses in the facility, the GEF NGI will provide an additional buffer that would ensure SIDBI can keep issuing guarantees on the back of the full corpus of the World Bank Guarantee of USD 150 million. This is important given the nascency of the biogas industry. IBRD guarantee annual fee is of 60bps. The GEF NGI is priced at 10 bps to bring down the blended cost of the sub-guarantees to the ultimate borrowers and projects. As these fees are passed by the Program Manager to the beneficiaries of the RSF (the PFIs), lowering this fee lowers the annual RSF Guarantee fee to be charged by the Program Manager to the PFIs, and ultimately the project developers, which renders the project more affordable and attractive The proposed pricing of the GEF NGI instrument has been selected to ensure the affordability of the program. The pricing is aligned with that of other similar instruments structured previously from other donors such as CTF and GCF.
Use of proceeds	Compressed biogas (CBG/biogas) provides an alternate renewable fuel that reduces natural gas import dependency. It drives resource efficiency, while simultaneously reducing air pollution as it replaces fossil fuels, mitigates GHG emissions including methane and creates new economic value chains. Foremost, it contributes to curbing air pollution by creating an alternate monetary stream for the waste that otherwise is burnt in open fields or sent to

	<p>landfills. Biogas offers a sustainable, renewable energy alternative; displacing fossil fuel particularly natural gas consumption in key sectors such as transportation and industry.</p> <p>However, financial institutions have a high risk-perception of the sector, which is reflected in a combination of higher interest rates and collateral requirements. Therefore, commercial loans remain unaffordable for many borrowers that would otherwise contribute to scaling up of the sector.</p> <p>The RSF supports the acceleration of biogas capacity installation through the mobilization of private capital. Through the mobilization of financing for up to 70 Biogas plants, the project also caters to four key interventions that generate significant global environmental benefits. (i) mobility and industrial sector decarbonization; (ii) restoration of degraded agriculture land; (iii) industrial and urban waste management to both reduce greenhouse gas emissions and air quality concerns; and (iv) agri-residue management which will address air quality concerns, particularly in the northern belt of India.</p>
<p>Financing instruments requested from GEF TF (other than grants)</p>	<p>The World Bank team is requesting GEF NGI funding to reinforce the Risk Sharing Facility Structure.</p> <p>The USD 13.76 million GEF NGI will serve as a risk mitigation fund (in USD terms) to cover any Project deficit registered by the Program over the course of the 15 years.</p> <p>Features of the GEF NGI sought by the WB:</p> <ul style="list-style-type: none"> a) Type of instrument and seniority: risk mitigation fund to be drawn in the event of NPA payments exceeding the amounts in the RSF operating accounts. b) Amount: USD 13.76 million (plus agency fees to GEF - total is USD 15 million) c) Non-Grant Instrument to act as risk mitigation d) Reimbursement agreement: In case of a draw on the GEF NGI in the life of the RSF, the Agency reimburses at the end of the Program the GEF NGI cumulative amounts called, up to the maximum cash balance amount available in the RSF operating account. e) Maturity: 15 years (duration of the Program) f) GEF NGI premium: 10 bps
<p>Financing requested from the GETF in the form of Grant for Technical Assistance</p>	<p>Not Applicable None.</p>

[1] This estimation is based on 65% guarantee, and a debt-to-equity ratio of 2.33x.

ANNEX H.2: Reflows table

Instructions. Any financial returns, gains, interest or other earnings and remaining principal will be transferred to the GEF Trust Fund as noted in the Guidelines on the Project and Program Cycle Policy. and the GEF Non-Grant Instrument Policy.

Item	Data
GEF Project Number	11068
Estimated Agency Board approval date	28-Mar-24
Investment type description (financial product: debt, equity, guarantee, other)	Guarantee
Expected date for start of investment	15-Apr-24
Amount of investment (USD GEF funds) (include technical assistance and non-grant portions)	Non-Grant: 13761468 Grant (TA):
Maturity (indicate the grace period if needed)	15 years from Guarantee Effectiveness
First repayment year	2025
Final repayment year	2040
Repayment method description	Fixed semi-annual for premium and bullet for undrawn principal amount reflow
Frequency of reflow payments (if amortized)	Semi-annual reflows of premium, single bullet reflow of GEF undrawn NGI in the final repayment year
A. Total principal amount to be paid- reflowed to the GEF Trust Fund (Please provide actual amount with assumption of exchange rate if applicable) in whole USD.	Base Case: USD 7,032,725.47 Best Case: USD 13,761,468 Worst Case: 0
B. Total interest/earnings/premiums amount to be paid-reflowed to the GEF Trust Fund (Please provide actual amount with assumption of exchange rate if applicable) in whole USD.	USD 225,000
Total reflows to the GEF Trust Fund (Sum A + B) in whole USD	Base Case: USD 7,257,725 Best Case: USD 13,986,468 Worst Case: 225,000

ANNEX H.3: GEF Agency Eligibility to Administer Concessional Finance

Instructions. The GEF Agency submitting the PIF or PFD will demonstrate its capacity and eligibility to administer NGI resources as noted in the NGI Policy, summarized below:

The GEF Agency submitting the PIF or PFD will demonstrate its capacity and eligibility to administer NGI resources as described below:

1. A GEF Agency is eligible to administer projects using non-grant instruments if it can demonstrate the following:

a) Ability to monitor compliance with non-grant instrument repayment terms;

The World Bank Group Financing and Accounting Trust Funds and Loan Operations department supports an appropriate fiduciary control framework for Bank lending and donor funds. It performs several key financial operation activities related to: loan origination, compliance, disbursements, accounting, and analytics for IBRD/IDA and Trust Funds. The department consists of WFA Client Services (WFACS) and WFA Corporate Services and Accounting Support (WFAAS).

WFACS provides client services and related loan operation support to internal and external clients. WFACS provides services related to loan origination and disbursement, advisory and clearance support for project preparation and implementation, project-level fiduciary and loan portfolio management, and regional and country level loan operations activities.

WFAAS supports both WBG Trust Funds and Loans portfolios with a range of services that cover: (i) providing advice on the design and implementation of new trust funds and related policies and procedures, and (ii) conducting activities associated with establishment and closure of loans or trust funds, including account creation and maintenance, accounting and reporting, and help desk functions.

b) Capacity to track financial returns (semester billing and receiving) not only within its normal lending operations, but also for transactions across trust funds;

As noted above, the World Bank Group supports an appropriate fiduciary control framework for Bank lending and donor funds. The World Bank Group maintains separate records and ledger accounts in respect of the GEF Funds.

c) Experience and positive track record with the use of non-grant instruments.

The World Bank Group has been operating for more than 75 years and is one of the world's largest sources of funding and knowledge for developing countries. It consists of five institutions with a common commitment to reducing poverty, increasing shared prosperity, and promoting sustainable growth and development. The **International Bank for Reconstruction and Development (IBRD)** lends to governments of middle-income and creditworthy low-income countries. The **International Development Association (IDA)** provides financing on highly concessional terms to governments of the poorest countries. The **International Finance Corporation (IFC)** provides loans, equity, and advisory services to stimulate private sector investment in developing countries. The **Multilateral Investment Guarantee Agency (MIGA)** provides political risk insurance and credit enhancement for cross-border private sector investors and lenders.

In FY 2022, the World Bank Group committed \$104.37 billion in financing to partner countries. The World Bank (IBRD and IDA) has been extending loans and other non-grant financing to countries since 1946. IBRD's net commitments in FY 2022 totaled \$33.07 billion, all of which were non-grant. IBRD's net loans outstanding totaled \$227.1 billion at the end of FY 2022.

The Bank Policy, 'Financial Terms and Conditions of Bank Financing'[1]²⁷ sets out the key financial terms and conditions of (i) IBRD loans and IBRD Guarantees, (ii) IDA Financing, (iii) IBRD Enclave IPF, and (iv) other financial products, including hedging products. This Policy is to be read concurrently with the applicable

General Conditions for IBRD[2]²⁸ or IDA[3]²⁹ Financing, which set forth certain terms and conditions that are generally applicable to IBRD loans and IDA credits and grants. Provisions covered include withdrawals, financing terms, program and project execution, effectiveness, and cancellations.

2. For concessional finance (i.e., projects under the Blended Finance Global Program), a GEF Agency must further demonstrate:

a) Ability to accept receive and account for financial returns and transfer from the GEF Agency to the GEF Trust Fund;

See above with respect to the World Bank Group's fiduciary control framework for Bank lending and donor funds.

Section 7.1 of the financial procedures memorandum agreed between the IBRD and the GEF, dated August 15, 2016, describes the commitment of the Bank to return reflows to the GEF trust fund:

If any GEF Trust Fund funds transferred to the Bank/IA for GEF Projects are used to provide financing, which generates any reflow of funds, and such reflow of funds are required to be returned to the GEF Trust Fund pursuant to the applicable policies and procedures of the GEF, the Bank/IA will credit and hold the funds in

Bank/IA/GEF Trust Fund (following their receipt by the Bank/IA) until the Trustee requests the Bank/IA to return them to such account as the Trustee may designate. The Bank/IA will maintain a record of any such reflow of funds and report them to the Trustee pursuant to Section 12.2.(e) below.

b) Capacity to perform investments in the type of non-grant instrument to be used with GEF funding;

The World Bank (IBRD And IDA) offers loans and guarantees and hedging products the terms and conditions of which are set forth in the Bank Policy, 'Financial Terms and Conditions of Bank Financing'.

c) An analysis of the investment/due diligence for GEF investments ahead of CEO endorsement

Prior to or concurrent with CEO Endorsement, the World Bank carries out project appraisal, during which the Borrower and the Bank review the work done during the identification and preparation phases and confirm the expected project outcomes, intended beneficiaries, application of Environmental and Social Framework (ESF) requirements and evaluation tools for monitoring progress. Agreement is reached on the viability of all aspects of the project at this time. The Bank team confirms that all aspects of the project are consistent with all World Bank operations requirements, assesses the project's readiness for implementation, and that the Borrower has institutional arrangements in place to implement the project efficiently. All parties agree on a project timetable and on public disclosure of key documents and identify any unfinished business required for final Bank approval. The Project Information Document and Environmental and Social Review Summary (for IPF) are updated and disclosed during this phase.

d) Additional requirements on the suitability of the Agency such as co-financing, co-investment requirements, additional safeguards, strengthened due diligence, and strengthened reflow reporting by executing entities. These may be included in the call for proposals, or be specific to the design of individual projects.

N/A

e) Commitment to transfer reflows to the GEF Trust Fund as agreed under the FPA;

As per section 12.2 para (e) of the financial procedures memorandum, the World Bank currently reports to the Trustee within thirty (30) days after the end of each quarter of the GEF Fiscal Year (or such other frequency agreed with the Trustee), the dates and amounts of reflows of funds received by the Bank/IA from GEF Projects, for the period reported, broken down by each GEF Project.

3. In case of concessional finance for public sector recipients, additionally, the Agency will be required to demonstrate

a) Track-record of lending or financing arrangements with public sector recipients;

Since its establishment over 75 years ago, the World Bank has been lending to member countries to support their development aspirations. In FY 22 alone the World Bank (IBRD and IDA) committed \$70.8 billion to operations led by public sector recipients. IDA commitments include both loans, grants and guarantees, while IBRD commitments are in the form of loans and guarantees.

b) Established relationship with the beneficiary countries' Ministry of Finance or equivalent.

The Ministry of Finance is the World Bank's main interlocutor in member countries. The World Bank carries out in-depth country engagement to with eligible recipient member countries in which the Ministry of Finance plays the lead role.

[1] <https://ppfdocuments.azureedge.net/84079d41-a348-41be-a064-8ffdf21d4a1e.pdf>

[2] <https://www.worldbank.org/en/topic/lawjusticeanddevelopment/publication/general-conditions>

[3] <https://ppfdocuments.azureedge.net/e4b82da4-63a2-4d11-a27c-fcc27b1012f1.pdf>

ANNEX H.4: Management Capacity of Executing Agency and Governance Structure

Instructions. For projects requesting equity instrument, structured finance, or SPVs please provide following information

Additionally, as assessment was also done of the Financial Intermediary who would be managing the risk sharing facility and underlying sub-projects:

Small Industries Development Bank of India (SIDBI) will act as Program Manager for the guarantee mechanism for renewable biogas project. SIDBI is perfectly qualified to run the project and administer the GEF NGI instrument.

1. SIDBI is a statutory body established by the Small Industries Development Bank of India Act, 1989. SIDBI was established as the principal financial institution for the promotion, financing and development of industry in the small-scale sector and to co-ordinate the functions of the institutions engaged in the promotion, financing or developing industry in the small-scale sector. Shares of SIDBI are held by GoI and 22 other (financial and insurance) institutions owned or controlled by GoI. GoI is the largest shareholder with 20.85% of shareholding followed by State Bank of India and Life Insurance Corporation of India holding 15.65% and 13.33%, respectively. The other institutions each hold less than 10% of shareholding.

2. **Business Practices of SIDBI:** SIDBI fulfils its statutory mandate through the following activities: (i) indirect lending undertaken through commercial banks, NBFCs, and other financial institutions; (ii) direct lending to fill existing credit gaps in the MSME sector, undertaken through demonstrative and innovative lending products; (iii) fund of funds to boost entrepreneurship culture by supporting emerging startups; and (iv) facilitation of MSME-oriented schemes of GoI. SIDBI has over 1,000 employees and close to 50 offices across India.

3. **Financial Management and Performance:** SIDBI is adequately exposed to the World Bank's financial management processes and procedures having successfully implemented a prior operation financed by the World Bank. Specifically, SIDBI is currently the implementing entity of the India Partial Risk Sharing Facility for Energy Efficiency Project (PRSF) for which SIDBI benefited from USD 16 million GEF Grant (USD 12 million for establishing and operating the risk sharing facility and USD 4 million for goods, works, and consultant services, trainings, and operating costs). **To date, SIDBI has issued guarantees to 45 energy efficiency projects under PRSF and experienced zero calls on its guarantees.** As such, the financial management assessment for the project is predicated on SIDBI's existing systems which provide reasonable assurance on the use of proceeds for intended purposes.

4. **SIDBI has demonstrated good financial performance** in the last five (5) years (FY 2017-2021) as indicated by the levels of profitability (over 20% in average), leverage, and liquidity ratios. SIDBI's revenues

main source is the interest on loans ranging between 80% to 85% (across the years) of the total revenue, followed by interest on investments accounting for 5% to 10% across years, and the rest is complemented by different sources including upfront and processing fees, profit on sale of investments, recoveries out of bad debts, among others. SIDBI's expenditure is mainly driven by its interest and financial charges representing 87% of total expenditure (on average across the years).

5. SIDBI is in a good path to recovery from the COVID pandemic. Revenues for FY 2021 decreased by only 7.6% from their level in FY 2020 while net profit after tax increased by 5.5% to reach INR2,495 crores (equivalent to USD 333 million) realizing SIDBI's highest net profit.

6. SIDBI's balance sheet shows a solid and continuous growth in its asset base following a Compound Annual Growth Rate (CAGR) of 24.6% over the five (5) years of analysis to reach INR192,332 Crores in 2021 (USD 25,644 million). This growth has been mainly driven by the loan and advances provided by SIDBI and a significant increase in the customer base (+ 19.9% in FY 2021 for instance). On average, 90% of SIDBI's loans are directed to refinancing financial institutions and the remaining 10% on the proceeds are provided as direct loans. SIDBI's refinancing portfolio is composed by a majority of commercial banks/financial institutions (90%), followed by NBFCs (8%), and micro finance institutions (2%). SIDBI's long term liabilities have been mainly driven by the deposits under the MSME refinance fund accounting for 1.24 lakh crores in FY2021 (equivalent to USD16,588 million). SIDBI's borrowings have remained at substantially the same level with a CAGR of (-2.6%) during the five-year period reaching INR39,090 Crores (equivalent to USD 5,212 million) in 2021. Most of these borrowings (85%) are made in India and contracted with the GoI (6.3%), Bonds and Debentures (52.4%), and the rest is contracted with other sources including term loans from banks, certificate of deposits, and commercial papers. The borrowings outside India represents 15% of the total borrowings and are contracted from development financing institutions (DFIs) including the World Bank, KFW, JICA, and IFAD. The significant increase in the asset base of SIDBI combined with restricted level of borrowings has resulted in the reduction of its debt-to-equity ratio from 54.5% in 2017 to 20.4% in 2021.

7. In terms of liquidity, SIDBI has seen its cash and cash equivalent increasing significantly as a result of the high level of income in the last years. Cash and bank balances are predominantly (97%+) kept inshore in India. SIDBI is indeed fully capable of meeting its short-term obligations and this is transparent through the high levels of current ratio that increased from 1.29x in 2017 to 1.88x in 2019 to 4.38x in 2021. This is an indication of SIDBI's ability to manage its mandate and portfolio risk in a prudent manner.

8. **Institutional Capacity:** SIDBI – as the Program Manager – will be responsible for to manage the RSF and provide sub-guarantees to eligible PFIs and projects based on the financing provided by IBRD and GEF NGI. Specifically, SIDBI will be responsible to recruit PFIs and project developers in line with eligibility criteria detailed in the Operations Manual, develop the project pipeline, negotiate the Guarantee Agreement with the World Bank, negotiate Master Guarantee Agreements with individual PFIs, evaluate and sign projects, and monitor the portfolio of sub-guarantees and the development of biogas sector. In addition, SIDBI will also be the primary implementing entity for technical assistance activities funded by donor grants. SIDBI is well-positioned to manage the Program given its experience from the above-mentioned and implementing similar operations with the World Bank. SIDBI has experience with monitoring and managing the environmental and social risks and impacts of its portfolio, however, limited experience of PFI and Environmental and Social risk management particularly with respect to ESF. SIDBI has successfully managed the India Partial Risk Sharing Facility for Energy Efficiency Project (P128921) supported by the World Bank. To ensure an efficient and well managed administering, risk-monitoring, and payout/collection of guarantees, it is intended that SIDBI, hires an agency to develop an Operations Manual (OM) for the implementation of the Program. The OM will be a reference document for SIDBI in implementing the project. This Project will be executed by a dedicated project implementation unit (PIU) with experience in similar projects and supported by external specialists. While

SIDBI will not be providing its own co-financing to the RSF, at the end of the 15 years, it is possible for SIDBI to top up the RSF and continue to mobilize private capital to further grow the sector.

9. **SIDBI’s experience running similar Risk Sharing Facilities, implementing World Bank environmental and social standards, its strong financial position justifying good track record in managing projects’ financials, and its institutional capacity give comfort on SIDBI’s strong capacity to implement the NGI and run the Project.**

ANNEX I: RESPONSES TO PROJECT REVIEWS

From GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF.

WB	ACTIVITIES	OUTPUTS	ST OUTCOMES	MT OUTCOMES	LT OUTCOMES
	<p>Improve financing: • Establish RSF for Biogas projects • Provide manuals, systems and trainings</p> <p>Conduct field trials / bio-efficacy for Fermented Organic Manure</p> <p>Enable mechanized infrastructure & business models for sustained feedstock supply</p> <p>Regulatory support to biogas access to gas grid; biogas grid planning</p> <p>Develop a national framework for carbon credits</p>	<p>• Private capital mobilized for biogas projects • Capacity building for PFIs</p> <p>Market development of FOM</p> <p>Develop ecosystem for feedstock aggregation & storage</p> <p>Biogas blended into networks; enable consistent offtake</p> <p>National framework for biogas registration & aggregation of biogas carbon credits</p>	<p>Increased access to affordable finance for biogas project developers</p> <p>Established an enabling environment for biogas projects</p>	<p>Increased installed capacity of biogas plants</p> <p>Direct employment generated across the biogas value chain</p>	<p>Green House Gas reduction (CO₂, Methane) and improved air quality</p> <p>Increased support to other bioenergy forms</p> <p>Increased use of biogas in the energy mix</p> <p>Reduced energy imports</p>
Critical Assumptions	<ul style="list-style-type: none"> • <i>Project pipeline will be robust, that is, the biogas plants that are resilient (“early movers”) to other market barriers but need assistance on collateralization impediments (RSF).</i> • <i>PFIs will develop the necessary institutional capacity and would be willing to finance biogas projects based on the comfort of the RSF.</i> • <i>Technical Assistance is sufficient to inform and complement possible GoI measures to further address upstream and downstream market barriers, creating an enabling environment taking the biogas sector to scale.</i> 				
3	<p>Undertaking a policy gap analysis to understand where conflicting policies can hinder the achievement of expected outcomes and addressing them appropriately.</p>				
WB	<p><i>The team has carried out a detailed policy and market assessment to understand several key issues and the way forward to enable the achievement of expected outcomes from the biogas industry. The below note details the assessment and how Technical Assistance (TA) work under this project can enable that support.</i></p> <p>1. <i>The biogas industry is currently driven by entrepreneurs and joint ventures, but many plants are self-financed, with limited access to debt financing due to collateralization issues. A</i></p>				

	<p>parliamentary review committee in December 2022 also identified this problem and recommended the establishment of a credit guarantee fund, similar to the one for micro and small enterprises by SIDBI, to reduce risks and instill confidence in financial institutions for lending to the biogas sector.</p> <p>2. The World Bank's analytical studies and policy assessments have also revealed limitations in affordable commercial lending, including other market barriers. These barriers include difficulties in accessing carbon finance, establishing aggregation value chains, utilizing digestate, and enabling last-mile pipeline connectivity for biogas plants to gas networks.</p> <p>3. To overcome these obstacles and scale up the biogas sector, targeted Technical Assistance (TA) is necessary to strengthen policy reforms and attract both public and private sector investments.</p> <p>In summary, addressing the current market barriers of collateralization is being addressed by establishing a Risk Sharing Facility, including tackling various market barriers through policy reforms and technical assistance are essential steps to unlock the investment potential of the biogas industry and promote its growth. These gaps are well assessed, and the Project team is well equipped in terms of understanding these challenges and path forward for achievement of expected outcomes.</p>
4	Instituting mechanisms to monitor feedstock and biogas digestate quality and pipeline leakages.
WB	<p>To promote the use of fermented organic manure, the Department of Fertilizers (Government of India) has approved the Market Development Assistance Scheme for the promotion of biogas digestate (fermented organic manure (FOM) in both soil and liquid form) produced from biogas plants. This assistance is only available to entities that adhere to the specifications of the digestate as specified under the Fertilizer Control Order. To claim this assistance, the quality of FOM needs to be certified by a notified laboratory, and non-standard digestate is not eligible for any kind of assistance. Since the operation of biogas plants depends on the offtake of FOM with the support of market development assistance, the institutional mechanism is in place to ensure the quality of the digestate.</p> <p>Currently, most biogas is transported via cascades, but there are plans to have pipelines connected to the biogas plants with potential policy support. It is understood that these pipelines, developed under such a policy, will adhere to the technical specification guidelines already established by the regulatory board in India.</p>
5	Providing details for avoided residual plastic waste.
WB	<p>Under the project the focus is on biogas generation using organic component of municipal solid waste. To ensure success of biogas plants based on organic municipal solid waste, source segregation of waste practices needs to be adopted. The organic component of which supports the biogas projects, while segregated plastic waste supports the recycling industry. Therefore, the practices adopted will indirectly support circularity of plastics, which is well aligned with GEF-8's integrated program for systems transformation to develop circular solutions to plastic pollution. Within this program the focus is on organic waste, and hence there will not be any monitoring mechanism for avoided residual plastic waste.</p>
6	Including provisions to measure, track, and report the co-benefits (air quality improvement, better waste management, and job creation) to be achieved through the project.
WB	<p>To measure, track and report the co-benefits arising from the project the following provisions will be included under the Project.</p> <p>Monitoring: A detailed monitoring plan will be developed that outlines how the project will track progress toward achieving co-benefits. This plan will also include methodologies, indicators, and</p>

data sources for each co-benefit. It should also specify the frequency of data collection and responsible parties.

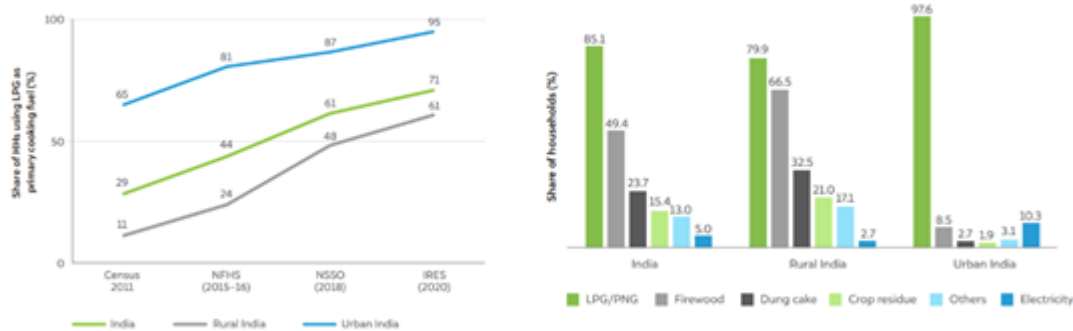
Reporting Framework: A reporting framework will be created that aligns with GEF's reporting requirements. Specify how data on co-benefits will be reported and shared with GEF, project partners, and relevant stakeholders. Use standardized reporting formats and templates provided by GEF.

Resource Allocation and Capacity Building: Allocate the necessary resources in the project budget for monitoring and reporting activities. In addition, to provide capacity-building activities for project staff and local stakeholders to ensure they have the skills and knowledge to effectively carry out monitoring and reporting activities.

COUNCIL COMMENTS

SW1 The program investments strictly prioritize generation of bioenergy produced by anaerobic decomposition of organic waste including agricultural waste, municipal waste, and industrial waste streams such as sugarcane press mud. Large amounts of waste are required to generate the targeted quantity of biogas. The Program does not describe if it can have negative consequences on poor population that rely on similar biomass for cooking and heating purposes for private consumption and their small businesses. **Has an analysis been performed to assess this risk? What risk mitigation measures could be taken in case there is a risk?**

WB In the recent past, the share of households using LPG as a primary cooking fuel has increased significantly in India. While it is also understood that despite improvements in LPG use, half of Indian households continue to use firewood, and nearly a fourth report using dung cakes and other solid fuels for cooking. One of the recent studies on the State of Clean Cooking Energy Access in India^[1], it is understood that within rural India there is a large dependency on firewood as a solid fuel, followed by dung cake (refer figure below)



The World Bank program supports the development of industrial scale compressed biogas facilities which surely requires feedstock at scale to ensure sustainable production of compressed biogas. As per the feedstock assessment carried out for the biogas sector, the key feedstocks include industrial waste (press mud, spent wash, pulp & paper waste), animal waste (cattle & poultry litter), agriculture residue (primarily paddy straw, maize etc.) and municipal solid waste (in the urban municipalities). The feedstock potential excludes the existing / current usage of feedstocks such as agro-residue, with most of it being burnt in open fields, rather being utilized for cooking or heating purposes. This project will aim to channelize the excess crop residue for biogas generation and reduce the air pollution issue specifically in the north region of India.

In addition, the animal manure which would be required for the biogas project is large in number and might require a population of 10,000+ cattle aggregated at one place (cow sheds) to make a

	<p><i>business case for setting up a biogas facility. While for cooking, dung cake, is mostly sourced through domesticated cattle which are not large in number on per household basis. The large scale biogas potential from animal manure reflects that only 10% of the total potential could be realized for such large projects in India and remaining 90% will still remain available for use. Considering the above, we do not foresee a risk that the program will have a negative consequence on poor population that rely on similar biomass for cooking.</i></p> <p><i><u>Impact on private consumption and small businesses for heating:</u> In multiple states of India, there are policies defined towards implementation of command area concept. The command area concept restricts registration of any other bio-energy project within a defined area to ensure that the biomass requirement remain consistent for supply to a designated plant. This measure aims to mitigate conflicts between projects vying for biomass supply and safeguard the financial viability of the said plant (both existing and potential projects). In this way by creating specific zones for existing and new projects, with limited competition, reduces the risks on private consumption and business utilizing the organic waste.</i></p>
SW2	<p>How does the project address or make sure the waste management hierarchy (prevent, reduce, reuse, recycle, recover, dispose) is being respected?</p>
WB	<p><i>The current project focuses on development of compressed biogas facilities using different feedstocks i.e., industrial waste (press mud, spent wash, pulp & paper waste), animal waste (cattle & poultry litter), agriculture residue (primarily paddy straw, maize etc.) and municipal solid waste (in the urban municipalities). The development of biogas facilities in the current Project will remain feedstock agnostic. While there are several initiatives being undertaken to support the municipalities for managing waste, the compressed biogas projects are developed to effectively manage only the organic component of the municipal solid waste. Today there are various models i.e., targeting bulk organic waste generators such as hotels, restaurants etc. from which a biogas facility can be developed. In specific cases, where the biogas facility is being developed by working with the municipalities, the project will ensure that the waste management hierarchy (prevent, reduce, reuse, recycle, recover, dispose) is considered in those projects.</i></p>
SW3	<p>· Indigenous peoples and local communities have not been part of the initial stakeholder consultations (p. 17) at program design stage. We would like to get more information on how they will be included in a structured and adequate manner during program implementation.</p>
WB	<p><i>Under the Environmental and Social Commitment Plan (ESCP) defined for the Project, include an exclusion list to have the PFI screen all proposed sub-project. The exclusion list includes sub-projects having:</i></p> <ul style="list-style-type: none"> - <i>involuntary taking of land, any physical displacement or permanent disruption of sources of income.</i> - <i>adverse impact on Indigenous People or their territories and cultural heritage.</i> - <i>located in protected areas, critical habitats, culturally or socially sensitive areas or leading to conversion of natural habitat.</i> - <i>risks to violation of labour rights, health and safety of employees, and child or forced labour.</i> - <i>Located in disputed areas.</i>
SW4	<p>· About 5,100 people will benefit from the GEF financed investments, out of which there are only 510 female beneficiaries, only 10%. Can or how can the number of female beneficiaries be increased?</p>
WB	<p><i>The biogas industry falls under the MSME sector and while women's participation throughout the value chain is negligible in India, some women are involved in the early stages of feedstock supply.</i></p>

	<p><i>A survey of representative industrial scale biogas plants found that less than 3 percent women employees (7 out of 222), with many of the plants having only men staff. This is lower than the energy sector average in India, with only 8 percent women's participation.</i></p> <p><i>Considering that the sector has a very limited gender participation i.e., less than 3 percent, Project's focus is to increase the gender participation to the 10 percent within biogas plant and associated value chain and will require significant efforts by the project developers and the participating financial institutions (PFIs).</i></p> <p><i>Furthermore, there will also be efforts to train women officers at SIDBI who will evaluate the biogas projects sent for appraisal by the PFIs. A helpdesk will be created where agents will be trained to provide extra support to women applicants and provide clear information on application procedures to ensure that there are women led project developers also participate which can potentially further increase the gender participation.</i></p> <p><i>With the integration of the upstream and downstream value chain in the compressed biogas project, there has been an increased capital cost which is considered and therefore there is an overall reduction in the total biogas project capacities being developed under this program. With these inputs, the Project Core Indicators have been revised and the assumptions including the methodology and calculations is provided under Annex. With reduction in the overall capacity and number of plants, the number of people directly benefiting from GEF financed investments has been decreased from 5100 number of direct and indirect employment to 3600. The methodology and calculations for the said indicator is mentioned in the Annexure.</i></p>
SW4	<p>The programs states that the gender dimension has been addressed as per GEF policy and clearly articulated in the program, but little information can be found, except (p. 26) that number of women led biogas developers, number of women employed / trained in offices are KPIs for the gender results areas of the gender equity component of the program</p>
WB	<p><i>The energy sector in India remains one of the least gender diverse. Gender inequality could prove to be a hindrance in the economic growth, especially in areas like energy, where there is great scope for innovation and entrepreneurship. Though women participation in the entire value chain of biogas is negligible in India, a lot of women are involved in the initial stages of the supply chain, i.e., feedstock supply, for example, accumulating and loading trolleys with cow dung, informal aggregation of agricultural residues, and segregation of the waste, although the involvement is still highly location specific. But in the construction/installation phases, and subsequently the O&M, women are not involved much as these are assumed to be masculine job roles. Gender goals are not defined across the complete supply chain of the CBG industry.</i></p> <p><i>Based on interactions with several biogas plants and assessment of the gender ratio, the participation of women stands merely at 3 per cent (seven women out of 222 employees). Following are the key factors that impede the participation of women in the CBG sector:</i></p> <ol style="list-style-type: none"> <i>1. Cultural - Patriarchal notion of the masculine nature of the biogas industry and the long travel distance to the biogas plants, which are usually located in places far away from habitation.</i> <i>2. Educational - Lesser participation of women in India in Science, Technology, Engineering and Mathematics (STEM) as it is considered a prestigious area of study for men</i> <i>3. Awareness - Lack of awareness about the job opportunities for women in the CBG industry</i> <i>4. Viability - Biogas plants are reluctant to hire female employees because of the additional costs that will be incurred for developing infrastructure for them, such as separate washrooms</i>

	<p>5. Policy – <i>No specific policies to ensure employment of women in biogas plants</i></p> <p><i>Through capacity building, it needs to be ensured that women can contribute towards the CBG industry by working in roles, such as lab assistants, human resource personnel, receptionists, R&D personnel, data monitoring, and many more. Examples can be drawn from some biogas plants in India as well for this. One of the analyzed plants has planned on employing spouses on their premises as providing shared accommodation would prove to be cost effective. Women are encouraged to participate in waste segregation, plant operation, designing, R&D and housekeeping, and males in operation, engineering, and maintenance activities. The education of their children supported through the CSR fund collected by the plant, along with provision of special policies for the security of women have also been put in place to ensure their participation.</i></p> <p><i>The Indore Municipal Corporation (IMC) has emerged as a model by employing women for solid waste management. Out of a total staff of 11,000 workers involved in maintaining cleanliness of the city, and working as street sweepers, waste collectors, and factory workers, approximately 80 per cent are women. They typically opt for the night shift because of convenience, and in areas close to their homes. Such initiatives are necessary to ensure the participation of women in the CBG supply chain.</i></p> <p><i>A detailed gender gap assessment was conducted and provided as an Annexure to the responses.</i></p>
GE1	<p>· Germany appreciates the description of the outcomes. Yet, the second outcome of the proposal seems vague and would benefit from a more precise formulation.</p>
WB	<p><i>The updated project structure has 2 components: Component 1 which is the risk sharing facility and guarantee structure; and component 2: technical assistance. The TA will finance TA activities aimed at enabling sector development throughout the value chain. Of the US\$5 million, about US\$2 million will be recipient executed (RE), and the remaining US\$3 million will be bank executed (BE) . The RE funds, for SIDBI and PFIs, focus on supporting implementation of the RSF, including raising consumer awareness and aggregating RSF demand/ pipeline. This includes support to strengthen SIDBI procedures, frameworks, and policies such as its environmental and social (E&S) structures and support to gender-specific actions, which are required to manage the RSF in an efficient and impactful manner. This also includes support to develop impact management/monitoring systems and reporting processes. The BE funds support analytical work to address market barriers and support GoI towards policy implementation to benefit the biogas sector.</i></p>
GE2	<p>· While the project rationale is clear, the proposal lacks consideration for how the implantation of a biogas sector in India will look like and which target groups will be addressed. As mentioned, the sector is nascent, meaning that, it will need to be scaled-up. The proposal would benefit from how logistic or cultural barriers will be addressed (e.g., for the involvement of women).</p>
WB	<p><i>The proposed Project is designed around two components that will provide targeted intervention aimed at addressing the diverse market barriers.</i></p> <p><i>The two project components include (a) Component 1: Establishment and operations of a US\$165 million risk sharing facility (RSF) that will mobilize private capital scale up biogas generation. The RSF guarantee is intended to be applicable not only to a standalone biogas plant but even vertically integrated plants having feedstock aggregation ecosystem developed. This will ensure that the logistic challenges pertaining to feedstock supply is also supported under the guarantee structure. From the initial market sounding it is observed that the investor’s focus is towards development of biogas plants from industrial & organic municipal solid waste. Biogas plants based on agro-residue are</i></p>

	<p><i>also under consideration and will eventually help scale up the overall biogas production capacity considering the total potential of such residue availability.</i></p> <p>(b) Component 2: <i>The technical assistance is aimed at institutional capacity development, addressing market barriers along the value chain and supporting project implementation (including on environmental and social risk management). The technical assistance is outlined to address some of the pertinent cultural barriers such as supporting municipalities to develop waste segregation practices. In addition, working with state nodal agencies to develop program which can support in reduction of agro-residue crop burning are some of the key aspects into consideration.</i></p> <p><i>In addition to promote involvement of women, provisions have been introduced within the Project which will enable women-led (or biogas projects with at least 10% women employees with a minimum threshold of 05 women employee to qualify) developers receive concessional guarantee conditions (e.g., pricing) from the RSF.</i></p>
GE3	<p>To ensure environmental benefits of the intervention, Germany recommends:</p> <ul style="list-style-type: none"> o Monitoring of soil organic carbon levels through fermented organic manure usage needs to be coherent on the basis of good scientific standards, e.g. by performing sampling exercise in different agroecological zones and taking into account various other drivers of GHG emissions from soils o Complementing with TC to help farmers to transition to sustainable rice production practices including usage of FOM, taking into account climate risks · Monitoring agricultural practices to avoid perverse incentives that would maximize residue output instead of increasing productivity in sustainable ways
WB	<p><i>Under this Project, it is expected that close to 70 biogas plants will be developed across the country. These biogas plants will be producing FOM which is expected to be marketed by the fertilizer companies. To ensure that there is a positive ecosystem towards adoption of FOM, the Project team has already initiated an initial technical assistance work to understand the bio-efficacy of FOM on various crop types at lab scale.</i></p> <p><i>Considering that the sector is nascent, the initial assessment will help identify and shortlist the areas where field trials of FOM can be carried out which will help assess the impact on crop-yield as well as soil organic carbon by implementing good scientific standards at a large scale.</i></p> <p><i>In India, the excessive crop residues are burnt in open field during the harvesting season, due to a very short window between the two crop cycles. For instance, in case of Punjab (one of the state producing rice in India), produces close to 185 lakh tonnes of paddy straw every year, of which only 11 lakh tonne stubble is expected to be managed by ex-situ which is just 6% of the total straw produced. Therefore, to reach to a level when perverse incentives to maximize residue outputs is not envisaged in near future.</i></p>
GE4	<p>In addition, Germany recommends to state more clearly how the estimations for up to 100 bio-plants were made and, according to objective 1.2 of the GEF-8 CCM Focal Area Strategy, to which extent decentral solutions are taken into consideration</p>
WB	<p><i>The Government of India (GoI) has established a target of producing 15 million tons per annum of compressed biogas to meet several developmental goals of reducing natural gas imports, managing waste, and mitigating climate change and air pollution. The World Bank is considering an initial de-risking of the industry, which will enable private capital entry, through the introduction of risk sharing facility coupled with technical assistance.</i></p>

At different stages of the project, the task team has conducted market research, survey and interviews for operational readiness and review of the pipeline of projects; either ready for investments or are under active consideration by the project developers.

Most recently, in March 2023, a comprehensive market sounding exercise was conducted with experienced biogas project developers by the World Bank task team together with SIDBI. This exercise revealed that as of today 13 biogas developers have 35 projects ready for financing. Additional data from the market sources indicates an additional 15 projects ready for financing. The team then assumed that conservatively, the risk sharing facility could support on average 10-15 projects per year (including some ramp up) which is also confirmed from the market feedback on the potential project pipeline.

[1] <https://www.ceew.in/sites/default/files/ires-report-on-state-of-clean-cooking-energy-access-in-india.pdf>