



## Project Implementation Report

(1 July 2023 – 30 June 2024)

Project Title:	<b>Organic Waste Streams for Industrial Renewable Energy Applications in India</b>
GEF ID:	5087
UNIDO ID:	120095
GEF Replenishment Cycle:	<i>GEF-5</i>
Country(ies):	India
Region:	<i>SA - Southeast Asia</i>
GEF Focal Area:	<i>Climate Change Mitigation (CCM)</i>
Integrated Approach Pilot (IAP) Programs <sup>1</sup> :	Not applicable
Stand-alone / Child Project:	Stand alone
Implementing Department/Division:	<i>ENE / ESI</i>
Co-Implementing Agency:	Not applicable
Executing Agency(ies):	Ministry of New and Renewable Energy (MNRE)
Project Type:	<i>Full-Sized Project (FSP)</i>
Project Duration:	60 months (At Start)
Extension(s):	<i>3 (59 months)</i>
GEF Project Financing:	US\$ 3,333,000
Agency Fee:	US\$ 316,635
Co-financing Amount:	US\$ 18,215,000
Date of CEO Endorsement/Approval:	<i>2/25/2015</i>
UNIDO Approval Date:	<i>3/18/2015</i>
Actual Implementation Start:	<i>4/30/2015</i>
Cumulative disbursement as of 30 June 2022:	<i>\$ 2,882,222.58</i>
Mid-term Review (MTR) Date:	<i>11/11/2019</i>
Original Project Completion Date:	<i>4/30/2020</i>
Project Completion Date as reported in FY23:	<i>3/31/2024</i>
Current SAP Completion Date:	<i>3/31/2025</i>
Expected Project Completion Date:	<i>3/31/2025</i>

<sup>1</sup> Only for GEF-6 projects, if applicable

<b>Expected Terminal Evaluation (TE) Date:</b>	2/1/2025
<b>Expected Financial Closure Date:</b>	1/31/2026
<b>UNIDO Project Manager<sup>2</sup>:</b>	Mr Sanjaya SHRESTHA

## I. Brief description of project and status overview

<b>Project Objective</b>	
<p>The overall objective of the project is to increase the use of industrial, commercial and/or municipal organic waste streams for industrial scale bio-methanation for renewable energy (RE) applications in Small and Medium Enterprises (SMEs) to achieve renewable energy, environment and climate targets. The project, therefore, promotes the application of innovative and adaptive technology and business models in the target SME sectors to reduce their dependency on fossil fuels, whilst also managing organic wastes in environmentally sound manners. The project contributes to the GEF (5) Climate Change Strategic Objective 3: Promote investment in renewable energy technologies. The project set out to transform the market by using organic wastes for SME industrial energy applications in India by facilitating investment in innovative organic waste to industrial energy projects, through technology and market demonstration, development of appropriate financial support mechanisms/instruments, development of technical specifications, capacity building and by strengthening the policy and regulatory environment. Industries in India, many of which are energy intensive and generate large quantity of organic waste from their processes, stand to benefit from implementation of bio-methanation technology and the useful application of biogas (industrial fuel or for bio-CNG applications).</p>	
<b>Project Core Indicators</b>	<b>Expected at Endorsement/Approval stage</b>
Cumulative direct reduction of GHG over the period 2015-2035 (20 years)	228,000 tCO <sub>2eq</sub>
Energy generated annually from biogas through projects installed over the period 2015- 2035	16.310 MWh
Installed power generation capacity	3.7 MW <sub>eq</sub>

<b>Baseline</b>
<p>The National Master Plan (NMP) for development of waste-to-energy in India was developed in 2002 by the Ministry of New and Renewable Energy (MNRE) under the then UNDP-GEF bio-methanation project. This identified 14 organic waste generating industries which had a high potential for renewable energy generation at the time estimated to total 1,997 MWe by 2017. The analysis showed that bio-methanation could be technically and commercially viable in sectors as diverse as food processing, pulp and paper, breweries, distilleries, tanneries, cattle, poultry and cassava sectors.</p> <p>The NMP provided the baseline project since it provided the groundwork for the development of organic waste to energy (OWtE) in India. In line with the NMP, MNRE had undertaken a number of programmes in the area of recovery of energy from urban and industrial wastes, including incentive schemes to trigger and accelerate the deployment of biogas projects. The baseline government support programme (energy from urban, industrial and agricultural wastes/residues during 12<sup>th</sup> Plan period, 2012-2017 included incentive schemes for industrial waste bio-energy generation (up to 20% capital grant with an upper cap or 40% in sewage treatment plants) which did contribute to expansion of biogas only projects, subject to a number of eligibility criteria, conditions and caps. The programme was implemented through state nodal agencies and was applicable to developers to set-up waste to energy projects on the basis of Build, Own and Operate (BOO), Build, Own, Operate and Transfer (BOOT), Build, Operate and Transfer (BOT) and Build, Operate, Lease and Transfer (BOLT)</p>

<sup>2</sup> Person responsible for report content

The major success of MNRE programmes had been in power generation predominantly by large-scale industries. As for smaller-scale projects, there had been three national programmes supporting biogas and waste to energy from MNRE. These programmes primarily targeted small scale biogas (family or community size up to 250kW) in rural areas. There had been limited uptake by SMEs which, due to their size, typically require further technical support for the introduction of innovative technologies.

As part of the PPG phase the 14 sectors of the NMP were further studied to select priority SME sectors with the most promising potential for the use of organic waste streams for bio-methanation. This resulted in four prioritised sectors where, despite large potential, the existing organic waste resource remained largely underutilized for energy conversion. These four sectors were poultry, sugar, fruit and vegetable and cattle.

The stakeholders' consultations during the PPG identified several key barriers including: limited awareness about the biogas waste to energy technologies and its potential benefits; limited demonstration projects providing practical evidence of feasibility in these four industrial sectors; seasonal availability of large volume organic waste streams; lack of innovations and application of (international) best techniques; inadequate and poor experience in design and construction of biogas projects among biogas technology and project developers; capital intensive nature (high establishment costs); high Operation and Maintenance (O&M) cost of biogas technology; limited availability of equity and loans; lack of funding support from financial institutions due to low return on investments and high perceived risk and limited knowledge about biogas business models.

Please refer to the explanatory note at the end of the document and select corresponding ratings for the current reporting period, i.e. FY24. Please also provide a short justification for the selected ratings for FY24.

In view of the GEF Secretariat's intent to start following the ability of projects to adopt the concept of adaptive management<sup>3</sup>, Agencies are expected to closely monitor changes that occur from year to year and demonstrate that they are not simply implementing plans but modifying them in response to developments and circumstances or understanding. In order to facilitate with this assessment, please introduce the ratings as reported in the previous reporting cycle, i.e. FY23, in the last column.

Overall Ratings <sup>4</sup>	FY24	FY23
Global Environmental Objectives (GEOs) / Development Objectives (DOs) Rating	<i>Satisfactory (S)</i>	<i>Satisfactory (S)</i>
The four innovative demonstration projects selected for the technical and financial support of the project have a cumulative bio-CNG generation capacity of 25.6 tons/day, which is equivalent to 5.3 MW electrical energy output. They will also generate approximately 225 tons of Fermented Organic Manure (FOM) daily, which will partially replace chemical fertilisers in agriculture.		
Implementation Progress (IP) Rating	<i>Moderately Satisfactory (MS)</i>	<i>Moderately Satisfactory (MS)</i>
The project team along with the Expert Appraisal Group (EAG) are closely monitoring the construction and implementation of four innovative demonstration projects and providing them necessary assistance by conducting site visits, coordinating meetings with concerned officials of MNRE and other government agencies. Two out of the four demonstration projects have completed commissioning and started bio-CNG production.		
The delay in the execution of the four pilot demonstration projects was partly due to disrupted availability, storage, and supply of seasonal feedstocks/raw materials as a consequence of torrential unprecedented rains in the previous year, and secondly due to low offtake of the bio-CNG by the retail outlets of the oil companies. Despite these challenges, which were beyond control of the project stakeholders, efforts were made to find solutions such as sourcing of feedstocks from different places even at premium price, industrial		

<sup>3</sup> Adaptive management in the context of an intentional approach to decision-making and adjustments in response to new available information, evidence gathered from monitoring, evaluation or research, and experience acquired from implementation, to ensure that the goals of the activity are being reached efficiently

<sup>4</sup> Please refer to the explanatory note at the end of the document and assure that the indicated ratings correspond to the narrative of the report

consumers to offtake bio-CNG for heating applications etc. In view of this, the IP rating is confirmed.		
Overall Risk Rating	Moderate Risk (M)	Moderate Risk (M)
The project demonstrates diverse innovative bio-methanation technologies for mixed feedstocks, which carry limited, anticipated and known techno-economic performance risks. The necessary measures are being taken to resolve them by coordinating with ministries and relevant agencies and providing technical expertise by the project.		

## II. Targeted results and progress to-date

Please describe the progress made in achieving the outputs against key performance indicator's targets in the project's **M&E Plan/Log-Frame at the time of CEO Endorsement/Approval**. Please expand the table as needed.

*Please fill in the below table or make a reference to any supporting documents that may be submitted as annexes to this report.*

Project Strategy	KPIs/Indicators	Baseline	Target level	Progress in FY24
<b>Component 1 – Strengthening the policy and institutional framework through a strengthened policy and regulatory framework</b>				
Outcome 1: Strengthening the policy and institutional framework through a strengthened policy and regulatory framework				
Output 1.1: An updated and tailored roadmap for increased use of waste-to-energy practices in the target SME sectors	NMP for organic waste to energy	NMP not updated since 2002	New NMP to 2027 published	The project is developing a web-based application/tool to monitor the performance of biogas plants in India. The outcomes and database of this application will enable the ministry in further development of waste-to-energy program effectively and to devise potential additional support in terms of Performance Linked Incentive (PLI) as part of potential policy intervention
	Specific Revised strategic action plan/road map for organic waste to energy for SMEs	No clear strategies for SMEs	Clear action plan for organic waste to energy for SMEs	
	Certificate of authenticity from the government for support programmes	No certificate issued prior to subsidy allocation	Certificate of authenticity for support programmes prepared	No more actions required.
<b>Component 2 – Demonstration of the most relevant financially feasible technologies in selected sectors</b>				
Outcome 2.1: Demonstrated technical and financial viability of projects in the range of 0.25 – 2 MW (or equivalent thermal energy)				
Output 2.1.1: Techno-financial and strategic assessment of most suitable business models	Number of assessments of business and technology models available	No assessments of appropriate models carried out	2-3 models assessed appropriate for the four priority sectors	No progress to report in FY24
Output 2.1.2: A 'Consolidation Matrix' on appropriate financial models and schemes suitable for SME financing for innovative technology financing in SMEs	Matrix on appropriate financial models	No matrix available to assist in selecting appropriate financial model	Matrix developed	No progress to report in FY24
	Due diligence guidelines for organic waste to energy projects	No due diligence guidelines developed	Due diligence guidelines for the different technologies developed	No progress to report in FY24
	Establishment of a Technical Advice Committee to advise on technical merits of projects	No Technical Advice Committee in existence	Technical Advice Committee established made up of 5 experts	The activity is completed, and no more actions are required.
Output 2.1.3: Detailed technology packages with specifications for identified technologies for target	Number of technology packages developed for the priority sectors	No technology packages or guidelines developed	4 Technology packages and guidelines (one per sector)	The activity has been delayed due to delay in the output 2.1.4.

sectors (food processing, poultry, cattle and sugar-press mud) and applications (thermal, power, bio-CNG) and applications (e.g. thermal, power, bio-CNG)		for SMEs in priority sectors		
	Guides on developing markets for by-products	No guides for market development of by-products	Guides developed for market development for bio-CNG and organic fertiliser	
	Standardized financial and technical parameters for reporting in DPRs	No standardized parameters for feasibilities and DPRs	Standardised financial and technical parameters for reporting in DPRs	
Output 2.1.4: 2-4 innovative organic waste to energy projects installed and operating in selected SME sectors	Number of organic waste to energy projects implemented with support from GEF	No innovative systems installed No systems designed as co-digestion	2-4 additional projects implemented with direct support from GEF. 2-4 innovative technologies included 1-2 co-digestion systems installed	The EAG and PMU assisted with two rounds of on-site monitoring during the reporting period. Two out of the four demonstration projects have completed the commissioning and trials of operations. The remaining two are expected to complete the same by December 2024. Nonetheless, the demonstration of 'successful completion and commercialisation' including bio-CNG production up to their designed capacity is likely to be unattainable due to the constrained demand of bio-CNG and slow increase in its offtake. The necessary actions are being taken with the help of MMNRE to ascertain complete offtake of bio-CNG from the four pilot plants.
	Number of innovative technologies			
	Number of co-digestion systems			
	Installed capacity of new organic waste to energy projects (MW)	0 installed	Installed capacity of more than 3.7 MW	
	Performance monitoring, evaluation reports and case studies on each GEF supported project	No dissemination material on organic waste to energy for SMEs	2-4 case studies	

### Component 3 – Scale up of technologies in organic waste to energy applications in industry

Outcome 3.1: Sustainable replication model for effective scaling up of different technologies across target industries

Output 3.1.1: Development of database and tools to identify and help SMEs to invest in innovative biogas projects	A master database of potential SMEs/ Industries for bio-methanation technology adoption Standardised long-term feedstock supply agreement	No national database of potential for SMEs and biogas Informal/non-standardised Feedstock supply agreements	Master database developed for 4 priority sectors Standardised long term feedstock supply agreement developed	The activity is completed. The first draft is ready for the review and comments.
Output 3.1.2: Specific financing mechanism established to reduce risk for investing in innovative biogas projects and sources of funds secured to ensure a healthy project pipeline	Financing facility established Quantity (USD) of funding identified	No financing facility available for organic waste for energy for SMEs No dedicated funding for organic waste to energy	A financing facility established 10 MUSD identified as partial risk guarantee	National Bioenergy Programme: notified by the Ministry of New and Renewable Energy (MNRE) on November 2, 2022, to support the development of waste to energy projects. The WTE Programme has a budget outlay of Rs 600 crore for the period FY 2021-22 to FY 2025-26 ( <a href="https://mnre.gov.in/waste-to-energy/">https://mnre.gov.in/waste-to-energy/</a> ) The Sustainable Alternative Towards Affordable Transportation (SATAT) scheme of the Ministry of Petroleum and Natural Gas (MoPNG), is supporting the waste-to-energy bio-CNG projects in terms of minimum purchase price of bio-CNG by oil companies. The Department of Fertilisers of the Ministry of Chemical & Fertilisers is offering Market Development Assistance (MDA) to promote organic fertilisers including fermented organic manure produced in Bio-CNG projects Several banks in India such as Bank of Baroda, Canara Bank, Punjab National Bank, State Bank of India, Union Bank have policies focused to support to waste to energy bio-CNG projects. In view of the above, specific financing mechanism in the form of partial risk guarantee fund is under discussion with IREDA and MNRE

Output 3.1.3: Framework for Service Support Networks in different sectors/clusters set up	No. of service support networks	No service support networks dedicated to organic waste streams	More than 10 service support networks established	No progress to report in FY24
Output 3.1.4: Quality standards, performance guidelines, and a standardization framework for innovative biogas projects in SMEs in place	Needs assessment and roadmap for quality infrastructure for bio-methanation plants in SMEs (both for technology and for the outputs from technology)	No assessment or roadmap for the quality infrastructure for bio-methanation	Needs assessment and roadmap for quality infrastructure for technology components  Needs assessment and roadmap for quality infrastructure for biogas products	No progress to report in FY24
<b>Component 4 – Capacity building of public and private sector stakeholders</b>				
Outcome 4.1: Enhanced capacity of key players in target industries, promotion of knowledge and information sharing and dissemination of best practices				
Output 4.1.1: Enhanced awareness and knowledge in key players in target 30 – 50 SMEs, 20 – 30 banks/FIs, technical institutions, manufacturers and other service providers in each of the selected states.	No. of training sessions targeted at financial institutes	None	Nine training sessions	No progress to report in FY24
	No. of trained bank staff	Zero	450	
	No. of training sessions targeted at SME sectors	0	9	
	20% of female participation in training sessions	0		
	No. of trained SMEs	0	450	
	Established facilitation service for target clusters	No facilitation service in existence	>9 facilitation events	
Output 4.1.2: Knowledge products developed that are targeted at anaerobic digestion in industrial sector, including those to facilitate technology transfer.	Knowledge platform establishment	None	Knowledge platform establishment	No progress to report in FY24
	Number of users of platform	None	200	
	Organic waste stream web portal established	None	1	
	Number of users of website per year	0	1000	
Output 4.1.3: Capacity building mechanism for O&M, technical and service roles is established at state level to develop and retain skilled workforce for innovative biogas applications	No. of training sessions targeted at O&M	None	Nine	No progress to report in FY24
	No. trained O&M personnel	0	200	

### III. Project Risk Management

1. Please indicate the overall project-level risks and the related risk management measures: (i) as identified in the CEO Endorsement document, and (ii) progress to-date. Please expand the table as needed.

*Describe in tabular form the risks observed and priority mitigation activities undertaken during the reporting period in line with the project document. Note that risks, risk level and mitigations measures should be consistent with the ones identified in the CEO Endorsement/Approval document. Please also consider the*

*project's ability to adopt the adaptive management approach in remediating any of the risks that had been sub-optimally rated (H, S) in the previous reporting cycle.*

	(i) Risks at CEO stage	(i) Risk level FY 23	(i) Risk level FY 24	(i) Mitigation measures	(ii) Progress to-date	New defined risk <sup>5</sup>
1	Lack of government commitment to support the project.	L	L	The project objectives and activities are in line with national policies and objectives. The project has achieved and is maintaining active involvement of representatives from concerned ministries to ensure their full support throughout the project and beyond	The ministry has signed the project agreement and annual work plans have been submitted and approved in successive project steering committees. The Project Executive Committee (PEC) & Project Steering-Cum-Advisory Committee (PSAC) meetings have been timely held. MNRE launched on 18 Nov 2022 its National Bioenergy Programme, which includes renewed government support for waste to energy sector.	<input type="checkbox"/>
2	Lack of interest from industries to take up WTE projects	M	L	Development of detailed activity plans in close cooperation with in-country project partners, stakeholders and developers. A thorough stakeholder consultation process conducted during the project preparation phase identified industries with interest to develop and invest in WTE	The awareness generation in the waste-to-energy sector continued with: (1) Seminar on National Bioenergy Programme on 18 November 2022. In which, MNRE launched its umbrella National Bioenergy Programme (NBP) with a budget of ₹ 600 crore for support for waste to energy projects until 31 March 2026; and (2) A workshop on 'Bioenergy for Sustainable Development: Case Studies and Best Practices' on 12 May 2023. This included case studies of various bio-CNG, biomass and biogas projects were presented by the developers. Best practices and lessons learned in bioenergy sector and Decoding Code of Practice of BIS standards by NIBE) were presented. Following the presentations, Moderated panel discussion on 'Financing of waste-to-energy biomethanation projects – Challenges and opportunities was also conducted. (3) NPC participated as panellist speaker in Special Plenary – Innovations in Waste to Energy session of the 4 <sup>th</sup> International Conference on Recent Advances in Bio-Energy Research (ICRABR) organised from 9-12 October 2023 at Kapurthala, Punjab organised by the Sardar Swaran Singh National Institute of Bio-Energy (SSS-NIBE) <sup>6</sup> to discuss significance and potential of innovations in waste-to-energy projects.	<input type="checkbox"/>
3	Lack of interest from technology providers	L	L	Technology advisors expressed their interest in the project during the PPG Throughout the project, there has been regular and continued contact with manufacturers which should lead to their interest and participation.	The relauching of the support scheme by MNRE under its National Bioenergy Programme during the seminar on 18 November 2022 has spurred interest among the technology providers to set up new bio-methanation waste-to-energy plants.	<input type="checkbox"/>
4	Unsuccessful demonstration at selected sites Lack of capacity to operate and	L	L	Suitable sites have been selected through careful analysis of target sectors and plants to ensure success of demonstration projects including: - Identification of proven and innovative technologies	The four selected demonstration projects were comprehensively assessed and vetted on relevant techno-economic and innovation parameters specified in the project document by the Expert Appraisal Group (EAG).	<input type="checkbox"/>

<sup>5</sup> New risk added in reporting period. Check only if applicable.

<sup>6</sup> SSS-NIBE is an autonomous Institute created by Ministry of New and Renewable Energy (MNRE), Govt. of India to support the development of bioenergy sector in the country



	(i) Risks at CEO stage	(i) Risk level FY 23	(i) Risk level FY 24	(i) Mitigation measures	(ii) Progress to-date	New defined risk <sup>5</sup>
	maintain biogas plants			- Quality audit of equipment - Implementation guidance by experts - Training to the operating personnel in the industry	The UNIDO PMU and the Expert Appraisal Group (EAG) are closely monitoring the progress of those four projects through periodic site visits and providing necessary inputs to their developers. The issues observed by the EAG and PMU during the site visits and informed by the project developers are being resolved with the help of MNRE by seeking necessary intervention from other concerned ministries and organisations.	
5	WTE technologies do not succeed	L	L	There is limited technical risk since technologies are widely used in several other countries. Detailed assessment of suitable sites for technologies has been carried out and training from technology importers will be provided.	WTE technologies are utilised in India have already proven successful elsewhere. Further technological improvements to be demonstrated through the project to improve efficiency and operability of bio-methanation, which will further improve feasibility of bio-methanation.	<input type="checkbox"/>
6	Lack of collaboration by key agencies	L	L	A central co-ordination committee was foreseen to be established to facilitate project implementation. Members will include representatives of MoA, MoF, NDRC and MoE.	Continuous stakeholder engagement was undertaken, through PSAC and its Expert Advisory Group.	
7	Failure to achieve project outcomes and objectives after successful delivery of outputs.	M	L	By making market players fully aware of the economic potential of biogas technologies and by equipping them with the capacity and tools to realize and capture the benefits of such potential, the project will generate a self-reinforcing market. In addition, the financial mechanisms that will be put in place will create a positive context that is expected to ensure the attainment of the project outcomes and their sustainability.	The understanding among the stakeholders seems to be good as they fully understand the multiple advantages of waste-to-energy initiatives, including waste management, renewable energy generation and nutrient/by-product recovery and use.	
8	Lack of technical capacity	M	M	Strengthening and expansion of technical capability through training facility foreseen to be established in component 3. Training activities will be closely monitored and supported under M&E plan. Linkage to experts and specialized institutions for training and support will be established and coordinated.	The project team is professionally well qualified. MNRE and PSAC have requested the project to de-prioritize capacity-building interventions under the project, in view of augmenting technical and financial support for innovative demonstration projects.	
9	Changes in the availability of the waste from industry	L	L	Market and demand analysis. Continuous policy dialogue with the Government on the improvement of the sector development during the project implementation.	Analysis of waste streams and experiences from existing projects undertaken. Project developed waste inventory at district level covering nine major organic waste streams. Anaerobic digestion of multiple feedstocks is being extensively promoted in the demonstration projects that are currently being constructed and installed TOR for Guides on developing markets for by-products and Standardised long-term feedstock supply agreement is under implementation.	
10	Industries' lack of resources to repay loans	L	L	Stringent selection of borrowers through assessment and due diligence of each borrower's historic and future financial management capacity.	The innovative bio-methanation demonstration projects were selected on the basis of provisional or final project loan sanction letter issued by the respective banks only after the comprehensive techno-financial due diligence and compliance of the statutory approvals by these respective banks. The projects are being encouraged to get into long terms agreements for the	



	(i) Risks at CEO stage	(i) Risk level FY 23	(i) Risk level FY 24	(i) Mitigation measures	(ii) Progress to-date	New defined risk <sup>5</sup>
					feedstock supply and sale of bio-CNG and the by-product as Fermented Organic Manure (FOM)	
11	Lack of co-finance	L	L	Demonstration projects only selected on evidence of co-finance of the project	The call for Expression of Interest launched in February 2021 to invite the demonstration of innovative organic waste to energy bio-methanation projects enabled the project developers to liaison with banks to secure the project loans to apply for the financial support scheme.	
12	Lack of interest among banks and FIs for large-scale uptake.	L	L	Banking sector was closely involved during the PPG phase and has shown their support of the project and technologies. Letters of commitment to invest have been provided by three banks.	The Letter of Recommendations (LoR) were issued to the potential projects selected under the financial support scheme to facilitate project loan approvals from the proponent's preferred bank.	
13	In case any possible social and environmental safeguards issues occurred.	M	M	Carry out Environmental Impact Assessments as part of preparation of the technology interventions, including sanitary management of organic waste, ways to address potential odour problems caused by the biochemical process to covert waste to energy, etc.; Annual environment and safeguards M&E reports will be provided, which will follow up with necessary actions	The demo projects are still to complete successful completion and commercialisation to experience such issues.	
14	The technology or renewable resource is affected by climate change	L	M	Changing patterns in temperature and rainfall may affect the availability of the renewable resource; due to the different sectors in different parts of the country, and the target of applying co-digestion, the risk is deemed low; Biogas technology is very little impacted by climate change	The selected demonstration projects are resilient to the potential climate changes in near futures and are including the necessary design and engineering measures to tackle the temperature variations during the peak winter (and potentially summer) seasons. However, changing patterns in temperature and rainfall affected their construction, commissioning timelines and impacted feedstock supply and operational interruptions during. The project developers are exploring alternative feedstocks and necessary alterations on site to cope up potential flood situations	
15	Onset of the COVID19 pandemic	M	M	Successive waves of the pandemic had adversely impacted project implementation at multiple levels during 2020-22, as (1) health and humanitarian crisis impacts firm's and government's capability to take on and complete project activities; (2) movement restrictions were preventing field work; (3) economic crisis did dent companies' working capital and balance sheets which deteriorated credit ratings	Mitigation measures rely largely on virtual operation of the project and its interactions with project stakeholders, which have had lower efficiency. Now that both the severity and spread of the pandemic has substantially diminished, there has been low or no impact on the project.	

2. If the project received a **sub-optimal risk rating (H, S)** in the previous reporting period, please state the **actions taken** since then to mitigate the relevant risks and improve the related risk rating. Please also elaborate on reasons that may have impeded any of the sub-optimal risk ratings from improving in the current reporting cycle; please indicate actions planned for the next reporting cycle to remediate this.

*If the project has received a sub-optimal risk rating in FY23, please elaborate here on any actions taken towards the mitigation of these risks.*

3. Please clarify if the project is facing delays and is expected to request an **extension**.

Two out of the four pilot demonstration projects completed commissioning and started bio-CNG production. Their ramp up of the bio-CNG production as per the plan is significantly delayed due to limited offtake of the bio-CNG by the Retail Outlets (RO) of the oil companies and shortage of seasonal feedstock. The commissioning of the remaining two projects primarily delayed due to poor working conditions on site during the erratic heavy rainfalls and intense heat waves observed during the porting period.

Subject to the improvement in the bio-CNG market conditions and availability of the seasonal feedstocks by Q4, 2024 required for the successful demonstration of innovations in the pilot projects, a short (up to 6 months) extension beyond the current completion date of 31 March 2025 to properly capture and disseminate the project's achievements and lessons learned.

4. Please provide the **main findings and recommendations of completed MTR**, and elaborate on any actions taken towards the recommendations included in the report.

#### **MTR was undertaken in Q4, 2019**

##### **Lessons learnt**

- Neither UNIDO nor MNRE were prepared for new rules in routing foreign funds through the mechanism known as the CAAA for all externally aided projects at the starting phase. An exemption was sought for this rule, given that the project was already under implementation prior to the rule being put in place. The process for granting of the exemption caused a delay of 2.5 years, upon which contract and cooperation modalities were in place and functioning, which paved the way for several GEF UNIDO projects in India.
- It will not be possible to achieve major deliverables (as per project results framework) within the given timeframe. By December 2023, only the two smaller of the four innovative demonstration projects will have started to operate. Therefore, it will not be possible for all activities that substantively rely on outcomes from the innovative demonstration projects to be completed within given time.
- For OWtE CO<sub>2</sub> eq calculation is especially challenging. The impact on CO<sub>2</sub> eq of by-products (e.g. reduction by replacing 'chemical fertilizers') may not be taken fully into account. The full cycle of selected waste stream to energy including all by-products has to be monitored and evaluated. It is also needed to account for different end uses of the produced biogas.
- A full cycle for the pilot plant to test feasibility and to understand plant performance is needed. Therefore a 5-years project design may already be inadequate to develop appropriate knowledge products to take innovation forward, as the development of knowledge products may need to undertake some research based upon the outcomes of the project prior to publishing the products. This may only be possible with at least one full year of the pilot projects running, if not more.
- Different business models (location, input material management and use/sales of product and by-products) have to be selected to showcase functionality in different scenarios and enable to develop appropriate roadmap and knowledge documents. Therefore, pilot projects will need to be selected carefully, taking into account these factors, as well as understanding project risks and ensuring that risks are addressed.
- Technologies for bio-methanation are available and proven in the country, but there is a lack in management of input materials and the plants itself, as well as standardizing and market development for the by-products, which are critical for techno-economic feasibility. Hence, the focus of such project must reflect innovations in both upstream and downstream marketing, along with the reflection of these factors in project documentation and knowledge products.
- Existing scheme (given price for CBG) did not seem to be attractive for plant owners and developers. The price per kg is rather low and only granted for a 3 years period, therefore FIs were hesitant with loans and industries do not have a sustainable baseline to calculate their business models.
- Legal framework is not in favour of OWtE, e.g. feed in tariff in grid at state level is not regulated. Existing rules for testing, labelling and promoting digestate as fertilizers are not rated to be supportive. There is also a need for a supportive environment for cleaner energy sources – such as OWtE, over oil -based fuels. It needs a strong entrepreneur (managerial skills, financial background, and strong network) to start a project without subsidies and legal support.

- Only if all potential by products can be marketed successfully OWtE projects become viable. In some cases, the gas may even be the by-product. It will therefore, also be important to review these aspects in the project and to consider them as a part of planned knowledge products.
- Legal framework for all by-products is needed. The project has its focus on organic wastes, but if mixed waste is used, different legal regime may come into play, and will also require to be considered. Given that is unlikely that any of the OWtE pilot projects will sustain completely on a single type of waste, this may be a concern to address within this project. Furthermore, as other waste streams come into play, there may be additional stakeholders that may need to be included. All these aspects will need to be identified in the next few months as pilot projects are selected.
- Selection of location is key to success, including sufficient feedstock-mix, space, buyer of products and by-products as incoming waste and product are very sensitive to transport cost and logistic. Availability of local labour forces is important.
- Technology must be designed to fit all these parameters and consider local climatic conditions. Envisaged roadmap and knowledge documents should support these aspects of the project and pilot projects
- The Exposure cum Study Tour (in 2019) was well received by and encouraged the participants. It was seen as a helpful learning, even though the visited plants operated in first instance for environmentally sound management of wastes, with biogas generation as a complementary benefit.

### **Best practices**

- Creation of multiple local pilot projects focusing on the business case to prove viability and functionality, as OWtE projects are complex, specific to their mix of feedstock and final products, and can hence not easily standardized.
- Approach to quality standards to create performance guidelines and a standardization framework for biogas projects. This is key to bring more plants on stream and market their biogas and other products.
- Project has shown flexibility and ability to adapt to actual situation and changing policies. Production and marketing of by-products is given a stronger focus now.
- Existing biogas plant in Kheda has control over major logistics processes from raw material; waste, to delivery of gas to industries. It owns trailers, used by the farmers to procure cattle dung, and tankers, also belonging to the plant, are used to transport liquid waste from industries. This plant also has ensured enough space is available to produce fertilizer, which is dried on a sealed concrete floor to ensure that it does not mix with the soil. Finally, the plant uses its own caskets to transport CBG to industry clients and also owns the gas pressure control units at their client's sites, where they supply their gas to industries. Existing biogas plant in Kheda has assessed its full material flows, is designed for and is now utilizing the full (closed) loop. It an almost perfect 'closed loop' or 'Circular economy' example. They are presently experiment on how to utilize the CO<sub>2</sub> that is generated from the plant, to close the 'loop' completely. Furthermore, the owner of the plant and his consultant, decided to undertake the development of the plant without funding support from the project, even though technical support had been extended by UNIDO experts.
- Close cooperation with MNRE has been developed, and IREDA has been appointed to manage the project's funding support for the innovative demonstration projects. This joint understanding project relevance between MNRE, IREDA and UNIDO is enabling project progress and result.
- GEF project is to contribute up to an existing funding scheme from MNRE by subsidising part of the loan for selected pilots, to foster 'Innovation'. This practice increases the impact and also allows to compare the outcome; if time for monitoring is given. This is also fully in line with GEF strategies.
- Definition of innovation has been well thought through and developed. It is giving a specific focus on 'management of raw material' including:
  - modification of properties of organic waste to optimize overall biogas generation process and digestate quality
  - New models of waste collection, transportation and storage facilitating optimized and sustainable supply of multiple wastes, including seasonal wastes

Local supply of cleaned Biogas and new developments in production of organic fertilizers using digestate

### **Recommendations**

- The Project Result Framework and Workplan should be reviewed and adapted to the actual situation especially focusing on the timeframe for project work.

Action Taken: The detailed workplan was updated and presented before the 4<sup>th</sup> Project Steering-cum-Advisory Committee (PSAC) meeting held on 29 January 2020.

- Specific effort is needed to speed up with the pilot projects; programme to invite potential project developers to be started quickly. If projects cannot start by mid-2020, even the extension for 2,5 years will not be sufficient.

Action Taken: The UNIDO project team, supported by PRS, worked extensively to address successive concerns of IREDA in finalizing the contract to appoint it as the fund manager for the project's financial support scheme. Finally, UNIDO obtained IREDA approval in June 2021, so that contract was finally signed on 29 July 2021 (draft had been issued to IREDA in April 2020). The financial support scheme was launched soon after on 10 August 2021.

- Some new objectives (including Indicators and means of verification) should be added (e.g. tons of fertilizers produced/capacity established and respective regulations for fertilizer in place)

Action Taken: In view of this relevant information included in the application of project financial support scheme launched for the demonstration of innovations.

- Review stakeholder map to enable creation of an inducive environment for OWtE projects. The learnings so far showcase, that additional stakeholders have to be included. An illustration of this is the applicable regulations in the project - some regulations are at state level, and therefore the state nodal agencies from selected states will be needed.

Action Taken: Following the regulations imposed by the central and state governments during the COVID19 pandemic, different stakeholders including the representatives of the State Nodal Agencies participated in the webinar conducted on the world biofuel day 10 August 2021.

- Allocate sufficient time and resources to select and monitor pilot projects.

Action Taken: Expert Appraisal Group (EAG) was selected to conduct the competitive assessment of the project applications received for the pilot demonstration. Virtual interaction between the EAG members and applicants was organised before the final evaluation. The UNIDO PMU is regularly monitoring the construction of the selected pilot projects

- Implement an efficient project management system in line with given indicators to ensure efficient project execution as timeliness of outcomes from different components is core to project success.
- Demonstrate and publish feasible OWtE projects that will foster uptake of these business models. As the project will add its funds to existing scheme from MRNE to bring more innovation to the ground, the outcome has to be carefully monitored
- Crosscheck if extra support from GEF project enhances performance, compared to 'standard projects' –

Action Taken: Pilot demonstration projects are under construction hence performance data are not yet available.

- Test the business model (full cycle) to understand operation costs and sales of products. As waste streams as well as sales of products and by-products have a seasonal dependency, a full year of M&V will be needed.

Action Taken: Pilot demonstration projects are yet to complete.

- Prepare a specific knowledge document for FIs on selection criteria and finance guidelines for not specialized banks to enable them to enhance their loan programmes.

Action Taken: A guideline document to conduct the techno financial due diligence of waste to energy bio-methanation projects is under consideration.

- Specific focus given to Gender Mainstreaming. PMU is advised to check the project documents and act accordingly.

Action Taken: The project document is being followed.

- Explore/develop an accounting system for cradle-to-cradle GHG reduction for OWtE, suitable for
  - fossil/non fossil fuel-based system
  - different OWtE approaches and technologies
  - different products and by-products

Action Taken: The accounting system for cradle-to-cradle GHG reduction for OWtE is planned.

- Ensure monitoring and validation protocol are an integral part to pilot projects (funding contract). In order to do this, there is a need to define and monitor all project relevant indicators, starting with waste management (including logistics), to plant operation and different products and the chain of actions and processes, such as marketing, sales and logistics.
  - This will enable harvesting of results to be included in knowledge products

Action Taken: Pilot demonstration projects are yet to complete.

- Involved project stakeholders should plan PSC meeting soon to come up with a joint decision how to modify the project to achieve project deliverable
  - UNIDO – MNRE to prepare 2 versions of workplan (ext./non ext.) to be agreed upon by stakeholders in upcoming PSC
  - Request for no-cost project extension of 2.5 years
  - Adapt workplan according to new timeline including harvesting results and dissemination of learning
  - Discuss whether to include additional stakeholders to create an attractive business environment for OWtE
  - Ensure continuity with involved experts

Action Taken: The workplan with the project extension up to December 2022 was reviewed with MNRE and presented in the 4<sup>th</sup> PSAC meeting for approval. The members accepted the proposal and granted the no-cost project extension. The beginning of COVID19 pandemic in March 2020 and continued its progression in different waves until February 2022 severely impacted the adaption of the new workplan.

Action Update (during the reporting period)

- The workplan with the project extension up to March 2024 was reviewed with MNRE and presented in the 7<sup>th</sup> PSAC meeting held on 14<sup>th</sup> December 2023 for approval. The members accepted the proposal and granted the no-cost project extension until 31<sup>st</sup> March 2025.
- The UNIDO PMU and the Expert Appraisal Group (EAG) are jointly monitoring the progress of the four selected innovation demonstration project through conducting regular site visits and providing necessary assistance to them.

#### IV. Environmental and Social Safeguards (ESS)

1. As part of the requirements for **projects from GEF-6 onwards**, and based on the screening as per the UNIDO Environmental and Social Safeguards Policies and Procedures (ESSPP), which category is the project?

Category A project

Category B project

Category C project

(By selecting Category C, I confirm that the E&S risks of the project have not escalated to Category A or B).

*Notes on new risks:*

- *If new risks have been identified during implementation due to changes in, i.e. project design or context, these should also be listed in (ii) below.*
- *If these new/additional risks are related to Operational Safeguards # 2, 3, 5, 6, or 8, please consult with UNIDO GEF Coordination to discuss next steps.*
- *Please refer to the [UNIDO Environmental and Social Safeguards Policies and Procedures \(ESSPP\)](#) on how to report on E&S issues.*

Please expand the table as needed.

	E&S risk	Mitigation measures undertaken during the reporting period	Monitoring methods and procedures used in the reporting period
(i) Risks identified in ESMP at time of CEO Endorsement	NA	NA	NA
(ii) New risks identified during project implementation (if not applicable, please insert 'NA' in each box)	NA	NA	NA

## V. Stakeholder Engagement

1. Using the previous reporting period as a basis, please provide information on **progress, challenges and outcomes** regarding engagement of stakeholders in the project (based on the Stakeholder Engagement Plan or equivalent document submitted at CEO Endorsement/Approval).

Sardar Swaran Singh National Institute of Bio-Energy (SSS-NIBE), which is an autonomous Institute created by Ministry of New and Renewable Energy (MNRE), Govt. of India to support the development of bioenergy sector in the country, invited UNIDO to the 4<sup>th</sup> International Conference on Recent Advances in Bio-Energy Research (ICRABR) organised from 9<sup>th</sup> to 12<sup>th</sup> October 2023 at Kapurthala, Punjab. The NPC of the project to participated as panellist speaker in Special Plenary – Innovations in Waste to Energy.

The project developers of the four pilot demonstration projects were requested to present the progress of their respective project before the 7<sup>th</sup> Project Executive Committee (PEC) meeting held on 11 August 2023.

The Expert Appraisal Group (EAG) and UNIDO conducted two consecutive on-site monitoring and inspection visits to the four demonstration projects during the reporting period to identify and address any bottlenecks that have arisen.

2. Please provide any feedback submitted by national counterparts, GEF OFP, co-financiers, and other partners/stakeholders of the project (e.g. private sector, CSOs, NGOs, etc.).

No specific inputs were provided separately during the reporting period.

3. Please provide any **relevant stakeholder consultation** documents.

5087\_Approved Minutes of 7th PEC meeting.pdf  
5087\_EAG Second Inspection Report.pdf  
5087\_Approved Minutes of 7th PSAC meeting.pdf  
5087\_Approved minutes 8th PEC meeting.pdf

## VI. Gender Mainstreaming

1. Using the previous reporting period as a basis, please report on the **progress achieved on implementing gender-responsive measures and using gender-sensitive indicators**, as documented at CEO Endorsement/Approval (in the project results framework, gender action plan or equivalent),.

The woman Scientist 'G' in MNRE is now the National Project Director (NPD) of GEF organic waste to energy project. She is in the in-charge of biomass and waste to energy division in ministry. One of the four pilot projects has recently appointed a woman as the operations manager and she has also been the point of contact for certain parts of plant operation.

The project continues to aim for gender mainstreaming, and where possible, identify more activities where gender can be addressed as a part of project activities.

## VII. Knowledge Management and Communication

1. Using the previous reporting period as a basis, please elaborate on any **knowledge management and communication activities / products**, as documented at CEO Endorsement / Approval.

No progress to report in FY24.

2. Please list any **relevant knowledge management and communication mechanisms / tools** that the project has generated.

An online GIS based, and searchable knowledge tool has been created that shows available volumes of nine key organic waste streams at district level across India along with estimated energy generation potential. The GIS tool has been launched on 10 August 2021 and is accessible through: <https://bio-energy.isid4india.org/>.

## VIII. Implementation progress

1. Using the previous reporting period as a basis, please provide information on **progress, challenges and outcomes achieved/observed** with regards to project implementation.

### Progress

In addition to the monitoring of the four pilot demonstration projects and providing support to them, the project is developing web-based application/tool to monitor the performance of biogas plants in India. The objective is to remotely monitor and analyze the performance of bio-methanation plants in India in terms of their biogas generation and its energy output in the form of heat, power, and bio-CNG, and the utilization of different organic wastes and fermented organic manure generated in them. The outcomes and database of this application will facilitate MNRE to further develop the waste-to-energy program effectively and to devise potential support in terms of Performance Linked Incentive (PLI) to the biogas plants in India.

The UNIDO PMU is continuously monitoring the progress of all four projects by conducting actual site visits and collecting monthly progress reports from the project owners. As a result, two out of four have advanced to achieve successful commercialization.

### Challenges

Due to lack of awareness and the logistical issues, offtake of bio-CNG has been slow in India. Presently, it is limiting the two out of four demonstration projects to operate at their designed capacity and likely to have the same impact on the remaining two pilot projects. It may therefore not be achievable to complete in full the monitoring and evaluation of demonstration projects, demonstration of the targeted GHG emission reduction and undertake the critical dissemination and outreach activities by the current completion date (31 March 2025).

### Outcomes

The poor offtake of bio-CNG in India has not only hindered the four pilot demonstration projects selected under the financing support scheme of the GEF but has also posed challenges to many other waste-to-energy bio-CNG projects registered under SATAT scheme and being setup with or without the support of



MNRE The potential challenge of timely offtake of Fermented Organic Manure (FOM) is second in line and experienced partially by the presently running bio-CNG projects including the pilot demonstration projects. This has also impacted activities under 'Scale Up' and 'Capacity Building' components of the project components.

One out of the four pilot projects have completed commissioning and trials of operation and are ready for commercial operation. The other three are expected to be ready by December 2024 – January 2025.

2. Please briefly elaborate on any **minor amendments**<sup>7</sup> to the approved project that may have been introduced during the implementation period or indicate as not applicable (NA).

Please tick each category for which a change has occurred and provide a description of the change in the related textbox. You may attach supporting documentation, as appropriate.

<input checked="" type="checkbox"/>	Results Framework	Preparation of National Master Plan (NMP) and strategic action plans and continued capacity building, training and awareness have been de-prioritized by MNRE (as endorsed by PSAC), in favor of further technical and financial support to innovative demonstration projects.
<input type="checkbox"/>	Components and Cost	N/A
<input type="checkbox"/>	Institutional and Implementation Arrangements	N/A
<input type="checkbox"/>	Financial Management	N/A
<input checked="" type="checkbox"/>	Implementation Schedule	A 2.5 year no cost extension was granted in 2020, to accommodate for delayed start of project activities as a result of the need to clarify the fund management procedures with the Government of India. Further, 1.25 years no cost extension was granted in December 2022 by PSAC in view of achieving successful commercialization of all four demonstration projects selected under the OWtE financial scheme and release of applicable loan subvention fund in their loan account by fund manager i.e. IREDA. 8. In view of the progress of the project and the time required for the monitoring of the four demonstration projects, the PSAC approved a no-cost project extension up to 31 March 2025 in December 2023
<input type="checkbox"/>	Executing Entity	N/A
<input type="checkbox"/>	Executing Entity Category	N/A
<input type="checkbox"/>	Minor Project Objective Change	N/A
<input type="checkbox"/>	Safeguards	N/A
<input type="checkbox"/>	Risk Analysis	N/A
<input type="checkbox"/>	Increase of GEF Project Financing Up to 5%	N/A
<input type="checkbox"/>	Co-Financing	N/A
<input type="checkbox"/>	Location of Project Activities	N/A
<input type="checkbox"/>	Others	N/A

3. Please provide progress related to the **financial implementation** of the project.

<sup>7</sup> As described in Annex 9 of the *GEF Project and Program Cycle Policy Guidelines*, **minor amendments** are changes to the project design or implementation that do not have significant impact on the project objectives or scope, or an increase of the GEF project financing up to 5%.



## Grant Delivery Report

Sponsor	400150 - GEF - Global Environment Facility	Fund	GF	Reporting Period	30.04.2015 - 15.07.2024
Grant	2000003043	Grant Status	Authority to implement	Grant Validity	30.04.2015 - 31.03.2025
Other Reference	5087-U3-PJ-FS-GR-01	Currency	USD	Prepared on	26.07.2024
Project	120095	ORGANIC WASTE STREAMS FOR INDUSTRIAL RENEWABLE ENERGY APPLICATIONS IN INDIA (MAIN PHASE)			

Project	Budget Line	Description	Total Budget (a)	Released Budget (b)	Obligations (c)	Disbursements (d)	Expenditures (e=c+d)	Funds Available* (f=b-e)	Support Cost (g)	Total Expenditures (h=e+g)
120095	1100	Staff & Intern Consultants	35,733.13	35,733.13	0.00	15,721.13	15,721.13	20,012.00	0.00	15,721.13
	1500	Local Travel	46,147.37	46,147.37	130.96	31,030.52	31,161.48	14,985.89	0.00	31,161.48
	1600	Staff Travel	586.60	586.60	0.00	0.00	0.00	586.60	0.00	0.00
	1700	Nat.Consult./Staff	682,231.54	682,231.54	20,063.44	647,522.83	667,586.27	14,645.27	0.00	667,586.27
	2100	Contractual Services	2,246,878.10	2,246,878.10	1,372,790.27	555,589.20	1,928,379.47	318,498.63	0.00	1,928,379.47
	3000	Train/Fellowship/Study	102,583.24	102,583.24	0.00	26,441.73	26,441.73	76,141.51	0.00	26,441.73
	4300	Premises	172,036.44	172,036.44	4,864.80	164,285.97	169,150.77	2,885.67	0.00	169,150.77
	4500	Equipment	10,201.15	10,201.15	(0.01)	10,232.86	10,232.85	(31.70)	0.00	10,232.85
	5100	Other Direct Costs	36,602.43	36,602.43	714.59	33,073.42	33,788.01	2,814.42	0.00	33,788.01
	9300	Support Cost	0.00	0.00	0.00	0.00	0.00	0.00	273,811.68	273,811.68
120095			3,333,000.00	3,333,000.00	1,398,564.05	1,483,897.66	2,882,461.71	450,538.29	273,811.68	3,156,273.39
<b>Grant Total</b>			<b>3,333,000.00</b>	<b>3,333,000.00</b>	<b>1,398,564.05</b>	<b>1,483,897.66</b>	<b>2,882,461.71</b>	<b>450,538.29</b>	<b>273,811.68</b>	<b>3,156,273.39</b>

## IX. Work Plan and Budget

1. Please provide **an updated project work plan and budget** for the remaining duration of the project, as per last approved project extension. Please expand/modify the table as needed.

For the work plan, please refer to the attachment.

Please, kindly note that this budget plan corresponds to three-quarters of the Jul 24 - Jun 25 monitoring year applicable to the remaining project duration at present, whereas the work plan attached is the latest activity plan approved by the Project Steering-cum-Advisory Committee (PSAC) in its last meeting and it corresponds to the complete project extension period from 1 Jan 2024 to 31 Mar 2025

Outputs by Project Component	2024/25				GEF Grant Budget Available (US\$)
	Q1	Q2	Q3	Q4	
<b>Component 1 – Policy and Strategy</b>					
Outcome 1:					
Output 1.1:	[REDACTED]				26,867.47
<b>Component 2 – Technology Demonstration</b>					
Outcome 2:					
Output 2.1:	[REDACTED]				30,816.38
<b>Component 3 – Scale-up</b>					
Outcome 3:					
Output 3.1:	[REDACTED]				2,26,970.19
<b>Component 4 – Capacity Building</b>					
Outcome 4:					

Output 4.1:				1,30,816.99
Project Management				2,493.55
Independent Evaluation				32,593.00
<b>Result</b>				<b>4,50,557.58</b>

## X. Synergies

### 1. Synergies achieved:

The project is coordinated in a coherent way with other projects implemented in India by UNIDO. Specifically, synergies with Promoting Market Transformation for Energy Efficiency in Micro, Small & Medium Enterprises project and Sustainable cities, integrated approach pilot in India are observed (knowledge exchange, technology transfer).

### 3. Stories to be shared (Optional)

NA

## XI. GEO LOCATION INFORMATION

The Location Name, Latitude and Longitude are required fields insofar as an Agency chooses to enter a project location under the set format. The Geo Name ID is required in instances where the location is not exact, such as in the case of a city, as opposed to the exact site of a physical infrastructure. The Location & Activity Description fields are optional. Project longitude and latitude must follow the Decimal Degrees WGS84 format and Agencies are encouraged to use at least four decimal points for greater accuracy. Users may add as many locations as appropriate. Web mapping applications such as [OpenStreetMap](#) or [GeoNames](#) use this format. Consider using a conversion tool as needed, such as: <https://coordinates-converter.com> Please see the Geocoding User Guide by clicking [here](#)

Location Name	Latitude	Longitude	Geo Name ID	Location and Activity Description
<a href="#">Malheri, Fatehgarh Sahib Tahsil, Fatehgarh Sahib District, Punjab, India</a>	30.46758333333333	76.40208333333334		<a href="#">Cities Innovative Biofuels Pvt Ltd – Pilot innovation demonstration Project supported under financial support scheme</a>
<a href="#">Damla, Jagadhri, Yamunanagar District, Haryana, India</a>	30.09686111111111	77.21675		<a href="#">SPS-BIOCHEM Pvt Ltd – Pilot innovation demonstration Project supported under financial support scheme</a>
<a href="#">Balsamand, Hisar District, Haryana, 127045, India</a>	28.995583333333336	75.57827777777777		<a href="#">Metro Biofuels – Pilot innovation demonstration Project supported under financial support scheme</a>
Mawana, Meerut Uttar Pradesh	29.026916666666665	77.93172222222222		<a href="#">Circle CBG India Pvt Ltd – Pilot innovation demonstration Project supported under financial support scheme</a>

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

1. M/s Cities Innovative
--------------------------



2. M/s SPS Bio Chem





**3. M/s Metro Fuels**



**4. M/s Circle CBG**





## EXPLANATORY NOTE

1. **Timing & duration:** Each report covers a twelve-month period, i.e. 1 July 2023 – 30 June 2024.
2. **Responsibility:** The responsibility for preparing the report lies with the project manager in consultation with the Division Chief and Director.
3. **Evaluation:** For the report to be used effectively as a tool for annual self-evaluation, project counterparts need to be fully involved. The (main) counterpart can provide any additional information considered essential, including a simple rating of project progress.
4. **Results-based management:** The annual project/programme progress reports are required by the RBM programme component focal points to obtain information on outcomes observed.

Global Environmental Objectives (GEOs) / Development Objectives (DOs) ratings	
<b>Highly Satisfactory (HS)</b>	Project is expected to achieve or exceed <u>all</u> its major global environmental objectives, and yield substantial global environmental benefits, without major shortcomings. The project can be presented as “good practice”.
<b>Satisfactory (S)</b>	Project is expected to <u>achieve most</u> of its <u>major</u> global environmental objectives, and yields satisfactory global environmental benefits, with only minor shortcomings.
<b>Moderately Satisfactory (MS)</b>	Project is expected to <u>achieve most</u> of its major <u>relevant</u> objectives but with either significant shortcomings or modes overall relevance. Project is expected not to achieve some of its major global environmental objectives or yield some of the expected global environmental benefits.
<b>Moderately Unsatisfactory (MU)</b>	Project is expected to achieve <u>some</u> of its major global environmental objectives with major shortcomings or is expected to <u>achieve only some</u> of its major global environmental objectives.
<b>Unsatisfactory (U)</b>	Project is expected <u>not</u> to achieve <u>most</u> of its major global environmental objectives or to yield any satisfactory global environmental benefits.
<b>Highly Unsatisfactory (HU)</b>	The project has failed to achieve, and is not expected to achieve, <u>any</u> of its major global environmental objectives with no worthwhile benefits.

Implementation Progress (IP)	
<b>Highly Satisfactory (HS)</b>	Implementation of <u>all</u> components is in substantial compliance with the original/formally revised implementation plan for the project. The project can be presented as “good practice”.
<b>Satisfactory (S)</b>	Implementation of <u>most</u> components is in substantial compliance with the original/formally revised plan except for only few that are subject to remedial action.
<b>Moderately Satisfactory (MS)</b>	Implementation of <u>some</u> components is in substantial compliance with the original/formally revised plan with some components requiring remedial action.
<b>Moderately Unsatisfactory (MU)</b>	Implementation of <u>some</u> components is <u>not</u> in substantial compliance with the original/formally revised plan with most components requiring remedial action.
<b>Unsatisfactory (U)</b>	Implementation of <u>most</u> components in <u>not</u> in substantial compliance with the original/formally revised plan.
<b>Highly Unsatisfactory (HU)</b>	Implementation of <u>none</u> of the components is in substantial compliance with the original/formally revised plan.

Risk ratings	
Risk ratings will assess the overall risk of factors internal or external to the project which may affect implementation or prospects for achieving project objectives. Risk of projects should be rated on the following scale:	
<b>High Risk (H)</b>	There is a probability of greater than <b>75%</b> that assumptions may fail to hold or materialize, and/or the project may face high risks.
<b>Substantial Risk (S)</b>	There is a probability of between <b>51%</b> and <b>75%</b> that assumptions may fail to hold or materialize, and/or the project may face substantial risks.
<b>Moderate Risk (M)</b>	There is a probability of between <b>26%</b> and <b>50%</b> that assumptions may fail to hold or materialize, and/or the project may face only moderate risk.
<b>Low Risk (L)</b>	There is a probability of up to <b>25%</b> that assumptions may fail to hold or materialize, and/or the project may face only low risks.