UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

TERMS OF REFERENCE

Independent terminal evaluation of the project:

Biogas applications for the Brazilian agro-industry

UNIDO ID: 150014

GEF Project ID: 9057

May 2025

Contents

I. PROJECT BACKGROUND AND CONTEXT

1. Project factsheet[1]

Project title	Biogas applications for the Brazilian agro-industry
UNIDO ID	150014
GEF Project ID	9057
Country	Brazil
Project funding partner(s)	GEF (Global Environment Facility)
Project approval date/GEF CEO endorsement date	04-05-2017
Planned project start date (as indicated in project document/or GEF CEO endorsement document)	19-04-2017
Actual project start date (First PAD issuance date)	10-08-2017
Planned project completion date (as indicated in project document/or GEF CEO endorsement document)	10-08-2022
Actual project completion date (as indicated in UNIDO ERP system)	31-12-2025
Project duration (year):	Planned: 5 Actual: 8
GEF Focal Areas and Operational Programme	CCM-1 Program 1
Implementing agency(ies)	UNIDO
Government coordinating agency	N/A
Executing Partners	Ministry of Science, Technology and Innovation (MCTI, formerly MCTIC), Ministry of Mines and Energy (MME), Itaipu Binacional and CIBiogasER at project approval. Current status: In addition to the above institutions, MMA (Ministry of Environment and Climate Change), MAPA (Ministry of Agriculture, Livestock and Food Supply).
Donor funding	GEF (Global Environment Facility) USD 7,665,000
UNIDO input (in kind, USD)	USD 100,000
Co-financing at CEO Endorsement, as applicable	USD 58,392,070
Total project cost (USD), excluding support costs	USD 7,000,000
Gender Marker	1 (Limited expected contribution to GE)
Mid-term review date	July, 2021
Planned terminal evaluation date	September-December 2025

(Source: Project document, UNIDO ERP system)

[1] Data to be validated by the Consultant

2. Project context

ORGANIZATIONAL CONTEXT

The United Nations Industrial Development Organization (UNIDO) is the specialized agency of the United Nations that promotes industrial development for poverty reduction, inclusive globalization and environmental sustainability. The mission of UNIDO, as described in the *Lima Declaration* adopted at the fifteenth session of the UNIDO General Conference in 2013 as well as the *Abu Dhabi Declaration* adopted at the eighteenth session of UNIDO General Conference in 2019, is to promote and accelerate inclusive and sustainable industrial development (ISID) in Member States. The relevance of ISID as an integrated approach to all three pillars of sustainable development is recognized by the 2030 Agenda for Sustainable Development and the related Sustainable Development Goals (SDGs), which will frame United Nations and country efforts towards sustainable development. UNIDO's mandate is fully recognized in SDG-9, which calls to "Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation". The relevance of ISID, however, applies in greater or lesser extent to all SDGs. Accordingly, the Organization's programmatic focus is structured in four strategic priorities: Creating shared prosperity; Advancing economic competitiveness; Safeguarding the environment; and Strengthening knowledge and institutions.

Each of these programmatic fields of activity contains a number of individual programmes, which are implemented in a holistic manner to achieve effective outcomes and impacts through UNIDO's four enabling functions: (i) technical cooperation; (ii) analytical and research functions and policy advisory services; (iii) normative functions and standards and quality-related activities; and (iv) convening and partnerships for knowledge transfer, networking and industrial cooperation. Such core functions are carried out in Departments/Offices in its Headquarters, Regional Offices and Hubs and Country Offices.

The Directorate of **Directorate of Technical Cooperation and Sustainable Industrial Development (TCS)** under the overall direction of the Director General, and in close collaboration with all relevant organizational entities within UNIDO, the Directorate of Technical Cooperation and Sustainable Industrial Development (TCS), headed by a Managing Director, ensures the Organization's application of strategies and interventions for sustainable industrial development related to environment, energy, Micro, Small and Medium-Enterprises (MSMEs), and digitalization. The Directorate also oversees the Organization's normative contribution to achieving the Sustainable Development Goals through industrial policy advice and capacity development. Through coordination in-house and with Member States and industry stakeholders, it ensures that the services provided in these areas contribute to effective and appropriate technical, business and policy solutions and are focused on results, scaling up and positioning UNIDO as a leading platform for industrial development in developing countries and global fora.

The Directorate is responsible for the Division of Industrial Policy Advice and Capacity Development (TCS/IPC), and technical Divisions of Circular Economy and Green Industry (TCS/CEG), Energy and Climate Action (TCS/ECA), Climate Innovation and Montreal Protocol (TCS/CMP); MSME Competitiveness, Quality and Job Creation (TCS/SME); and Digital Transformation and Artificial Intelligence (TCS/DAI). Leveraging the diverse skill sets of UNIDO personnel and the services provided by the two TC directorates, TCS collaborates closely with IET to develop and implement programmes and projects, aiming at enhancing synergy and complementarity and maximizing UNIDO corporate performance and impacts on the ground. The Directorate also ensures close coordination and collaboration among the Divisions as well as with relevant entities in all Directorates across the Organization.

The **Division of Energy and Climate Action (TCS/ECA)** under the supervision of the Managing Director of the Directorate of Technical Cooperation and Sustainable Industrial Development (TCS), and in close coordination with other organizational entities within UNIDO, the Division of Energy and Climate Action (TCS/ECA) assists Member States in the transition to low-carbon and climate resilient economies through the promotion of renewable energy, energy efficiency solutions and breakthrough technologies in industry and other key sectors, diversifying supply chains for renewable energy manufacturing and stimulating innovation to address critical climate and energy related challenges.

The Division assists governments in fulfilling national commitments under the Paris Agreement and progress towards the 2030 Agenda for Sustainable Development, thereby facilitating a just transition towards sustainable industrialization. In transitioning to a low-carbon and climate resilient economies, the challenges of addressing energy poverty and climate change are an integral part of the Division's activities, as is the dissemination of policies, knowledge and technologies and pathways to plan, manage and finance the energy transitions and climate action for industrial transformation. It collaborates closely on converging issues with IET/CTP and TCS/CMP.

The position is located under the **Energy Systems and Industrial Decarbonization Unit (TCS/ECA/ESD)** promotes the emergence, deployment and large-scale adoption of sustainable energy technologies to drive the decarbonization of energy systems and industrial processes. It supports Member States to charter pathways for net zero industrial development through the development of conducive policies. It also promotes the deployment of crosscutting energy efficiency solutions, electrification and carbon management of industrial processes in large and small-scale industries. It charters norms and standards for reporting embodied carbon in products and supports member states in developing the reporting and verification structures to support compliance with global standards.

PROJECT CONTEXT

In May 2017, the Global Environment Facility (GEF) endorsed the full-sized project under its Climate Change Focal Area entitled "**Biogas applications for the Brazilian agro-industry**" for which UNIDO will act as the implementation agency and Ministry of Science, Technology, Innovation and Communication will act as the leading institution.

While Brazil only accounts for 1.4% of global GHG emissions, these have increased in the last decade, totaling 739,671Gg of CO2eq in 2010. The agricultural sector, representing 48% of national GHG emissions, is the main source, thereby offering opportunities for mitigation actions to achieve substantial impact and introduce a more low-carbon development path by incorporating renewable energy systems. Brazil has played a leading role in global environmental discussions since the Rio Summit in 1992 and was the first signatory to the UNFCCC. Brazil's National Policy on Climate Change (PNMC), adopted in December 2008, established voluntary commitment to cut projected GHG emissions between 36.1% and 38.9% by 2020.

Moreover, it is recognized that the energy potential of biomass and biogas feedstock in agro-industries, specifically the beer breweries (90.1%), is hardly exploited, which translates into a lost opportunity to add value to the production chain and to address environmental issues related to agro-industrial residues and effluents. Currently, though, the introduction of biogas energy technologies into small and medium-sized agro-industries is hampered by a range of specific barriers.

In order to address these barriers, the present GEF Project will take a broader approach to the biogas market in Brazil by (i) facilitating investment in market segments which are ready to take off; (ii) expanding professional capacities and skills for scaling-up; and (iii) providing technical assistance and disseminating best practices, thereby reducing project costs and accelerating penetration of biogas technology downward the market pyramid.

The overall objective of the project "Biogas applications for the Brazilian agro-industry" is to reduce GHG emissions and dependence on fossil fuels through the promotion of biogas-based energy and mobility solutions within agro-industrial value chains in Southern Brazil and strengthening of national biogas technology supply chains.

The project has three substantive components:

- Policy framework and information.
- Biogas and biomethane technology and value chain.
- Demonstration and optimization of biogas projects.

The project counts on a budget of USD 7,000,000 in GEF grant funding and USD 58,392,070 in co-financing to be mobilized from different stakeholders. The total duration of the project was 60 months, and after extensions, the total duration is 100 months.

Scenario at the project conception:

The Brazilian energy mix is characterized by a high share of renewable energy sources, predominantly ethanol (used for transport), large and small hydropower systems (electricity), and sugar-cane bagasse (for heat and electricity). This situation is the result of national policy formulated in the 1970s and 1980s in an attempt to reduce vulnerability to global oil price markets. Brazil's natural resources in terms of land area, hydrological resources, biomass, and more recently, oil and gas, have been a key asset to achieve this objective. In line with the increase in population and GDP, final energy consumption grew from 102,934 ktoe in 1990 to 196,168 ktoe (2010), and fossil fuels consumption increased from 72,207 ktoe (1990) to 143,831 ktoe (2010). There is a trend towards an increased use of renewable energy sources and higher-quality fossil fuels, at the expense of heavier hydrocarbons including coal, lignite, fuel oil, and charcoal.

Brazil's electricity sector is dominated by renewable energy sources (79.3%), primarily hydropower (71%), biomass (8%) and wind energy (1%). Fossil fuels make up 21% of total generation including natural gas (11%) and oil products (4%).26 The figures also make evident the traditional focus on large-scale, centralized energy supply systems. However, there is growing awareness that Brazil's continental dimensions are an impediment for bringing centrally produced energy (both electricity and natural gas) to all consumers outside the demand centers in a cost-effective manner. This is also the case in Southern Brazil, where, for example, the gas distribution network is located mainly along the coast.

The cornerstone for Brazil's energy policy is the National Energy Policy (Law 9.478), enacted in 1997, which created the National Agency of Oil, Gas and Biofuels (ANP). The National Electricity Agency (ANEEL) was established one year later by Decree 2,665 (1998). In 2002, support for (non-conventional) renewable energy-based electricity generation was initiated under the Alternative Electricity Sources Incentive Program (PROINFA) programme, set out by Article 3 of Federal Law 10.438 (2002) issued by the Ministry of Mines and Energy (MME).

In 2003 and 2004, the Government created a new framework for the national electricity sector, through the enactment of Law 10,847 and 10,848, and Decree 5,163. This framework foresaw in the establishment of an institution responsible for long-term energy planning, the Empresa de Pesquisa Energetica (EPE) which overviews supply security in the electricity market through the Electricity Sector Monitoring Commission (CMSE27), including the activity of the Mercado Atacadista de Energia Eletrica (MAE) and the Electric Energy Commercialization Chamber (CCEE).

Based on data from the National Institute for Geography and Statistics (IBGE), the biogas production potential is estimated at 296,597 million m3 biogas per year, equivalent to an energy volume of 424,134 GWh. Animal breeding makes up 3.2% of this total, comparable to the waste sector (3.3%). The largest potential is found in agro-industries (93.5%), specifically beer breweries (90.1%). Biogas represents 14% of Brazil's total energy potential based on agricultural and industrial residues, the majority being non-woody biomass waste from the sugar cane, corn, soy and cassava sectors (2,615,360 GWh/yr, or 96% of total if combusted for electricity generation).

ANEEL's Database on Electricity Generation (BIG)37 provides information about all authorized power plants under construction and in operation in the country; this database is continuously updated but does not cover micro-generation systems. The biogas plants registered in the BIG account for only 26 out of 4.477 power plants (0.58%) installed in the country and an installed capacity of 87 MW (0.06%) (on a total of 143 GW). 14 biogas plants installed at landfills, which demonstrates the incipient stage of biogas energy production in agro-industries, accrue nearly all capacity (83.7MW). In fact, detailed information on the technology and operational performance of these biogas plants seems not publicly available.

Current Status:

Brazil's energy matrix stands out globally due to its high proportion of renewable sources, which accounted for approximately 44.8% of total energy production in 2023. This leadership is anchored in robust hydropower infrastructure, expanding solar and wind capacity, and pioneering biofuel integration in transportation. Notably, Brazil has established itself as a benchmark for mandatory biofuel blending policies, with ethanol and biodiesel constituting significant components of its low-carbon transport strategy. Amid this renewable energy landscape,

biogas has emerged as a critical contributor to diversifying the nation's sustainable energy portfolio, particularly through advancements in agricultural waste management and biomethane production.

A unique combination of natural resources, regulatory frameworks, and technological innovation underpins the country's energy transition. Hydropower remains the cornerstone of electricity generation, but decentralized renewable sources such as solar, wind, and biomass have gained prominence, collectively representing 85% of the country's power generation capacity. The transport sector, meanwhile, relies heavily on biofuels, with ethanol derived from sugarcane and biodiesel from soybeans and animal fats fulfilling 28% of national fuel demand.

Biogas has increasingly complemented these efforts, offering a dual solution for waste management and renewable energy generation. In 2023, Brazil recorded a 32% year-on-year increase in biogas installations, reaching 1,365 operational plants, of which 983 actively produce approximately 4 billion normal cubic metres (Nm^3) annually. This growth reflects strategic investments in agro-industrial waste valorization, particularly in states with intensive agricultural activities, such as São Paulo, Paraná, and Goiás.

The evolution of Brazil's biogas sector can be summarized in three distinct phases:

- **Initial growth (2003–2010):** This period was characterized by gradual adoption, driven by pilot projects and small-scale applications in agro-industrial sectors. Approximately 100 new plants were commissioned, contributing an incremental production capacity of 1 million Nm^3/year. Early adopters focused on treating poultry and swine farming waste, leveraging anaerobic digestion to mitigate methane emissions while generating energy for on-site use.
- **Consolidation and market stability (2011–2017):** Growth stabilized, with around 200 new plants and a production increase of 2 million Nm^3/year. Regulatory frameworks, such as the National Policy on Solid Waste (2010), incentivized organic waste treatment, while energy auction mechanisms began recognizing biogas as a viable feedstock for distributed generation. The sugar-energy sector emerged as a key player, utilizing vinasse, a by-product of ethanol production, as a primary substrate for biogas.
- **Accelerated expansion (2018–2023):** The sector experienced rapid growth, with 400 new plants and a 4 million Nm^3/year production surge. This acceleration was fueled by the launch of the GEF Biogás Brasil Project, which synergized with state-level incentives, research partnerships, and private-sector investments. By 2023, annual growth rates for new installations reached 32%, far exceeding the previous average of 20%.

Multiple factors have catalyzed Brazil's biogas sector, positioning it as a linchpin for sustainable development. Brazil's agricultural and livestock industries generate vast quantities of organic waste, with an estimated biogas potential of 84 billion Nm^3/year-equivalent to 35% of the nation's natural gas consumption. The sugar-energy industry alone produces 400 million tonnes of vinasse annually, while poultry and swine farming contribute 45 million tonnes of waste, creating a readily available substrate base. The RenovaBio Program, established in 2017, has been instrumental in promoting bioenergy through decarbonization credits (CBIOs), which incentivize biogas producers to scale operations. State-level policies in São Paulo and Paraná also offer tax exemptions and grants for biogas projects, reducing capital expenditure barriers. Research institutions, including the Brazilian Agricultural Research Corporation (EMBRAPA) and the University of São Paulo, have advanced digester technologies tailored to tropical climates. The Brazilian Biogas Association (ABiogás) has further facilitated knowledge transfer and advocacy, fostering a collaborative ecosystem among farmers, industries, and policymakers.

Biomethane, purified biogas with methane content exceeding 90%, has gained traction as a renewable substitute for natural gas. In 2023, Brazil inaugurated seven new biomethane plants, raising the total to 50 facilities and boosting production by 16%. Key applications include transportation fuel, over 200 buses in São Paulo now operate on biomethane, reducing emissions by 85% compared to diesel, and industrial use, with ceramics and glass manufacturers in Goiás adopting biomethane to decarbonize thermal processes. States like Paraná are integrating biomethane into natural gas networks, enhancing energy security.

Despite progress, logistical and financial hurdles persist. Brazil's territorial expanse complicates biogas distribution, particularly in remote agro-industrial regions. Limited pipeline infrastructure necessitates decentralized solutions, such as compressed biogas (CBG) transportation via trucks. Additionally, high upfront costs for digester systems remain a barrier for smallholders, necessitating innovative financing models.

Opportunities abound, with ABiogás forecasting the inauguration of 138 new plants by 2032, backed by investments totalling USD 3.2 billion. Emerging applications, such as biogas-to-hydrogen pathways and carbon credit generation, could further enhance the sector's viability.

Brazil's biogas sector is poised to play a pivotal role in achieving the nation's Nationally Determined Contributions (NDCs) under the Paris Agreement, which targets a 43% reduction in greenhouse gas emissions by 2030. To capitalize on this potential, it is recommended that Brazil expand grid access by prioritizing the injection of biomethane into natural gas networks. This approach will help diversify the energy supply. Additionally, it is important to strengthen financing mechanisms through green bonds and low-interest loans specifically tailored to biogas projects. Enhancing public awareness is also crucial; campaigns should be launched to highlight the economic and environmental benefits of biogas for rural communities. By addressing these priorities, Brazil can establish itself as a global leader in biogas, aligning industrial growth with climate resilience and sustainable development goals.

3. Project objective and expected outcomes

The main objective of the proposed project is to reduce GHG emissions and dependence on fossil fuels by promoting biogas-based energy and mobility solutions within agro-industrial value chains in Southern Brazil and strengthening national biogas technology supply chains.

The following **components** have been developed, in addition to project management, to achieve the project objectives:

Component 1: Policy framework and information

Objective: To streamline and complement policies and regulations to accelerate Brazil's biogas and biomethane market. This component also aims to facilitate access to finance and anchor supportive regulation and incentives into sectoral plans at the federal and state levels. Additionally, it will facilitate the generation, validation, and consolidation of information on biogas and biomethane technology and market development, making it accessible to stakeholders.

Component 2: Biogas and biomethane technology and value chain

Objective: To strengthen the biogas and biomethane value chain by promoting cost-effective, standardized technologies, consolidating market strategies and business models, and transferring know-how and skills to project developers and other stakeholders. It also aims to accelerate the market pull for biogas and biomethane by assisting the energy sector in designing intelligent market introduction strategies and exploring joint ventures with agro-industries.

Component 3: Demonstration and optimization of biogas projects

Objective: Verifying and implementing biogas and biomethane demonstration units to test business models, institutional arrangements, financing concepts, environmental guidelines, and technical standards developed under the project.

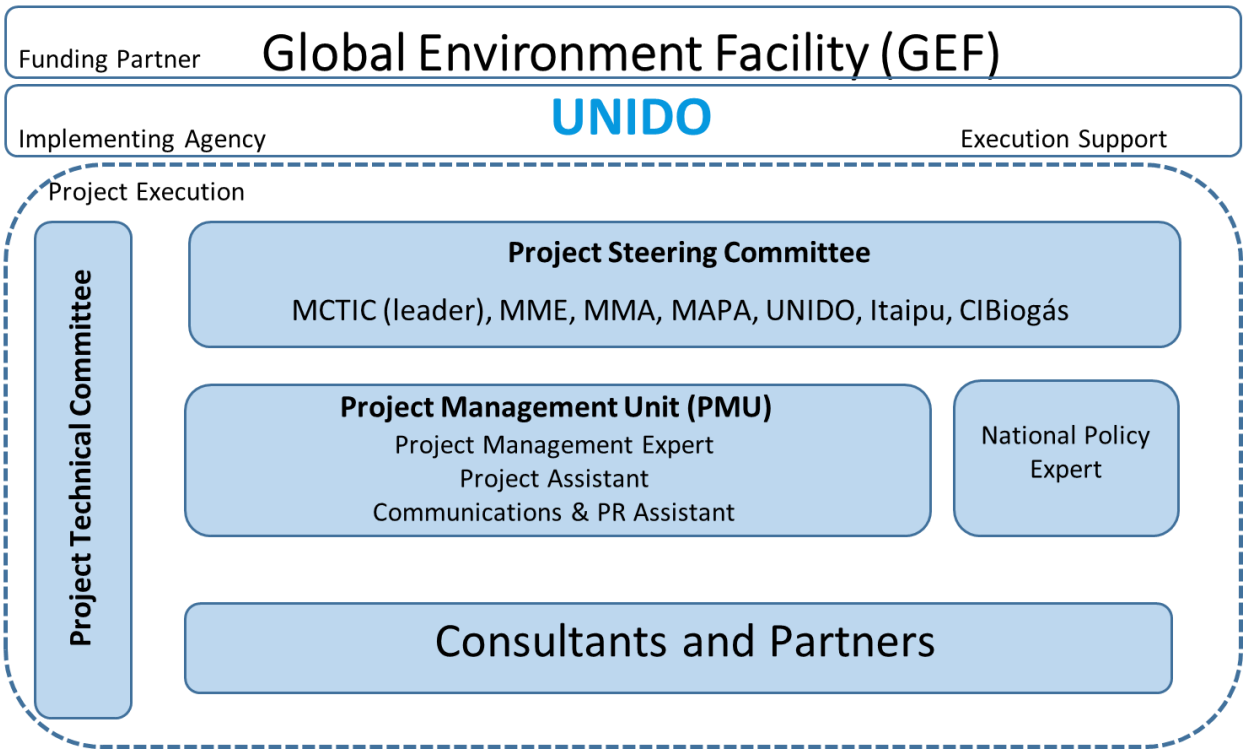
The following are, in brief, some of the expected results (outcome(s) and output(s)) of the project/programme:

- **Outcome 1.1:** Enhanced inter-ministerial coordination and implementation of policies, regulations, and instruments to promote the adoption of biogas and biomethane energy systems based on agroindustrial organic waste.
    - Establishment of an inter-ministerial coordinating unit on biogas policy and technology development.

- Updating and detailing federal and state policies, programmes, and regulatory and financial instruments to facilitate biogas and biomethane market development based on agroindustrial organic waste.
- Integrating biogas and biomethane into federal and state-level energy and agriculture sector programmes.
- Design an MRV system for tracking GHG emission reductions from anaerobic digestion in agro-industries.

- **Outcome 1.2:** Information on biogas and biomethane technology and market development updated, consolidated, and made accessible to public and private stakeholders.
  - Collection, validation, and publication of technical, legal, economic, and other relevant information for biogas market development based on agroindustrial organic waste.
  - Operationalizing a Biogas Information Platform (BIP) to update, manage, and disseminate validated information to stakeholders.
- **Outcome 2.1:** Strengthening of the biogas and biomethane value chain by promotion of cost-effective, standardized technologies, consolidation of market strategies and business models, and transfer of know-how and skills to project developers and other stakeholders.
  - Validation of biogas and biomethane business models for agroindustries, including associative biogas production schemes.
  - Prepare recommendations and guidelines for standardizing technical designs, feedstock, equipment, and operational procedures for biogas production schemes.
  - Adaptation of equipment, components, and processes for biogas and biomethane production to local socio-economic and technical conditions ("tropicalization").
  - Implementation of training, capacity building, and promotional activities for biogas producers, project developers, and other stakeholders.
  - Development and approval of market introduction strategies and business models for biogas-based electricity and biomethane by electricity and gas companies in Southern Brazil.
- **Outcome 3.1:** Demonstration and optimization of the technical and economic feasibility of biogas and biomethane production and utilization based on agroindustrial organic waste.
  - Verification and implementation of demonstration pilots for biogas production and utilization based on agroindustrial organic waste in Southern Brazil.
  - Investment and technical services to ensure operational performance and sustainability of the installed demonstration pilots.
  - Monitoring of operational aspects and performance of established pilots, including systematization of lessons learned and recommendations for enhancement.

4. Project implementation arrangements



5. Main findings of the Mid-term review (MTR)

Even though the implementation of project activities lags against the defined initial work plan, which strongly impacted the achievement of many targets, the project was able to demonstrate progress, and it has already achieved some results.

In project component 1: Policy Framework and Information component, the project has made good progress in terms of developing proposals seeking the enhancement of policies and regulations, but it has made few strides while establishing the inter-ministerial coordination unit and enhancing financial instruments to promote the adoption of biogas as well as designing the MRV system to track GHG emission reductions.

In project component 2: Biogas and Biomethane Technology and Value Chain, the project is on track with most of the planned activities. It has achieved some expressive results in outputs regarding validation of biogas and biomethane business models, capacity building and dissemination of information via the BIP. Concerning access to technology, the call on tropicalization aims to boost access and knowledge of state-of-the-art technologies used for the production of biogas and / or biomethane with agro-industrial substrate.

In the project component 3: Demonstration and Optimization of Biogas Projects, the project has not met expectations, and only very limited progress was registered, as demonstration pilots have not yet been selected, and it has not achieved any of the targets connected to this PC. Nonetheless, as the call for the selection of demonstration pilots has been released, and the project is seeking to support efficiency improvements on already existing biogas projects, it is expected that once selected by the middle of 2021, the project will be up and running by the end of the year, enabling the implementation of other interconnected activities of this PC.

In the project component 4: Monitoring and Evaluation, is a continuous PC implemented throughout the project period with specific tasks. All reporting stages and monitoring activities of project progress have been carried out up to date without significant constraints or issues to be mentioned.

As the implementation of the project activities only started 16 months after the project start date due to factors out of the project's control and the COVID-19 pandemic that affected the project in 2020/21 (impacting primarily onsite training), the project should request an implementation extension to GEF to allow it to achieve the objectives that were proposed to be achieved at the design stage.

Although the spending of the GEF grant seems aligned with the plan, it is not aligned with the project's implementation progress. In fact, the project should have achieved more results with the budget spent so far.

The early bet on having a communication expert for the project from the start has paid off as the project has its own image and portal for communication and dissemination of information. Nevertheless, there is a need to speed up the revision/uploading of information / technical reports on the website as well as to provide more information on the project implementation status.

Recommendations and follow-up actions as reported in PIRs

The following are the overarching recommendations by the Review Team:

R1. PMU should consider revising the current implementation plan and adapt it to new circumstances and challenges encountered. The RT has suggested a follow-up plan in Table 11 for consideration.

Action followed: implementation has been reviewed and by the second quarter of 2022, 90% of the implementation on both component 1 and 2 have been achieved (PIR 2022).

Action followed: implementation has been reviewed and by the second quarter of 2023, component 1 has reached 92,5% of conclusion, component 2 has reached 100% and component 3 reached 35%. The overall project reached 73,8% (PIR 2023).

Action followed: implementation has been reviewed and by the second quarter of 2024, component 1 has reached 92,5% of conclusion, component 2 has reached 100% and component 3 reached 43%. The overall project reached 80% (PIR 2024).

R2. UNIDO HQ and PMU should request a project extension to GEF based on the delay from the national approval process of the project that impacted the project activities start with 16 months of delay, as well as due to the COVID-19 pandemic, which has not enabled the implementation of activities that require physical presence, such as the on-site training of biogas and biomethane experts.

Action followed: extension requested and granted. Project will run up to August 2024 and budget implementation management is updated as well (PIR 2022).

Action followed: extension requested and granted. Project will run up to August 2024 and budget implementation management is updated as well. A new extension might be needed in order to successfully carry out the 12-month monitoring of the demonstration projects in component 3, as the project is experiencing several delays on this front (PIR 2023).

Action followed: second extension requested and granted. Project will run up to April 2025 and budget implementation management is updated as well. A new extension might be needed in order to successfully carry out the 12-month monitoring of the demonstration projects in component 3, as the project is experiencing several delays on this front (PIR 2024).

R3. The PMU should make sure that the project is spending the GEF grant appropriately, and that results will start now to show with less spending associated (the spending reported on PC3 has been very high for the results accomplished so far).

Action followed: despite the delay on the selection and monitoring of the demonstration projects expenses will follow the implementation achieved by the next upcoming months (PIR 2022).

Action followed: Expenses and delivery still not completely matching but now are more appropriate and project has been able to deliver results on component 3, although there are still delays affecting the full deliveries (PIR 2023).

R4. When designing a project, UNIDO should make sure that:

- The indicators put forward to monitor the outputs/outcomes of the project at the design stage are specific, realistic, properly chosen, use the correct measuring units throughout and are all linked to the project activities, thus mitigating the risks related to external factors.
- Reporting process under the M&E plan clearly indicates the minimal reporting information.
- The project includes a budget to build the capacity of the PMU in the implementation of the M&E plan and on reporting activities.
- The log-frame should include a column highlighting the time for the implementation of each activity, reducing the error of interpretations between the PRF and the Chronograms of Implementation.
- There is budget integrated for communication activities. Integrate more media coverage, advertising and communication activities to:
    - clearly communicate what the project is about, what it aims to achieve and how it is planning on doing that as well as to report on project implementation and show results that the project is achieving through time,
    - increase awareness on the project topic,
    - engage with the maximum number of stakeholders in the targeted markets,
    - motivate and encourage participants to implement demonstration pilots.

This will contribute to increase perception and information and foster behavioural changes that the project aims to achieve.

R5. At the start of a new project, UNIDO should make sure that all the necessary reporting structures are put together according to the plan and that capacity is built on how to apply the M&E plan.

R6. The PMU should compile and maintain a record of partnerships built throughout the project implementation and advertise those, as partnerships are key for the successful implementation of any UNIDO project. Partnerships with stakeholders from other areas than the biogas sector that have climate change as area of action can be important to sensitize new actors with whom the project may collaborate in the future.

Action followed: the National Water Agency started to take part of the Interministerial Unit, participating in the meetings held, and a partnership with SENAI (National Service of Industrial Training) to train the trainers and leave a legacy on knowledge share from the biogas trainings the project had provided in the previous years (PIR 2022).

R7. Given the opportunities that exist for biogas development in Brazil as well as across South America, the identified potential for scalability and replicability and the partnerships that are being established, there are opportunities for a follow up project. The RT recommends that the PMU together with the UNIDO HQ start exploring the development of a proposal for a follow-up project that makes use of the body of knowledge and partnerships already created by this Project to enlarge the scope in terms of type of waste to be used for biogas production as well as geographical coverage – across other Brazilian states and South American countries, most of which have a significant and very active agricultural sector.

Action followed: a concept note proposing a follow up project is being written and should be delivered in the upcoming months (PIR 2022).

Lessons learned

L1. Partnerships are key for an effective and efficient project implementation. It is important to understand the different partners to be involved in the project and appropriately choose how, when and in what way they should be involved.

L2. TOC methodology is a good tool to understand the overall impact of the project. When the project was designed, the TOC methodology was not that widely applied. The compilation of the TOC was helpful to understand the interconnection between the different activities and the activities' contribution towards the expected overall project impact. It was also a useful tool to assess the project design.

L3. M&E plan implementation training, indicators selection, and targets selection are very important to ensure that the project remains on track and that can actually provide the desired results.

L4. There is frequent variability in the political will and political agendas, which should be more thoroughly evaluated at the design stage within the risk analysis in order to mitigate its impact with regards to (i) delays in approval of a project and (ii) impact on the overall project execution.

6. Budget information

Table 1: UNIDO budget allocation at approval and expenditure

		Year	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**Total**
		TOTAL Project Budget	**313.500**	**1.170.000**	**1.918.500**	**1.781.500**	**1.247.000**	**569.500**	**7.000.000**
		%	**4%**	**17%**	**27%**	**25%**	**18%**	**8%**	**100%**
			GEF Grant Budget Component 1 (USD)						
Component 1 - Policy framework and information.	***BL***	**Type of Expense**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**Output Total**
Output 1.1.1 - Establishment of an inter-ministerial coordinating unit on biogas and biomethane market development receiving support from the Project.	*11*	International Experts		5.000					5.000
	15	Project Travel	3.000	5.000	6.000	6.000	5.000	5.000	30.000
	17	National Experts/Consultants	5.000	25.000	23.000	23.000	23.000	23.000	122.000
	21	Contractual Arrangement	2.500	5.000	5.000	5.000	5.000	3.000	25.500
	30	Train/Fellowship/Study							
	35	International Meeting							
	45	Equipment	5.000						5.000
	51	Other Direct Costs		500	500	500	500	500	2.500
		Output sub-total	**15.500**	**40.500**	**34.500**	**34.500**	**33.500**	**31.500**	**190.000**
Output 1.1.2 - Development of federal and state policies and programmes, and regulatory and financial instruments to facilitate biogas and biomethane market development based on agroindustrial organic waste.	*11*	International Experts		13.500	13.500	13.500	13.500	9.000	63.000
	15	Project Travel		5.000	5.000	5.000	5.000	5.000	25.000
	17	National Experts/Consultants	5.000	30.000	30.000	30.000	30.000	15.000	140.000
	21	Contractual Arrangement		50.000	50.000	35.000	16.000	11.000	162.000
	30	Train/Fellowship/Study		5.000	5.000	5.000	5.000		20.000
	35	International Meeting							
	45	Equipment							
	51	Other Direct Costs		2.000	2.000	2.000	2.000	2.000	10.000
		Output sub-total	**5.000**	**105.500**	**105.500**	**90.500**	**71.500**	**42.000**	**420.000**
Output 1.1.3 - Integration of biogas and biomethane	*11*	International Experts		10.000	10.000	10.000	5.000	1.000	36.000
	15	Project Travel		2.000	2.000	2.000	2.000	1.000	9.000

into federal and state-level energy and agriculture sector programmes.	*17*	National Experts/Consultants	3.000	20.000	20.00	19.000	18.000	10.000	90.000
	21	Contractual Arrangement		2.000	2.000	2.000	2.000	2.000	10.000
	30	Train/Fellowship/Study							
	35	International Meeting							
	45	Equipment							
	51	Other Direct Costs		1.000	1.000	1.000	1.000	1.000	5.000
		Output sub-total	**3.000**	**35.000**	**35.000**	**34.000**	**28.000**	**5.000**	**150.000**
Output 1.1.4 - Design of an MRV system for tracking of GHG emission reductions from anaerobic digestion in agro-industries.	*11*	International Experts		4.000	7.000	2.000	2.000		15.000
	15	Project Travel		2.000	2.000	2.000	2.000		8.000
	17	National Experts/Consultants		5.00	5.000				10.000
	21	Contractual Arrangement		25.000	15.000	5.000	5.000		50.000
	30	Train/Fellowship/Study							
	35	International Meeting		2.000	6.000	3.000	2.000		13.000
	45	Equipment							
	51	Other Direct Costs		1.000	1.000	1.000	1.000		4.000
		Output sub-total		**39.000**	**36.000**	**13.000**	**12.000**		**100.000**
Output 1.2.1 - Collection, validation and publication of technical, legal, economic, and other relevant information for biogas market development based on agroindustrial organic waste.	*11*	International Experts		25.000	25.000	25.000	5.000		80.000
	15	Project Travel		10.000	10.000	10.000	10.000		40.000
	17	National Experts/Consultants		30.000	30.000	10.000	10.000	5.000	85.000
	21	Contractual Arrangement		100.000	80.000	50.000	30.000		260.000
	30	Train/Fellowship/Study							
	35	International Meeting			35.000	10.000			45.000
	45	Equipment							
	51	Other Direct Costs		5.000	5.000	5.000	5.000	5.000	25.000
		Output sub-total		**170.000**	**185.000**	**110.000**	**60.000**	**10.000**	**535.000**
Output 1.2.2 - Operationalization of a Biogas Information Platform (BIP) to update, manage and disseminate	*11*	International Experts		5.000	5.000	5.000	5.000		20.000
	15	Project Travel		4.000	4.000	4.000	4.000	3.000	19.000
	17	National Experts/Consultants		25.000	25.000	20.000	20.000	10.000	100.000
	21	Contractual Arrangement		15.000	48.000	48.000	15.000	15.000	141.000

validated information to stakeholders.	*30*	Train/Fellowship/Study							
	35	International Meeting							
	45	Equipment		5.000	5.000	5.000			15.000
	51	Other Direct Costs		1.000	1.000	1.000	1.000	1.000	5.000
		Output sub-total		**55.000**	**88.000**	**83.000**	**45.000**	**29.000**	**300.000**
TOTAL Component 1			**23.500**	**445.000**	**484.000**	**365.000**	**250.000**	**127.500**	**1.695.000**

			GEF Grant Budget Component 2 (USD)						
Component 2 - Biogas and biomethane technology and value chain.	***BL***	**Type of Expense**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**Output Total**
Output 2.1.1 - Validation of biogas and biomethane business models for agroindustries, including associative biogas production schemes.	*11*	International Experts		15.000	15.000	10.000			40.000
	15	Project Travel		3.000	3.000	3.000			9.000
	17	National Experts/Consultants		5.000	5.000	4.500			14.500
	21	Contractual Arrangement		50.000	35.000	20.000			105.000
	30	Train/Fellowship/Study							
	35	International Meeting							
	45	Equipment							
	51	Other Direct Costs		500	500	500			1.500
		Output sub-total		**73.500**	**58.500**	**38.000**			**170.000**
Output 2.1.2 - Preparation of recommendations and guidelines for standardization of technical designs, feedstock, equipment, and operational procedures for biogas production schemes.	*11*	International Experts		4.000	6.000	6.000	5.000	2.500	23.500
	15	Project Travel		5.000	5.000	5.000	5.000	5.000	25.000
	17	National Experts/Consultants							
	21	Contractual Arrangement	31.000	39.000	39.000	39.000	39.000	20.000	207.000
	30	Train/Fellowship/Study							
	35	International Meeting			10.000	10.000			20.000
	45	Equipment							
	51	Other Direct Costs		1.000	1.000	1.000	1.000	500	4.500
		Output sub-total	**31.000**	**49.000**	**61.000**	**61.000**	**50.000**	**28.000**	**280.000**
Output 2.1.3 - Adaptation of equipment, components and processes for biogas and biomethane production to local socio-economic	*11*	International Experts		25.000	32.000	32.000	32.000	5.600	126.600
	15	Project Travel		4.000	4.000	4.000	4.000	1.000	17.000
	17	National Experts/Consultants							
	21	Contractual Arrangement	180.000	250.000	320.000	280.000	260.000	63.000	1.353.000
	30	Train/Fellowship/Study							

and technical conditions ("tropicalization").	*35*	International Meeting							
	45	Equipment			20.000	20.000	20.000		60.000
	51	Other Direct Costs		1.000	4.000	4.000	4.000	400	13.400
		Output sub-total	**180.000**	**280.000**	**380.000**	**340.000**	**320.000**	**70.000**	**1.570.000**
Output 2.1.4 - Implementation of training, capacity building and promotional activities for biogas producers, project developers and other stakeholders.	*11*	International Experts		5.000	5.000	5.000	5.000	5.000	25.000
	15	Project Travel							
	17	National Experts/Consultants							
	21	Contractual Arrangement	23.000	39.000	39.000	39.000	39.000	3.500	182.500
	30	Train/Fellowship/Study			5.000	5.000			10.000
	35	International Meeting			5.000	5.000			10.000
	45	Equipment							
	51	Other Direct Costs		500	500	500	500	500	2.500
		Output sub-total	**23.000**	**44.500**	**54.500**	**54.500**	**44.500**	**9.000**	**230.000**
Output 2.1.5 - Development and approval of market introduction strategies and business models for biogas-based electricity and biomethane by electricity and gas companies in Southern Brazil.	*11*	International Experts		20.000	20.000	20.000	15.000	10.000	85.000
	15	Project Travel							
	17	National Experts/Consultants							
	21	Contractual Arrangement	30.000	35.000	35.000	50.000	23.000	12.000	185.000
	30	Train/Fellowship/Study							
	35	International Meeting							
	45	Equipment							
	51	Other Direct Costs		1.000	1.000	1.000	1.000	1.000	5.000
		Output sub-total	**30.000**	**56.000**	**56.000**	**71.000**	**39.000**	**23.000**	**275.000**
		TOTAL Component 2	**264.000**	**503.000**	**610.000**	**564.500**	**453.500**	**130.000**	**2.525.000**

			GEF Grant Budget Component 3 (USD)						
Component 3 - Demonstration and optimization of biogas projects.	***BL***	**Type of Expense**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**Output Total**
Output 3.1.1 - Selection and implementation of demonstration pilots for biogas production and utilization based on agroindustrial organic waste in Southern Brazil.	*11*	International Experts		45.000	45.000	45.000	20.000	10.000	165.000
	15	Project Travel		5.000	5.000	5.000	5.000	2.500	22.500
	17	National Experts/Consultants		15.000	15.000	15.000	15.000	5.000	65.000
	21	Contractual Arrangement		50.000	270.000	230.000	50.000	14.500	614.500
	30	Train/Fellowship/Study							
	35	International Meeting							
	45	Equipment			50.000	50.000	20.000		120.000
	51	Other Direct Costs			5.000	5.000	2.000	1.000	13.000
		Output sub-total		**115.000**	**390.000**	**350.000**	**112.000**	**33.000**	**1.000.000**
Output 3.1.2 - Investment and technical services to ensure operational performance and sustainability of the installed demonstration pilots.	*11*	International Experts		5.000	15.000	15.000	10.000	5.000	50.000
	15	Project Travel			5.000	5.000	5.000	5.000	20.000
	17	National Experts/Consultants		5.000	10.000	10.000	10.000	10.000	45.000
	21	Contractual Arrangement			230.000	190.000	180.000	37.500	637.500
	30	Train/Fellowship/Study							
	35	International Meeting							
	45	Equipment			75.000	50.000	50.000		175.000
	51	Other Direct Costs		2.500	5.000	5.000	5.000	5.000	22.500
		Output sub-total		**12.500**	**340.000**	**275.000**	**260.000**	**62.500**	**950.000**
Output 3.1.3 - Monitoring of operational aspects and performance of established pilots, including systematization of lessons learned and	*11*	International Experts				15.000	12.500	2.500	30.000
	15	Project Travel				5.000	5.000	4.000	14.000
	17	National Experts/Consultants				20.000	20.000	20.000	60.000
	21	Contractual Arrangement				40.000	40.000	30.000	110.000
	30	Train/Fellowship/Study							

recommendations for enhancement.	*35*	International Meeting							
	45	Equipment				2.500	2.500		5.000
	51	Other Direct Costs				500	500		1.000
		Output sub-total				**83.000**	**80.500**	**56.500**	**220.000**
TOTAL Component 3				**127.500**	**730.000**	**708.000**	**452.500**	**152.000**	**2.170.000**

			GEF Grant Budget Component 4 (USD)						
Component 4 - Monitoring and Evaluation.	***BL***	**Type of Expense**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**Output Total**
Output 4.1.1 - Monitoring of project progress and compliance with UNIDO and GEF guidelines and safeguards on social (including gender) and environmental impact.	*11*	International Experts	5.000	7.000	7.000	7.000	7.000	2.000	35.000
	15	Project Travel	1.000	5.000	5.000	5.000	5.000	4.000	25.000
	17	National Experts/Consultants	2.000	11.000	11.000	7.000	9.000	5.000	45.000
	21	Contractual Arrangement		5.000	5.000	3.500	3.500	500	17.500
	30	Train/Fellowship/Study							
	35	International Meeting							
	45	Equipment							
	51	Other Direct Costs		500	500	500	500	500	2.500
		Output sub-total	**8.000**	**28.500**	**28.500**	**23.000**	**25.000**	**12.000**	**125.000**
Output 4.1.2 – Implementation of mid-term review.	*11*	International Experts				25.000			25.000
	15	Project Travel				10.000			10.000
	17	National Experts/Consultants				20.000			20.000
	21	Contractual Arrangement							
	30	Train/Fellowship/Study							
	35	International Meeting							
	45	Equipment							
	51	Other Direct Costs							
		Output sub-total				**55.000**			**55.000**
Output 4.1.3 - Implementation of independent Terminal Evaluation.	*11*	International Experts						45.000	45.000
	15	Project Travel						20.000	20.000
	17	National Experts/Consultants						33.000	33.000
	21	Contractual Arrangement							
	30	Train/Fellowship/Study							
	35	International Meeting							

	45	Equipment							
	51	Other Direct Costs						2.000	2.000
		Output sub-total						**100.000**	**100.000**
TOTAL Component 4			**8.000**	**28.500**	**28.500**	**78.000**	**25.000**	**112.000**	**280.000**

			GEF Grant Budget Project Cost (USD)						
Project Management Cost (PMC).	***BL***	**Type of Expense**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**Output Total**
Project Management Cost (PMC).	*11*	International Experts							
	15	Project Travel	1.500	4.500	5.500	5.500	5.500	2.500	25.000
	17	National Experts/Consultants	15.000	60.000	60.000	60.000	60.000	45.000	300.000
	21	Contractual Arrangement							
	30	Train/Fellowship/Study							
	35	International Meeting							
	45	Equipment	1.000	1.000					2.000
	51	Other Direct Costs	500	500	500	500	500	500	3.000
		Output sub-total	**18.000**	**66.000**	**66.000**	**66.000**	**66.000**	**48.000**	**330.000**
TOTAL Component PMC			**18.000**	**66.000**	**66.000**	**66.000**	**66.000**	**48.000**	**330.000**
TOTAL Project Budget			**313.500**	**1.170.000**	**1.918.500**	**1.781.500**	**1.247.000**	**569.500**	**7.000.000**

Source: Project document and UNIDO Project Management ERP database as of 14/08/2018.

Table 2. Co-financing plan summary - Outcome breakdown

Project outcomes/components	Funding partner (GEF/other) (USD)	Co-Financing (USD)	Total (USD)
Project Preparation	199,261.03	0	199,261.03
Outcome 1.1	860,000	5,800,000	6,660,000
Outcome 1.2	835,000	3,470,000	4,305,000
Outcome 2.1	2,525,000	14,924,070	17,449,070
Outcome 3.1	2,170,000	33,170,000	35,340,000
Outcome 4.1	280,000	228,000	508,000
PMC	330,000	800,000	1,130,000
Total Project Costs	**7,199,261.03**	**58,392,070**	**65,591,331.03**

Source: Project document

Table 3. Co-financing source breakdown

Source of Co-financier	Name of Co-financier	In-kind	Total Amount (USD)
Recipient Government	Federal Ministry of Science, Technology, Innovation and Communication (MCTIC)	Grants	700,000.00
Recipient Government	Federal Ministry of Science, Technology, Innovation and Communication (MCTIC)	In-Kind	1,300,000.00
Recipient Government	Federal Ministry of Mines and Energy (MME)	In-Kind	2,237,064.84
Recipient Government	Federal Ministry of Environment (MMA)	In-Kind	1,101,425.00
Recipient Government	Federal Ministry of Agriculture, Livestock and Food Supply (MAPA)	Loans	9,000,000.00
Others	Itaipu Binacional	Grants	18,500,000.00
Others	Itaipu Technology Park Foundation (FPTI)	Grants	559,052.56
Recipient Government	Companhia Paranaense de Gás (Compagas)	In-Kind	500,301.00
Recipient Government	Companhia de Gás do Estado do Rio Grande do Sul (Sulgás)	Equity	2,225,967.50
Recipient Government	Companhia Paranaense de Energia (COPEL) – Entre Rios	Grants	5,467,298.13
Recipient Government	Banco do Brasil	Equity	1,589,976.79
Private Sector	Cooperativa Agroindustrial Lar	Equity	1,112,983.75
Private Sector	GEO Energética	In-Kind	10,000,000.00
Recipient Government	Empresa Brasileira de Pesquisa Agropecuária (Embrapa)	In-Kind	2,770,000.00
CSO	Associação Brasileira de Biogás e Biometano (Abiogás)	In-Kind	100,000.00
Others	Fundação Getúlio Vargas (FGV)	Equity	1,000,000.00
GEF Agency	UNIDO	In-Kind	100,000.00
GEF Agency	UNIDO	Grants	128,000.00
Total Co-financing (USD)			**58,392,069.57**

Source: Project document

II. SCOPE AND PURPOSE OF THE EVALUATION

The purpose of the evaluation is to independently assess the project to help UNIDO improve performance and results of ongoing and future programmes and projects. The terminal evaluation (TE) will cover the whole duration of the project from its starting date in September 2025 to the estimated completion date in December 2025.

The evaluation has two specific objectives:

(i) Assess the project performance in terms of relevance, effectiveness, efficiency, sustainability, coherence, and progress to impact; and
(ii) Develop a series of findings, lessons and recommendations for enhancing the design of new and implementation of ongoing projects by UNIDO.

III. EVALUATION APPROACH AND METHODOLOGY

The TE will be conducted in accordance with the UNIDO Evaluation Policy[2], the UNIDO Guidelines for the Technical Cooperation Project and Project Cycle[3], and UNIDO Evaluation Manual. In addition, the GEF Guidelines for GEF Agencies in Conducting Terminal Evaluations, the GEF Monitoring and Evaluation Policy and the GEF Minimum Fiduciary Standards for GEF Implementing and Executing Agencies will be applied.

The evaluation will be carried out as an independent in-depth exercise using a participatory approach whereby all key parties associated with the project will be informed and consulted throughout the process. The evaluation team leader will liaise with the UNIDO Independent Evaluation Unit (EIO/IEU) on the conduct of the evaluation and methodological issues.

The evaluation will use a theory of change approach[4] and mixed methods to collect data and information from a range of sources and informants. It will pay attention to triangulating the data and information collected before forming its assessment. This is essential to ensure an evidence-based and credible evaluation, with robust analytical underpinning.

The theory of change will depict the causal and transformational pathways from project outputs to outcomes and longer-term impacts. It also identifies the drivers and barriers to achieving results. Learning from this analysis will be useful for the design of future projects so that the management team can effectively use the theory of change to manage the project based on results.

1. Data collection methods

Following are the main instruments for data collection:

(a) **Desk and literature review** of documents related to the project, including but not limited to:
- The original project document, monitoring reports (such as progress and financial reports, mid-term review report, technical reports, back-to-office mission report(s), end-of-contract report(s) and relevant correspondence.
- Notes from the meetings of committees involved in the project.

[2] UNIDO. (2021). Director General's Bulletin: Evaluation Policy (UNIDO/DGB/2021/11).
[3] UNIDO. (2006). Director-General's Administrative Instruction No. 17/Rev.1: Guidelines for the Technical Cooperation Programme and Project Cycle (DGAI.17/Rev.1, 24 August 2006).
[4] For more information on Theory of Change, please see UNIDO Evaluation Manual.

(b) **Stakeholder consultations** will be conducted through structured and semi-structured interviews and focus group discussions. Key stakeholders to be interviewed include:
- UNIDO Management and staff involved in the project; and
- Representatives of funding partners, counterparts, final beneficiaries, and other stakeholders.

(c) **Field visit** to project sites in Brazil.
- On-site observation of results achieved by the project, including interviews of actual and potential project beneficiaries.
- Interviews with the relevant UN Resident Coordinator and UNIDO Country offices' representative to the extent that he/she was involved in the project and the project's management members and the various national [and sub-regional] authorities dealing with project activities as necessary.

(d) **Online data collection** methods will be used to the extent possible.

2. Key evaluation questions and criteria

The key evaluation questions (corresponding to the six OECD/DAC criteria[5]) are the following:

1) Relevance: Is the intervention doing the right things? To what extent do the project/programme's objectives respond to beneficiaries, global, country, and partner/institution needs, policies, and priorities, and continue to do so if circumstances change?
2) Coherence: How well does the intervention fit? How compatible is the project/programme with other interventions in the country, sector or institution?
3) Effectiveness: Is the project/programme achieving its objectives?
4) Efficiency: How well are resources being used? Has the project/programme delivered results in an economic and timely manner?
5) Impact: What difference does the intervention make? To what extent has the project/programme generated significant positive or negative, intended or unintended, higher-level effects? Has the project/programme had transformative effects? To what extend did the project contribute to SDG(s), intended or unintended?
6) Sustainability: Will the benefits last? To what extent will the net benefits of the project/programme continue, or are likely to continue?

The table below provides the key evaluation criteria to be assessed by the evaluation. The detailed questions to assess each evaluation criterion are in Annex 2 of UNIDO Evaluation Manual.

Table 5. Project evaluation criteria

#	Evaluation criteria	Mandatory rating
A	**Progress to Impact**	**Yes**
B	**Project design**	**Yes**
1	• Overall design	Yes
2	• Project results framework/log frame	Yes
C	**Project performance and progress towards results**	Yes
1	• Relevance	Yes
2	• Coherence	Yes

[5]https://www.oecd.org/en/topics/sub-issues/development-co-operation-evaluation-and-effectiveness/evaluation-criteria.html

3	• Effectiveness	Yes
4	• Efficiency	Yes
5	• Sustainability of benefits	Yes
D	**Gender mainstreaming**	Yes
E	**Project implementation management**	Yes
1	• Results-based management (RBM)	Yes
2	• Monitoring and Evaluation, Reporting	Yes
F	**Performance of partners**	
1	• UNIDO	Yes
2	• National counterparts	Yes
3	• Implementing partner (if applicable)	Yes
4	• Funding partner	Yes
G	**Environmental and Social Safeguards (ESS)[6], Disability and Human Rights**	Yes
1	• Environmental Safeguards	Yes
2	• Social Safeguards, Disability and Human Rights	Yes
H	**Overall Assessment**	Yes

Performance of partners

The assessment of performance of partners will ***include*** the quality of implementation and execution of the GEF Agencies and project executing entities in discharging their expected roles and responsibilities. The assessment will take into account the following:

- Quality of Implementation, e.g. the extent to which the agency delivered effectively, with focus on elements that were controllable from the given implementing agency's perspective and how well risks were identified and managed.
- Quality of Execution, e.g. the appropriate use of funds, procurement and contracting of goods and services.

The terminal evaluation will assess the following topics, for which ***ratings are not required***:

a. **Need for follow-up**: e.g. in instances of financial mismanagement, unintended negative impacts or risks.

b. **Materialization of co-financing**: e.g. the extent to which the expected co-financing materialized, whether co-financing was administered by the project management or by some other organization; whether and how shortfall or excess in co-financing affected project results. At the terminal evaluation point, the Project Manager will update table 3 on co-financing and add two more columns to submit to the evaluation team: 1) Amount of co-financing materialized at mid-term review (MTR); and 2) Amount of co-financing materialized at terminal evaluation (TE). The evaluation team has the responsibility to validate and verify the co-financing type and amount

[6] Appropriate environmental and social safeguards were addressed in the project's design and implementation, e.g. preventive or mitigation measures for any foreseeable adverse effects and/or harm to environment or to any stakeholder. Refer to AI/2021/03 - UNIDO Environmental and Social Safeguards Policies and Procedures; https://www.thegef.org/sites/default/files/documents/gef_environmental_social_safeguards_policy.pdf.

materialized. This table MUST BE included in the terminal evaluation report, as per requirement by the GEF.[7]

c. **Updated Monitoring and Assessment tool of core-indicators:** The project management team will submit to the evaluation team the up-to-date core-indicators or tracking tool (for older projects) whereby all the information on the project results and benefits promised at approval and actually achieved at completion point must be presented. The evaluation team has the responsibility to validate and verify updated core-indicators during the evaluation process. This table MUST BE included in the terminal evaluation report, as per requirement by the GEF.

d. **Knowledge Management Approach:** Information on the project's completed Knowledge Management Approach that was approved at CEO Endorsement/Approval.

3. Rating system

In line with the practice adopted by many development agencies, the UNIDO Independent Evaluation Unit uses an ordinal six-point rating system, where highly satisfactory is the highest score (6) and highly unsatisfactory is the lowest (1) as per the table below.

Table 6. Project rating criteria

Score	Definition
Highly satisfactory (6)	Level of achievement presents no shortcomings (90% - 100% achievement rate of planned expectations and targets).
Satisfactory (5)	Level of achievement presents minor shortcomings (70% - 89% achievement rate of planned expectations and targets).
Moderately satisfactory (4)	Level of achievement presents moderate shortcomings (50% - 69% achievement rate of planned expectations and targets).
Moderately unsatisfactory (3)	Level of achievement presents some significant shortcomings (30% - 49% achievement rate of planned expectations and targets).
Unsatisfactory (2)	Level of achievement presents major shortcomings (10% - 29% achievement rate of planned expectations and targets).
Highly unsatisfactory (1)	Level of achievement presents severe shortcomings (0% - 9% achievement rate of planned expectations and targets).

[7] https://www.gefieo.org/sites/default/files/documents/evaluations/program-evaluations-2023.pdf, para. 44.

IV. EVALUATION PROCESS

The evaluation will be conducted from September 2025 to December 2025. The evaluation will be implemented in five phases, which are not strictly sequential, but in many cases iterative, conducted in parallel and partly overlapping:

1) Inception phase: The evaluation team will prepare the inception report providing details on the evaluation methodology and include an evaluation matrix with specific issues for the evaluation to address; the specific site visits will be determined during the inception phase, taking into consideration the findings and recommendations of the mid-term review.
2) Desk review and data analysis;
3) Interviews, survey and literature review;
4) Country visits (whenever possible) and debriefing to key relevant stakeholders in the field;
5) Data analysis, report writing and online debriefing to UNIDO staff located at the Headquarters; and
6) Final report issuance and distribution with management response sheet, and publication of the final evaluation report on the UNIDO website.

V. TIME SCHEDULE AND DELIVERABLES

The evaluation is scheduled to take place from September 2025 to December 2025. The evaluation field mission is tentatively planned for October 2025. At the end of the field mission, the evaluation team will present the preliminary findings for key relevant stakeholders involved in this project in the country. The tentative timelines are provided in the table below.

After the evaluation field mission, the evaluation team leader will arrange a virtual debriefing and presentation of the preliminary findings of the terminal evaluation with UNIDO Headquarters. The draft TE report will be submitted 4 to 6 weeks after the end of the mission. The draft TE report is to be shared with the UNIDO Project Manager (PM), UNIDO Independent Evaluation Unit, the UNIDO GEF Coordinator and GEF OFP and other stakeholders for comments. The Evaluation team leader is expected to revise the draft TE report based on the comments received, edit the language and submit the final version of the TE report in accordance with UNIDO EIO/IEU standards.

Table 7. Tentative timelines

Timelines	Tasks
September 2025	Desk review and writing of inception report.
September 2025	Online briefing with UNIDO project manager and the project team based at Headquarters in Vienna.
October 2025	Field visit to Brazil (sites to be determined during inception); debriefing to stakeholders in Brazil.
October 2025	Online debriefing to UNIDO staff located at Headquarters Preparation of first draft evaluation report.
November 2025	Internal peer review of the report by UNIDO's Independent Evaluation Unit and other stakeholder comments to draft evaluation report.
December 2025	Final evaluation report.

VI. EVALUATION TEAM COMPOSITION

The evaluation team will be composed of one international evaluation consultant acting as the team leader and one national evaluation consultant. The evaluation team members will possess a mixed skill set and experience including evaluation, relevant technical expertise, social and environmental safeguards and gender. Both consultants will be contracted by UNIDO.

The tasks of each team member are specified in the job descriptions annexed to these terms of reference. The evaluation team is required to provide information relevant for follow-up studies, including terminal evaluation verification on request to the GEF partnership up to three years after completion of the terminal evaluation.

According to UNIDO Evaluation Policy, members of the evaluation team must not have been directly involved in the design and/or implementation of the project under evaluation.

The UNIDO Project Manager and the project management team in Brazil will support the evaluation team. The UNIDO GEF Coordinator and GEF Operational Focal Point (OFP) will be briefed on the evaluation and provide support to its conduct. GEF OFP(s) will, where applicable and feasible, also be briefed and debriefed at the start and end of the evaluation mission.

An evaluation manager from UNIDO Independent Evaluation Unit will provide technical backstopping to the evaluation team and ensure the quality of the evaluation. The UNIDO Project Manager and national project teams will act as resource persons and provide support to the evaluation team and the evaluation manager.

VII. REPORTING

Inception report

These Terms of Reference (TOR) provide some information on the evaluation methodology, but this should not be regarded as exhaustive. After reviewing the project documentation and initial interviews with the project manager, the Team Leader will prepare, in collaboration with the team member, a short inception report that will operationalize the TOR relating to the evaluation questions and provide information on what type and how the evidence will be collected (methodology). It will be discussed with and approved by the responsible UNIDO Evaluation Manager.

The Inception Report will focus on the following elements: preliminary project theory model(s); elaboration of evaluation methodology including quantitative and qualitative approaches through an evaluation framework ("evaluation matrix"); Unit of work between the evaluation team members; field mission plan, including places to be visited, people to be interviewed and possible surveys to be conducted; and a debriefing and reporting timetable[8].

Evaluation report format and review procedures

The draft report will be delivered to UNIDO Independent Evaluation Unit (with a suggested report outline) and circulated to UNIDO staff and key stakeholders associated with the project for factual validation and comments. Any comments or responses, or feedback on any errors of fact to the draft report will be sent to UNIDO's Independent Evaluation Unit for collation and onward transmission to the evaluation team who will be advised of any necessary revisions. On the basis of this feedback, and taking into consideration the comments received, the evaluation team will prepare the final version of the terminal evaluation report.

The evaluation team will present its preliminary findings to the local stakeholders at the end of the field visit and take into account their feedback in preparing the evaluation report. A presentation of preliminary findings will take place at UNIDO HQ afterwards.

The evaluation report should be brief, to the point and easy to understand. It must explain the purpose of the evaluation, what was evaluated, and the methods used. The report must highlight any methodological limitations, identify key concerns and present evidence-based findings, consequent

[8] The evaluator will be provided with a Guide on how to prepare an evaluation inception report prepared by UNIDO Independent Evaluation Unit.

conclusions, recommendations and lessons. The report should provide information on when the evaluation took place, the places visited, who was involved and be presented in a way that makes the information accessible and comprehensible. The report should include an executive summary that encapsulates the essence of the information contained in the report to facilitate dissemination and distillation of lessons.

Findings, conclusions and recommendations should be presented in a complete, logical and balanced manner. The evaluation report shall be written in English and follow the outline given by UNIDO Independent Evaluation Unit.

VIII. QUALITY ASSURANCE

All UNIDO evaluations are subject to quality assessments by UNIDO Independent Evaluation Unit. Quality assurance and control is exercised in different ways throughout the evaluation process (briefing of consultants on methodology and process of UNIDO Independent Evaluation Unit, providing inputs regarding findings, lessons learned and recommendations from other UNIDO evaluations, review of inception report and evaluation report by UNIDO's Independent Evaluation Unit).

The quality of the evaluation report will be assessed and rated against the criteria set forth in the Checklist on evaluation report quality. The applied evaluation quality assessment criteria are used as a tool to provide structured feedback. UNIDO Independent Evaluation Unit should ensure that the evaluation report is useful for UNIDO in terms of organizational learning (recommendations and lessons learned) and is compliant with UNIDO's evaluation policy and these terms of reference. The draft and final evaluation report are reviewed by UNIDO Independent Evaluation Unit, which will submit the final report to the GEF Evaluation Office and circulate it within UNIDO together with a management response sheet.

Annex 1: Project Logical Framework

UNIDO/GEF Project: Biogas applications for the Brazilian agro-industry.					
Applicable GEF Strategic Objective and Program: CCM-1 program 1					
Applicable GEF Expected Outcomes: Outcome A. Accelerated adoption of innovative technologies and management practices for GHG emission reduction and carbon sequestration. Outcome B. Policy, planning and regulatory frameworks foster accelerated low GHG development and emissions mitigation.					
Applicable GEF Outcome Indicators: Indicator 1. Tons GHG reduced or avoided. Indicator 2. Volume of investment mobilized and leveraged by GEF projects for low GHG development.[9] Indicator 5. Degree of support for low GHG development in the policy, planning and regulatory framework.					
Project Objective	To reduce GHG emissions and dependence on fossil fuels through the promotion of energy solutions for productive uses, including biogas-based mobility, within agro-industrial value chains and by strengthening of national biogas technology supply chains.				
	Indicator	Baseline value	Target value (EOP)	Means of verification	Assumptions
	A (GEF Indicator 1). Total direct GHG emission reductions (ton CO_2eq); B (GEF Indicator 2). Volume of investment mobilized (US$); C (GEF Indicator 5) Degree of support for low GHG development in the policy, planning and regulatory framework. [10] D. Annual biogas production pilot plants (m3/yr); E. Number of new jobs created in biogas market (m; f).	A. No reductions (0 ton CO_2eq); B. No investment mobilized (US$ 0) C. Level "6" (Sub-sector and institutional plans reflect key policy targets and priority actions). D. No energy prod-uction (0 MWh/yr); E. No new jobs created (0m; 0f).	A. 535,000 ton CO_2eq. B. Investment mobilized (US$32,170,000). C. Level "8" (Strong policy and regulatory frameworks designed with incentive based mechanisms). D. 15.7 million MWh/yr; E. New jobs created (24m; 16f).		
Component 1.	Policy framework and information.				
	Indicator	Baseline value	Target value (EOP)	Means of verification	Assumptions

[9] Disaggregated between public and private investments.
[10] Measured by a qualitative rating 1..10, according to GEF 6 Programming Directions, Annex II, p.83.

Outcome 1.1 Enhanced inter-ministerial coordination and implementation of policies, regulation and instruments to promote the adoption of biogas and biomethane energy systems based on agroindustrial organic waste.	(1.1) a) Number of biogas and biomethane policies and regulations enhanced (-); b) Funding earmarked for biogas investments under public programmes (US$/yr).	a) 0; b) 0 US$/yr	a) 3 policies and instruments; b) 10 M US$/yr	Official publications, project reports, interviews with federal and state authorities.	Sustained institutional and policy support from involved ministries and states. Project activities are implemented as expected.
1.1.1 Establishment of an inter-ministerial coordinating unit on biogas and biomethane market development receiving support from the Project.	(1.1.1) Number of meetings held during project timespan (#/yr).	0 meetings/yr	3 meetings/yr	Project reports, official reports, interviews with key ministry staff.	Sustained institutional support by key ministries. Adequate political prioritization of biogas and biomethane at federal level.
1.1.2 Updating and detailing of federal and state policies and programmes, and regulatory and financial instruments to facilitate biogas and biomethane market development based on agroindustrial organic waste.	(1.1.2) a) Number of biogas policies and regulations enhanced (-); b) Number of financial instruments adapted to biogas (-).	a) 0 policies and regulatory instruments; b) 0 financial instruments	a) 3 policies and instruments; b) 1 financial instrument adapted.	Official publications, project reports	Sustained institutional and policy support from involved ministries and states. Project activities are implemented as expected.
1.1.3 Integration of biogas and biomethane into federal and state-level energy and agriculture sector programmes.	(1.1.3) Number of sector programmes and plans specifically promoting biogas and biomethane investments (-);	0 programmes	3 programmes	Official publications, project reports	Sustained institutional and policy support from involved ministries and states. Project activities are implemented as expected.
1.1.4 Design of an MRV system for tracking of GHG emission reductions from anaerobic digestion in agro-industries.	(1.1.4) Delivery of envisaged MRV systems for biogas plants.	Not implemented	MRV system implemented	Official publications, project reports	Sustained institutional and policy support from involved ministries and states. Project activities are implemented as expected.
Outcome 1.2 Information on biogas and biomethane technology and market development updated, consolidated and made accessible to public and private stakeholders.	(1.2) a) Number of information packages delivered (scale 0…4); b) Sustainable operation of Biogas Information Platform (BIP) (yes/no)	a) 0; b) no BIP in place	a) total of 10 packages delivered; b) BIP operational	Official publications, project reports, interviews with federal and state authorities.	Sustained institutional and policy support from involved ministries and states. Project activities are implemented as expected.

1.2.1 Collection, validation and publication of technical, legal, economic, and other relevant information for biogas market development based on agroindustrial organic waste.	(1.2.1) Number of information packages with validated information on biogas and biomethane delivered per year (#/yr).	0 packages/yr	2 packages/yr;	Project reports, sector reports, academic publications	Project activities are implemented as expected. Stakeholders and sector agencies are able and willing to share information and data.
1.2.2 Operationalization of a Biogas Information Platform (BIP) to update, manage and disseminate validated information to stakeholders.	(1.2.2) a) Status of Biogas Information Platform (BIP); b) Number of information requests to BIP (1/yr).	a) not implemented; b) 0 requests per year	a) implemented; b) 50 requests per year.	Project reports, sector reports, interviews	Project activities are implemented as expected. Stakeholders and sector agencies are able and willing to share information and data. Sector stakeholders are willing to maintain the BIP or pay for the services delivered.
Component 2.	Biogas and biomethane technology and value chain.				
	Indicator	Baseline value	Target value (EOP)	Means of verification	Assumptions
Outcome 2.1 Strengthening of the biogas and biomethane value chain by promotion of cost-effective, standardized technologies, consolidation of market strategies and business models, and transfer of know-how and skills to project developers and other stakeholders.	(2.1) a) Share of biogas projects implementing standardized technologies and best practices (%); b) Number of energy sector companies delivering biogas-based electricity and biomethane (-);	a) 0%; b) 0	a) 67%; b) 3 companies	project reports, sector information	Sustained interest by national and foreign stakeholders, including businesses, in biogas and biomethane development. Encouraging business environment in Brazil.
2.1.1 Validation of biogas and biomethane business models for agroindustries, including associative biogas production schemes.	(2.1.1) Delivery status of reports	No reports delivered	Reports delivered	Project reports, sector information	Baseline information is available and made accessible to the Project. Project activities are implemented as expected.
2.1.2 Preparation of recommendations and guidelines for standardization of technical designs, feedstock, equipment, and operational procedures for biogas production schemes.	(2.1.2) Delivery status of recommendations and guidelines (yes/no).	Recommendations not delivered	Recommendations delivered	Project reports, sector information	Sustained interest by key stakeholders in biogas and biomethane development.
2.1.3 Adaptation of equipment, components and processes for biogas and biomethane production to local	(2.1.3) a) Number of produced proposals and concepts for technology adaptation (-);	a) 0;	a) 8 (sex-disaggregated data to be recorded);	Project reports; interviews with	Sustained interest by national and foreign stakeholders, including businesses, in biogas and biomethane development.

socio-economic and technical conditions ("tropicalization").	b) Percentage of technological issues and components successfully improved (%); c) Number of industry partnerships in biogas and biomethane technology established (-).	b) 0%; c) 0	b) 67%; c) 5 partnerships	proponents; PSC minutes; sector reports	Project activities are implemented as expected.
2.1.4 Implementation of training, capacity building and promotional activities for biogas producers, project developers and other stakeholders.	(2.1.4) a) Annual number of training events held (#/yr); b) Number of biogas professionals trained per year (m;f, #/yr).	a) 0; b) 0m, 0f per year	b) 1 event/yr; c) 30m; 20f per year	project reports, sector information	Sustained interest by key stakeholders in biogas and biomethane development.
2.1.5 Development and approval of market introduction strategies and business models for biogas-based electricity and biomethane by electricity and gas companies in Southern Brazil.	(2.1.5) Number of market introduction strategy documents and action plans (-).	No strategies (0)	At least 3 strategies and action plans delivered	Project reports, sector information, corporate business reports;	Sustained interest by key stakeholders in biogas and biomethane development. Project activities are implemented as expected.
Component 3.	Demonstration and optimization of biogas projects.				
	Indicator	Baseline value	Target value (EOP)	Means of verification	Assumptions
Outcome 3.1 Demonstration and optimization of the technical and economic feasibility of biogas and biomethane production and utilization based on agroindustrial organic waste.	(3.1) a) Technical performance level (monitored biogas production / projected biogas production), per project; b) Operational cost coverage rate (%) (financial revenues / operational costs), per project; c) Number of people (m, f) benefitting directly from delivered investments (-; m/f).	a) Not defined; b) Not defined; c) 0m; 0f.	a) >80% level, per pilot project b) 100% coverage, per pilot project; c) 120 m; 80 f.	Project reports, interviews with stakeholders; project monitoring data; sector reports	Sustained interest by regional authorities and key stakeholders in bioenergy development. Project activities are implemented as expected.
3.1.1 Verification and implementation of demonstration pilots for biogas production and utilization based on agroindustrial organic waste in Southern Brazil.	(3.1.1) a) Number of projects approved (-); b) Investment by project partners in pilot project installations (US$)	a) 0 pilot projects; b) US$ 0	a) 4 pilot projects; b) US$32,170,000.	Project report, interviews with stakeholders, model contracts and protocols	Project activities are implemented as expected. Sustained interest by key stakeholders in biogas development.

3.1.2 Investment and technical services to ensure operational performance and sustainability of the installed demonstration pilots.	(3.1.2) a) Average time between project delivery and satisfactory operation (months, per pilot project); b) Additional investment needed for satisfactory project operation (% of initial CAPEX).	a) 0; b) Not defined	a) < 18 months; b) < 20% (average).	Project reports; project monitoring data; interviews with stakeholders	Project activities are implemented as expected.
3.1.3 Monitoring of operational aspects and performance of established pilots, including systematization of lessons learned and recommendations for enhancement.	(3.1.3) a) Annual production of biogas (m3/yr, per pilot project); b) Unscheduled down-time per year (hour/yr, per pilot project); c) Delivery status of report with lessons learned and recommendations (yes/no).	a) 0 m3 biogas /yr; b) Not defined; c) No report delivered.	b) 15.7 m3 biogas/ yr (total); b) <100 hours/yr, per pilot; c) Report delivered.	Project reports; field inspections; project monitoring data; interviews with stakeholders	Project activities are implemented as expected. Sustained interest by key stakeholders in biogas development.

Annex 2: Job descriptions

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

TERMS OF REFERENCE FOR PERSONNEL UNDER INDIVIDUAL SERVICE AGREEMENT (ISA)

Title:	**Senior evaluation consultant, team leader**
Main Duty Station and Location:	Home-based
Missions:	Missions to Brazil
Start of Contract (EOD):	01 September 2025
End of Contract (COB):	31 December 2025
Contract Type	WAE
Number of Working Days:	35 working days spread over the above-mentioned period

1. ORGANIZATIONAL CONTEXT

The United Nations Industrial Development Organization (UNIDO) is the specialized agency of the United Nations that promotes industrial development for poverty reduction, inclusive globalization and environmental sustainability. The mission of UNIDO, as described in the Lima Declaration adopted at the fifteenth session of the UNIDO General Conference in 2013 as well as the Abu Dhabi Declaration adopted at the eighteenth session of UNIDO General Conference in 2019, is to promote and accelerate inclusive and sustainable industrial development (ISID) in Member States. The relevance of ISID as an integrated approach to all three pillars of sustainable development is recognized by the 2030 Agenda for Sustainable Development and the related Sustainable Development Goals (SDGs), which will frame United Nations and country efforts towards sustainable development. UNIDO's mandate is fully recognized in SDG-9, which calls to "Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation". The relevance of ISID, however, applies in greater or lesser extent to all SDGs. Accordingly, the Organization's programmatic focus is structured in four strategic priorities: Creating shared prosperity; Advancing economic competitiveness; Safeguarding the environment; and Strengthening knowledge and institutions.

Each of these programmatic fields of activity contains a number of individual programmes, which are implemented in a holistic manner to achieve effective outcomes and impacts through UNIDO's four enabling functions: (i) technical cooperation; (ii) analytical and research functions and policy advisory services; (iii) normative functions and standards and quality-related activities; and (iv) convening and partnerships for knowledge transfer, networking and industrial cooperation. Such core functions are carried out in Departments/Offices in its Headquarters, Regional Offices and Hubs and Country Offices.

The UNIDO Independent Evaluation Unit (EIO/IEU) is responsible for the independent evaluation function of UNIDO. It supports learning, continuous improvement and accountability, and provides evidence-based analysis and assessment on result and practices that feed into the programmatic and strategic decision-making processes. Independent evaluations provide credible, reliable and useful assessment that enables the timely incorporation of findings, recommendations and lessons learned into the decision-making processes at organization-wide, programme and project level. EIO/IEU is guided by the UNIDO Evaluation Policy, which is aligned to the norms and standards for evaluation in the UN system.

2. PROJECT CONTEXT

Detailed background information of the project can be found the terms of reference (TOR) for the terminal evaluation.

The senior evaluation consultant/team leader will evaluate the project in accordance with the evaluation-related terms of reference (TOR). S/he will perform, inter alia, the following main tasks:

MAIN DUTIES	Concrete/measurable Outputs to be achieved	Working Days	Location
Desk review & data analysis: Review project documentation and relevant country background information (national/regional policies and strategies, UN strategies and general economic data). Define technical issues and questions to be addressed by the national technical evaluator prior to the field visit. Determine key data to collect in the field and adjust the key data collection instrument if needed. In coordination with the project manager, the project management team and the national technical evaluator, determine the suitable sites to be visited and stakeholders to be interviewed.	• Key evaluation questions and an evaluation matrix • Data collection plan incl. draft list of stakeholders to be interviewed and sites to be visited • Workplan and responsibilities for each team member	5 days	Home-based
Inception phase: Based on consultations with the project management team and funding partner representatives, identify the key evaluation questions and prioritize evaluation criteria to be assessed in depth. Prepare an inception report summarizing these expectations and identify the methods to be used and data to be collected, confirm the evaluation methodology, draft a theory of change, and provide a tentative workplan.	• Draft inception report, incl. theory of change and evaluation framework for clearance by IEU	5 days	Home based

MAIN DUTIES	Concrete/measurable Outputs to be achieved	Working Days	Location
Provide guidance to the national technical evaluator to prepare initial draft of output analysis and review technical inputs prepared by national evaluator, prior to field mission.			
Interviews, surveys and literature review, incl. field mission to country: Conduct interviews online and in person, where feasible. Conduct survey, if deemed useful. Conduct additional literature review, if necessary.	• Report outline	10 days	Home based, online, country visit(s)
Data analysis & report writing: Coordinate the inputs from the national technical evaluator and draft the evaluation report. Share the evaluation report with UNIDO project management team, funding partner representatives and national stakeholders for feedback and comments. Present overall findings, conclusions and recommendations to the stakeholders, including the GEF OFP, in a debriefing meeting.	• Draft evaluation report • Debriefing meeting (online)	12 days	Home-based, online
Report finalization and submission: Revise the draft project evaluation report based on verifiable verbal and written comments from key evaluation stakeholders. Conduct final edit of language and formatting according to UNIDO standards and templates and submit report to the IEU evaluation manager.	• Final evaluation report	3 days	Home-based
Team leading Coordinate and supervise the work of the evaluation team	• Team performance	Throughout	n/a

MINIMUM ORGANIZATIONAL REQUIREMENTS

Education:

Advanced university degree (master's or equivalent) in economics, environment, energy, engineering, sciences, agro-industries, development studies or other relevant discipline is **required**.

Technical and functional experience:

- Minimum of ten (10) years' experience in evaluation of development projects and programmes at international level, including five (5) years at senior level is required.
- Experience in leading and conducting high-level, strategic or complex evaluations for UN organizations and international development banks/organizations.
- Good working knowledge in Latin American countries an asset.
- Knowledge about GEF operational programs and strategies and about relevant GEF policies such as those on project life cycle, M&E, incremental costs, and fiduciary standards.
- Experience in the evaluation of GEF projects and knowledge of UNIDO activities an asset.
- Knowledge about multilateral technical cooperation and the UN, international development priorities and frameworks.
- Familiarity with gender analysis tools and methodologies an asset.
- Familiarity with social and environmental analysis, tools and methodologies is an asset.
- Experience in the needs, conditions and problems in developing countries is desirable.

Languages:

Fluency in written and spoken English and Portuguese is required. All reports and related documents must be in English and presented in electronic format.

Absence of conflict of interest:

According to UNIDO rules, the consultant must not have been involved in the design and/or implementation, supervision and coordination of and/or have benefited from the programme/project (or theme) under evaluation. The consultant will be requested to sign a declaration that none of the above situations exists and that the consultants will not seek assignments with the manager/s in charge of the project before the completion of her/his contract with the UNIDO Independent Evaluation Unit.

REQUIRED COMPETENCIES

Core values:

WE LIVE AND ACT WITH INTEGRITY: work honestly, openly and impartially.
WE SHOW PROFESSIONALISM: work hard and competently in a committed and responsible manner.
WE RESPECT DIVERSITY: work together effectively, respectfully and inclusively, regardless of our differences in culture and perspective.

Core competencies:

WE FOCUS ON PEOPLE: cooperate to fully reach our potential –and this is true for our colleagues as well as our clients. Emotional intelligence and receptiveness are vital parts of our UNIDO identity.
WE FOCUS ON RESULTS AND RESPONSIBILITIES: focus on planning, organizing and managing our work effectively and efficiently. We are responsible and accountable for achieving our results and meeting our performance standards. This accountability does not end with our colleagues and supervisors, but we also owe it to those we serve and who have trusted us to contribute to a better, safer and healthier world.
WE COMMUNICATE AND EARN TRUST: communicate effectively with one another and build an environment of trust where we can all excel in our work.
WE THINK OUTSIDE THE BOX AND INNOVATE: To stay relevant, we continuously improve, support innovation, share our knowledge and skills, and learn from one another.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

TERMS OF REFERENCE FOR PERSONNEL UNDER INDIVIDUAL SERVICE AGREEMENT (ISA)

Title:	**National evaluation consultant**
Main Duty Station and Location:	Home-based
Mission/s to:	Travel to potential sites within Brazil
Start of Contract:	01 September 2025
End of Contract:	31 December 2025
Contract type	WAE
Number of Working Days:	25 days spread over the above-mentioned period

ORGANIZATIONAL CONTEXT

The United Nations Industrial Development Organization (UNIDO) is the specialized agency of the United Nations that promotes industrial development for poverty reduction, inclusive globalization and environmental sustainability. The mission of UNIDO, as described in the Lima Declaration adopted at the fifteenth session of the UNIDO General Conference in 2013 as well as the Abu Dhabi Declaration adopted at the eighteenth session of UNIDO General Conference in 2019, is to promote and accelerate inclusive and sustainable industrial development (ISID) in Member States. The relevance of ISID as an integrated approach to all three pillars of sustainable development is recognized by the 2030 Agenda for Sustainable Development and the related Sustainable Development Goals (SDGs), which will frame United Nations and country efforts towards sustainable development. UNIDO's mandate is fully recognized in SDG-9, which calls to "Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation". The relevance of ISID, however, applies in greater or lesser extent to all SDGs. Accordingly, the Organization's programmatic focus is structured in four strategic priorities: Creating shared prosperity; Advancing economic competitiveness; Safeguarding the environment; and Strengthening knowledge and institutions.

Each of these programmatic fields of activity contains a number of individual programmes, which are implemented in a holistic manner to achieve effective outcomes and impacts through UNIDO's four enabling functions: (i) technical cooperation; (ii) analytical and research functions and policy advisory services; (iii) normative functions and standards and quality-related activities; and (iv) convening and partnerships for knowledge transfer, networking and industrial cooperation. Such core functions are carried out in Departments/Offices in its Headquarters, Regional Offices and Hubs and Country Offices.

The UNIDO Independent Evaluation Unit (EIO/IEU) is responsible for the independent evaluation function of UNIDO. It supports learning, continuous improvement and accountability, and provides evidence-based

analysis and assessment on result and practices that feed into the programmatic and strategic decision-making processes. Independent evaluations provide credible, reliable and useful assessment that enables the timely incorporation of findings, recommendations and lessons learned into the decision-making processes at organization-wide, programme and project level. EIO/IEU is guided by the UNIDO Evaluation Policy, which is aligned to the norms and standards for evaluation in the UN system.

PROJECT CONTEXT

Detailed background information of the project can be found the terms of reference (TOR) for the terminal evaluation.

The national evaluation consultant will evaluate the projects according to the terms of reference (TOR) under the leadership of the team leader (international evaluation consultant). S/he will perform the following tasks:

MAIN DUTIES	**Concrete/measurable outputs to be achieved**	**Expected duration**	**Location**
Desk review & data analysis: Review project documentation and relevant country background information (national/regional policies and strategies, UN strategies and general economic data). Define technical issues and questions to be addressed from a national point of view and advise the team leader. Determine key data to collect in the field and adjust the key data collection instrument, if needed. In coordination with the evaluation team leader, the project manager and her/his assistant, discuss and share responsibilities for online and in-person meetings and agree on a meeting schedule, and list of stakeholders to be interviewed and sites to be visited.	• Draft list of stakeholders to be interviewed and sites to be visited • Workplan and responsibilities for each team member • List of key issues and questions for consideration by the team leader	4 days	Home-based
Inception phase: Based on consultations with the project management team and funding partner representatives, provide inputs to team leader on key evaluation questions. Based on guidance from team leader prepare initial draft of output analysis.	• Output analysis and technical inputs	2 days	Home based
Interviews, surveys and literature review: Conduct interviews online and in person, where feasible. Provide support, where needed, with the interview schedule.	• Individual interview summaries • Technical inputs and observations emanating from interviews	14 days	Home-based, local travel

MAIN DUTIES	Concrete/measurable outputs to be achieved	Expected duration	Location
Support team leader where translation is required.			
Data analysis & report writing: Follow up with stakeholders regarding additional information promised during interviews. Together with the team leader, present overall findings, conclusions and recommendations to the stakeholders at UNIDO HQ in a debriefing meeting.	• Inputs to draft evaluation report • Debriefing meeting (online)	5 days	Home-based

MINIMUM ORGANIZATIONAL REQUIREMENTS

Education: Advanced university degree (master's or equivalent) in economics, engineering, sciences, agro-industries, environment, business administration, development studies or other relevant discipline with specialization in renewable energy, is **required**.

Technical and functional experience:

- At least five (5) years of professional experience renewable energy required.
- Experience in evaluating development cooperation initiatives in this field is an asset.
- Exposure to the development needs, conditions and challenges in their country and region.
- Familiarity with gender analysis tools and methodologies an asset.
- Familiarity with social and environmental analysis, tools and methodologies is an asset.
- Familiarity with the institutional context of the project is desirable.

Languages: Fluency in written and spoken English and Portuguese is required. All reports and related documents must be in English and presented in electronic format.

Absence of conflict of interest:

According to UNIDO rules, the consultant must not have been involved in the design and/or implementation, supervision and coordination of and/or have benefited from the programme/project (or theme) under evaluation. The consultant will be requested to sign a declaration that none of the above situations exists and that the consultants will not seek assignments with the manager/s in charge of the project before the completion of her/his contract with the UNIDO Independent Evaluation Unit.

REQUIRED COMPETENCIES

Core values:

WE LIVE AND ACT WITH INTEGRITY: work honestly, openly and impartially.
WE SHOW PROFESSIONALISM: work hard and competently in a committed and responsible manner.
WE RESPECT DIVERSITY: work together effectively, respectfully and inclusively, regardless of our differences in culture and perspective.

Core competencies:

WE FOCUS ON PEOPLE: cooperate to fully reach our potential –and this is true for our colleagues as well as our clients. Emotional intelligence and receptiveness are vital parts of our UNIDO identity.

WE FOCUS ON RESULTS AND RESPONSIBILITIES: focus on planning, organizing and managing our work effectively and efficiently. We are responsible and accountable for achieving our results and meeting our performance standards. This accountability does not end with our colleagues and supervisors, but we also owe it to those we serve and who have trusted us to contribute to a better, safer and healthier world.
WE COMMUNICATE AND EARN TRUST: communicate effectively with one another and build an environment of trust where we can all excel in our work.
WE THINK OUTSIDE THE BOX AND INNOVATE: To stay relevant, we continuously improve, support innovation, share our knowledge and skills, and learn from one another.

Annex 3: Outline of an in-depth project evaluation report

Abstract

Contents

Acknowledgements

Abbreviations and acronyms

Executive summary

1. Introduction
   - 1.1 Evaluation Purpose
   - 1.2 Evaluation Objectives and Scope
   - 1.3 Theory of Change
   - 1.4 Methodology
   - 1.5 Limitations
2. Project Background and Context
3. Findings
   - 3.1 Relevance
   - 3.2 Coherence
   - 3.3 Effectiveness
   - 3.4 Efficiency
   - 3.5 Sustainability
   - 3.6 Progress to Impact
   - 3.7 Gender Mainstreaming
   - 3.8 Environmental Impacts
   - 3.9 Social Impact
   - 3.10 Performance of Partners
   - 3.11 Results-based Management
   - 3.12 Monitoring & Reporting
4. Conclusions and Recommendations
   - 4.1 Conclusions
   - 4.2 Recommendations and Management Response
5. Lessons Learned
6. Annexes
   - Annex 1: Evaluation Terms of Reference
   - Annex 2: Evaluation Framework / Matrix
   - Annex 3: List of Documentation Reviewed
   - Annex 4: List of Stakeholders Consulted
   - Annex 5: Project Theory of Change / Logframe
   - Annex 6: Details on Primary Data Collection Instruments
   - Annex 7: Details on Survey / Questionnaire
   - Annex 8: Statistical Data from Evaluation Survey / Questionnaire Analysis

Annex 4: Quality checklist

Quality criteria		UNIDO EIO/IEU assessment notes	Rating
1	The inception report is well-structured, logical, clear, and complete.		
2	The evaluation report is well-structured, logical, clear, concise, complete and timely.		
3	The report presents a clear and full description of the 'object' of the evaluation.		
4	The evaluation's purpose, objectives, and scope are fully explained.		
5	The report presents a transparent description of the evaluation methodology and clearly explains how the evaluation was designed and implemented.		
6	Findings are based on evidence derived from data collection and analysis, and they respond directly to the evaluation criteria and questions.		
7	Conclusions are based on findings and substantiated by evidence and provide insights pertinent to the object of the evaluation.		
8	Recommendations are relevant to the object and purpose of the evaluation, supported by evidence and conclusions, and developed with the involvement of relevant stakeholders.		
9	Lessons learned are relevant, linked to specific findings, and replicable in the organizational context.		
10	The report illustrates the extent to which the evaluation addressed issues pertaining to a) gender mainstreaming, b) human rights, and c) environmental impact.		

Rating system for quality of evaluation reports

An ordinal scale is used for each criterion: Highly satisfactory = HS (6), Satisfactory = S (5), Moderately satisfactory = MS (4), Moderately unsatisfactory = US (3), Unsatisfactory = U (2), Highly unsatisfactory = HU (1), and unable to assess = 0.