



Project Implementation Report

(1 July 2022 – 30 June 2023)

Project Title:	<i>Biogas applications for the Brazilian agro-industry</i>
GEF ID:	<i>9057</i>
UNIDO ID:	<i>150014</i>
GEF Replenishment Cycle:	<i>GEF-6</i>
Country(ies):	<i>Brazil</i>
Region:	<i>LAC - Latin America and Caribbean</i>
GEF Focal Area:	<i>Climate Change Mitigation (CCM)</i>
Integrated Approach Pilot (IAP) Programs¹:	<i>NA</i>
Stand-alone / Child Project:	<i>Stand-alone</i>
Implementing Department/Division:	<i>ENE / CTI</i>
Co-Implementing Agency:	<i>NA</i>
Executing Agency(ies):	<i>UNIDO</i>
Project Type:	<i>Full-Sized Project (FSP)</i>
Project Duration:	<i>60</i>
Extension(s):	<i>1</i>
GEF Project Financing:	<i>USD 7,000,000</i>
Agency Fee:	<i>USD 665,000</i>
Co-financing Amount:	<i>USD 58,392,070</i>
Date of CEO Endorsement/Approval:	<i>5/4/2017</i>
UNIDO Approval Date:	<i>5/17/2017</i>
Actual Implementation Start:	<i>8/10/2017</i>
Cumulative disbursement as of 30 June 2023:	<i>USD 5,850,752.29</i>
Mid-term Review (MTR) Date:	<i>6/30/2021</i>

¹ Only for **GEF-6 projects**, if applicable

Original Project Completion Date:	8/10/2022
Project Completion Date as reported in FY22:	8/10/2024
Current SAP Completion Date:	8/10/2024
Expected Project Completion Date:	4/30/2025
Expected Terminal Evaluation (TE) Date:	3/30/2025
Expected Financial Closure Date:	10/30/2025
UNIDO Project Manager²:	Luca Longo

I. Brief description of project and status overview

Project Objective		
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.		
Project Core Indicators		Expected at Endorsement/Approval stage
6	Greenhouse Gas Emissions Mitigated (metric tons of CO2e)	2,300,000 t CO2 direct 5,350,000 t CO2 indirect
11	Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment	Total: 3,825 Male: 2,065 Female: 1,760

Baseline
<p>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.²⁵</p> <p>24. Brazil's electricity sector is dominated by renewable energy sources (79.3%), primarily hydropower (71%), biomass (8%) and wind energy (1%), as depicted in the below figure. 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</p>

² Person responsible for report content

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 Eletrica28 (MAE) and the Electric Energy Commercialization Chamber29 (CCEE).

Based on data from the National Institute for Geography and Statistics (IBGE)36, 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 the 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.

Please refer to the explanatory note at the end of the document and select corresponding ratings for the current reporting period, i.e. FY23. Please also provide a short justification for the selected ratings for FY23.

In view of the GEF Secretariat's intent to start following the ability of projects to adopt the concept of adaptive management³, Agencies are expected to closely monitor changes that occur from year to year and demonstrate that they are not simply implementing plans but modifying them in response to developments and circumstances or understanding. In order to facilitate with this assessment, please introduce the ratings as reported in the previous reporting cycle, i.e. FY22, in the last column.

Overall Ratings⁴	FY23	FY22
Global Environmental Objectives (GEOs) / Development Objectives (DOs) Rating	<i>Satisfactory (S)</i>	<i>Satisfactory (S)</i>
The project is on track to achieve most of its objectives. Estimation of the CO2 emissions reduction will be calculated by the project in due course. As the project is not only implemented, but also executed by UNIDO, it serves as good practice for future projects to achieve impactful and lasting results. Closer		

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

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

participation of UNIDO enables more flexibility and efficiency in continuous planning, execution, and evaluation.		
Implementation Progress (IP) Rating	<i>Moderately Satisfactory (MS)</i>	<i>Satisfactory (S)</i>
Project implementation is still satisfactory: in the past twelve months, the project achieved most of the expected results for components 1 and 2. However, there is a delay concerning component 3 – PMU and PM are actively working to reduce the impact of the delays and mitigate risks.		
Overall Risk Rating	<i>Low Risk (L)</i>	<i>Low Risk (L)</i>
<p>The risk is still low for the project implementation since the delays are currently being managed. In any case, an extension may be needed to guarantee proper monitoring, evaluation and knowledge sharing regarding the Demonstration Units (under component 3). Indeed, after a thorough review, the PMU confirmed that there is available funding to run for 8 additional months. An extension would enable full (i.e. one year) monitoring of the demonstration units, and enough time for the final evaluation for the project, thereby ensuring the goals set at CEO Endorsement are met. A no-cost extension will be proposed to the next PSC meeting and, if agreed, will be formalised with the GEF Secretariat.</p>		

II. Targeted results and progress to-date

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

Project Strategy	KPIs/Indicators	Baseline	Target level	Progress in FY23
Component 1 – Policy framework and information.				
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 agro-industrial organic waste.				
Output 1.1: Output 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	<p>Previous reporting periods: 3 meetings in 2021 (May, September, November) 1 meeting (April, 2022).</p> <p>Current reporting period: 2 meetings (August and December 2022). It was not possible to hold additional meetings after the new government was sworn in as the new focal points/position in some of the ministries were not appointed.</p>

<p>Output 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.</p>	<p>(1.1.2) a) Number of biogas policies and regulations enhanced (-); b) Number of financial instruments adapted to biogas (-).</p>	<p>a) 0 policies and regulatory instruments; b) 0 financial instruments</p>	<p>a) 3 policies and instruments; b) 1 financial instrument adapted.</p>	<p>Previous reporting periods:</p> <p>a) 7 policies were enhanced overall, 3 for the state of Paraná and 4 for the Federal District.</p> <p>b) 2 financial instruments were adapted (improvement of ABC plan and improvement on ICMS tax in the state of Paraná).</p> <p>No updates for the current reporting period.</p>
<p>Output 1.1.3: Integration of biogas and biomethane into federal and state-level energy and agriculture sector programmes.</p>	<p>(1.1.3) Number of sector programmes and plans specifically promoting biogas and biomethane investments (-);</p>	<p>0 programmes</p>	<p>3 programmes</p>	<p>Previous reporting periods: 6 programmes were developed during the project duration: - 1 programme for biogas and biomethane in the Federal District. - 1 programme integrating digestate into agriculture in the Federal District. - 1 programme for integration to biogas in urban waste treatment. - 1 proposals for the treatment of urban solid waste using biogas for the intermunicipal consortium of solid waste in western São Paulo (ten municipalities).</p> <p>No updates for the current reporting period.</p>

Output 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	During the reporting period, the project delivered a tool to calculate MRV (Measurement, Reporting, and Verification), a manual for the tool and a report explaining the methodology used to make the tool. The MRV system was published in November 2022.
Outcome 1.2: Information on biogas and biomethane technology and market development updated, consolidated, and made accessible to public and private stakeholders.				
Output 1.2.1 Collection, validation and publication of technical, legal, economic, and other relevant information for biogas market development based on agro-industrial 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	There are considerable results regarding this target. Overall, the Project has developed 24 products. Out of which, the following took place in the FY23: 2 information packages were published in DataSebrae Website (https://datasebrae.com.br/biblioteca-relatorios-biogas/): 1. Technical Note - Biogas in the Brewery Sector - UNIDO/CIBiogás and 2. Technical Note - Management of swine carcasses: uses through anaerobic digestion - UNIDO/CIBiogás
Output 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.	a) Implemented. The full platform was launched on 29 June 2021 and is hosted by the MCTI (link: https://www.gov.br/mcti/pt-br/acompanhe-o-mcti/pibiogas). The BIP is available and consists of two tools: 1) Data Sebrae Biogas, which was launched in

				<p>September 2020 (link: https://www.gefbiogas.org.br/datasebrae.html) and,</p> <p>2) Biogas Invest web App, a free digital tool that allows producers, entrepreneurs, financing agents and public managers to independently carry out a customized analysis on the feasibility of new biogas projects</p> <p>b) The platform, hosted by MCTI, does not track the accesses anymore (during the MTR DataSebrae and BiogasInvest accesses were used, with an average ~561 requests per year, and considered the target achieved). As a proxy of the engagement, the total access figure is 54.222 for all platforms during the reporting period (YouTube, Newsletter and Website, Instagram).</p> <p>During the whole project duration, the Project's YouTube channel gathered 3,259 subscribers and a total of 171,511 views. The newsletter has 4,670 subscribers. The Instagram account has 655 followers (June/2023) and has reached 5,597 accounts in the latest period of 90 days. The Project Website had a total of 80,895 visits until July 2023.</p>
Component 2 – Biogas and biomethane technology and value chain.				
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				
Output 2.1.1 Validation of biogas	(2.1.1) Delivery status of reports	No reports delivered	Reports delivered	Overall, 13 reports were delivered.

<p>and biomethane business models for agro-industries, including associative biogas production schemes</p>				<p>Current Reporting Period: 2 business models were delivered: One for Klabin, a Brazilian paper producing, exporting and recycling company. One to JBS Company, the largest producer and exporter of animal protein in the world.</p>
<p>Output 2.1.2 Preparation of recommendations and guidelines for standardization of technical designs, feedstock, equipment, and operational procedures for biogas production schemes.</p>	<p>(2.1.2) Delivery status of recommendations and guidelines (yes/no).</p>	<p>Recommendations not delivered</p>	<p>Recommendations delivered</p>	<p>Recommendations Delivered.</p> <p>Overall, 18 reports were delivered.</p> <p>Current reporting period: A: 2 Internal reports 1. Workshop with agro-industrial stakeholders in south of Brazil on voluntary standard and best practices 2. Report about development of new recommendations and guidelines on biogas and biomethane in south of Brazil.</p> <p>B: 6 Publicly Available recommendations recommendations were published in the DataSebrae website (https://datasebrae.com.br/biblioteca-relatorios-biogas/): 1. Technical Note - Biomass pre-treatment - UNIDO/CIBiogás 2. Technical Guide – Technologies for biogas desulfurization – UNIDO/CIBiogás 3. Management of digestate for use as biofertilizer in plant production – UNIDO/CIBiogás</p>

				<p>4. Opinion survey with stakeholders - Standards and requirements for equipment and technical projects of biogas plants – UNIDO/CIBiogás</p> <p>5. Technical Guide – Recommendations for treatment and safety equipment for biogas plants – UNIDO/CIBiogás</p> <p>6. Practical guide for biogas projects – UNIDO/CIBiogás</p>
<p>Output 2.1.3 Adaptation of equipment, components and processes for biogas and biomethane production to local socio-economic and technical conditions (“tropicalization”).</p>	<p>(2.1.3) a) Number of produced proposals and concepts for technology adaptation (-);</p> <p>b) Percentage of technological issues and components successfully improved (%);</p> <p>c) Number of industry partnerships in biogas and biomethane technology established (-).</p>	<p>a) 0;</p> <p>b) 0%;</p> <p>c) 0</p>	<p>a) 8 (sex-disaggregated data to be recorded);</p> <p>b) 67%;</p> <p>c) 5 partnerships</p>	<p>Part of this action included receiving proposals (called Concept Notes, or CNs) for technology adaptation by participating companies. In the reporting period, there were 2 cycles, and 3 CNs were received. Thus, the current results are:</p> <p>a) 8;</p> <p>b) 100% of technological issues addressed.</p> <p>Six main challenges were identified, addressed:</p> <ul style="list-style-type: none"> - #1 Cost reduction and/or integrated solutions for biomethane and CO2 production. - #2 Digestate upgrading (valorisation) - #3 Cost reduction and plug and play automation in peripheral equipment. - #4 Electric exploitation - #5 Compressed biogas storage and transportation - #6 Biogas purification solutions.

				c) 8 partnerships
Output 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	a) Seven events were organized and conducted since the start of the project execution and one during the reporting period: - South Brazilian Biogas and Biomethane Forum (April 2023) - the event included 662 participants coming from 19 Brazilian states and 10 countries. b) The capacitation track already reached the total target level, by training: 1,993 m; 1,752 f in total.
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.	(2.1.5) Number of market introduction strategy documents and action plans (-).	No strategies (0)	At least 3 strategies and action plans delivered	Previous reporting period: 3 strategies and action plans were delivered to the following gas companies: - Compagás; - SCGás and, - COPEL. No updates for the current reporting period
Component 3 – Demonstration and optimization of biogas projects.				
Outcome 3.1: Demonstration and optimization of the technical and economic feasibility of biogas and biomethane production and utilization based on agroindustrial organic waste.				
Output 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.	a) 6 pilot projects; one demonstration project has not fulfilled the contract and is under the process of terminating the contract with UNIDO. b) US\$ 5,357,532.66 Financial and economic co-finance from the 6 pilot projects

Output 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).	a) 0 N.A. as the plants are not monitored b) Additional implementations such as flare system and other equipment (solid and liquid separation) were identified and are now in the process to be procured for the demonstration projects. Costs are around USD 80,000,00, which is < 20% initial CAPEX (USD 5,854,910.93)
Output 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.	a) 0 m3 biogas /yr; b) Not defined; c) Reports delivered with partial lessons learned and recommendations for improvements, although monitoring system still fine-tuning to give the start.

III. Project Risk Management

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

	(i) Risks at CEO stage	(i) Risk level FY 22	(i) Risk level FY 23	(i) Mitigation measures	(ii) Progress to-date	New defined risk ⁵
1	Delay to implement improvements to the policy and regulatory framework would impede biogas and biomethane	Medium Risk (M)	Low Risk (L)	The Government of Brazil (GoB) is increasingly committed to the incorporation of decentralized energy sources into the national energy	Biogas has been deeply integrated into Agricultural policies, being now one of the key technologies to be subsidized by the updated Low Carbon Agriculture Plan (Plano ABC+). There is a wide perception that Policies and Regulations are not	

⁵ New risk added in reporting period. Check only if applicable.

	market development.			<p>system. The development of a biogas and biomethane value chain is key for the adequate treatment of agro-industrial effluents and residues, and urban waste streams and wastewater. The Project builds upon the GOB/GIZ PROBIOGAS programme implemented by the Ministry of Cities (MCIDADES), which set up an interministerial working group to coordinate biogas and biomethane policy and regulation among the various sectors: technology and innovation (MCTI); energy (MME); environment (MMA); industry (MDIC) and agriculture (MAPA). Awareness and specific knowledge about biogas and biomethane in the federal government is still limited and scattered. Moreover, policy development processes are lengthy due to the federal organization of Brazil and some uncertainties in terms of competences of involved legislative entities. As such, amendments to the regulatory framework may not materialize as swiftly as hoped. The Project will therefore make an effort to keep biogas technology on the political agenda at the highest level, while meanwhile pursuing tangible results by a practical approach to enhance existing legislation where possible and required, including financial incentives and tax benefits.</p>	<p>a major constraint for the current state of market development.</p> <p>The GEF Biogas Brazil Project also provided technical and legal support to respond to questions from the regulatory bodies, civil society and government entities.</p> <p>Following the revisions and questions received and per request from the Federal District Government, the Project delivered a revised version of the bidding notice in March 2023. This version included the contributions from regulatory bodies, civil society, and government entities and provided more security to implement the policies proposed.</p>	
2	The executing entities would lack	Medium Risk (M)	Medium Risk (M)	The lack of competitiveness in	The project has offered constant support to the companies to	<input type="checkbox"/>

	managerial and technical capacities to implement the Project.			managerial and technical implementations in the services sector for the demonstration projects has been a threat to proper implementation. Some major delays have occurred in the period as a consequence of financial and managerial deficiencies from suppliers and technical partners.	overcome their difficulties, e.g. by introducing companies and financial investment opportunities so that the companies could plan their operations. Through technical advisory actions, the Project supports initiatives into accessing financing opportunities through financial services and the capital market, in addition to assisting them in identifying partners with complementary knowledge and expertise.	
3	Lack of confidence in biogas technology would lead to agro-industries refraining from implementing biogas projects.	High Risk (H)	Medium Risk (M)	While this issue has not been systematically investigated, the PPG phase found a considerable number of investments in biogas technology and the apparent reliable operation of these plants. This observation particularly holds true for large, high-end systems. Examples are urban biogas plants processing wastewater (more than ten systems in operation) and, in Paraná, cassava starch effluent (Amidonaria Navegantes) and sugar cane vinasse treatment (Geo Energética). There is also co-investment from the demand side, as demonstrated by COPEL (biogas-based electricity), SULGAS (biomethane), and Itaipu (biomethane for mobility), among others. The main challenges are system scale and return on the investment. Smaller installations still lack consolidated "off-the-shelf" plant designs, as is the case with the associative (condominium) business model. Moreover, capital opportunity costs for farmers are high; by consequence, farmers would prefer	The biogas sector in Brazil continues to grow in two-digits increments. Major investments in biogas generation from agro-industrial waste were announced across the country, especially in the South, Southeast and Midwest regions. At least 4 of the main companies operating in the provision of technology and services related to biodigestion pivoted their business models to Energy as Service or other models that aim to reduce investors' risks, such as leasing, instead of selling equipment and systems. In addition, there is an increase in the number of projects in Special Purpose Entities (SPE), a more suitable arrangement for mitigating risks and receiving investments from the capital market. Such signs are understood as progressive maturation of the value chain, with the recognition of sets of good practices that should enable the healthy maintenance of the expected growth rate. Major operators in the protein sector, such as the JBS Group, approached the Project with plans to adopt biogas and biomethane as a core element to their business.	□

				<p>alternative investments under a rational business approach (typically upscaling of core business activities). However, farmers (in Paraná) show great interest in biogas technology as an option for reducing energy costs and increasing energy security as well as to reduce the environmental footprint of their business activities. The Project aims to reduce capital and operating costs for this group of producers while increasing technical maturity and introducing standardized designs and materials.</p>	
4	<p>Lack of adequate technological support would undermine the success of proposed biogas demonstration pilots.</p>	<p>High Risk (H)</p>	<p>Medium Risk (M)</p>	<p>Given the incipient market, a comprehensive value chain for biogas and biomethane production has not yet developed. It must be noted that anaerobic digester systems operate embedded into the core business process and require a certain level of active management. Large companies including sugar mills often have in-house know-how for designing and operating energy systems; note that outsourcing of energy activities, for example through an ESCO model, is poorly developed in Brazil. Smaller farmers would require training to operate biogas systems and are likely to need stand-by technical support, which implies a major cost. The condominiums in Paraná receive operational support from CIBiogas, but a sustainable support model targeting the small farmers has not</p>	<p>The activities implemented in the previous period, with the support of national institutions such as SEBRAE and SENAI, are still in progress to guarantee the proper supply of competitive and reliable technology and services.</p> <p>Suppliers participating in the Tropicalization Program have also joined forces to offer state-of-the-art services and technology, which are also monitored by CIBiogás. The two biomethane refineries used in the demonstration plants are products of 3DI Engenharia, developed with support from the Tropicalization Program.</p>

				<p>yet emerged. The Project will address this weakness by systematically monitoring system operations and performance and working towards an efficient and cost-effective operational model.</p> <p>On-site meetings with the services suppliers and closer supervision of the deliverables of the services have been in place with the vendors to pressure their commitments to the deadlines.</p>		
5	<p>Bioenergy projects would be considered not feasible due to a lack of feasible business models, adequate revenues, and high operational and financial risks.</p>	<p>Medium Risk (M)</p>	<p>Medium Risk (M)</p>	<p>This risk is inherent to biogas development in many countries. From the project site, it can be mitigated by ensuring system reliability and performance and by optimization of project designs and cost parameters. A systemic problem is the lack of monetization of delivered social and environmental benefits (avoided externalities such as pollution, GHG emissions and nuisance). In the absence of strict enforcement of environmental regulation (effluent control), the economic value of biodigester technology is not acknowledged. Meanwhile, the produced biogas, electricity and biomethane can generate revenues by replacing baseline fuel options; biofertilizers may provide additional income, but several market barriers must be addressed. The Project aims to strengthen biogas business models from various angles: (a) cost reduction and system optimization; (b) advocating for</p>	<p>Based on the business models developed and validated from Output 2.1.1, and with access to the analyses and developments of support activities for financial instruments carried out in Component 1, we established an activity to support business structuring and fundraising.</p> <p>The activity includes dialogue with project owners and the identification of partners and financial solutions, including banking services and other financing alternatives, such as venture-capital funds and new business partnerships. The practical challenges identified in these processes will inform suggestions for even deeper improvements in business arrangements and instruments, such as recommendations on risk distribution structures.</p>	<p>□</p>

				adequate pay-back prices for electricity and biomethane; (c) recognition of the economic value of biogas technology; (d) recognition of its strategic value for decentralized biomethane and electricity production, and for further expansion of the agroindustrial sector (including animal farming).		
6	Implementation of project activities and pilot systems would be affected by inflation and currency risks.	Medium Risk (M)	Medium Risk (M)	The exchange rate of the real with the US dollar is subject to substantial fluctuations (approx. 20% increase compared to the USD between 1 Jan 2016 and 1 Jan 2017). The euro to USD rate also varies considerably. The impact of these fluctuations on the Project budget is uncertain but may lead to a reduced value of Project resources to purchase foreign equipment and services. Meanwhile, the prices for national procurement are subject to inflation on the internal market. This risk is mitigated by conservative budgeting of goods and services.	Currency fluctuation had a significant impact on the value of the Real against the US dollar. Thus, the resources allocated to the project remain sufficient to carry out the planned activities.	<input type="checkbox"/>
7	Social and gender issues with bioenergy systems would hamper replication and/or exacerbate social and gender inequalities.	Medium Risk (M)	Medium Risk (M)	<p>Social and gender issues were mitigated by promoting the participation of women in training activities, project management and contracted services and consultancies.</p> <p>Note that the targeted sectors (energy, agroindustry) are typically male dominated. Special attention will be given to potential gender issues resulting from environmental externalities and informal labour. Family-run farms typically have determined roles for</p>	<p>During the reporting period, no changes were identified regarding gender issues within the sector.</p> <p>In contrast, important initiatives aimed at the inclusion of gender in the sector were initiated and have seen continuous growth, with emphasis on the collective Mulheres no Biogás (Women in Biogas). This collective was even awarded for its importance and excellence during the AD and Biogas Industry Awards 2023 during the World Biogas Summit 2023.</p> <p>The project actions provided specific care to ensure the inclusion of women, especially in training. The results obtained so far in the project, considering the activities monitored for the gender</p>	<input type="checkbox"/>

				men and women, which vary according to the scale of the farm. Land tenure issues may play a role affecting women's rights. Weak enforcement of effluent control may contaminate soils and aquifers affecting health and livelihoods of neighbouring rural settlements, where women, children and elderly typically make up the larger share of the population. The envisaged gender screening is aimed at identifying such situations, proposing corrective actions and raising red flags if necessary.	dimension, resulted in about 40% of participation by women.	
8	Environmental factors, including the effects of global climate change, would cause bioenergy projects being delayed or abandoned.	Low Risk (L)	Low Risk (L)	It is mandatory that all the biogas demonstration plants selected by the project have flares systems in place for both safety and environmental reasons	The project requested the Biogas Demonstration projects to provide quotations to implement the additional improvements, such as the flares. The additional expenses were submitted and approved by the Project Steering Committee.	<input type="checkbox"/>
9	Delay from the national approval process of the project that impacted the project activities start with 16 months of delay	High Risk (H)	Low Risk (L)	No need for mitigation measure for the reporting period, after the 24 months extension was granted in 2021	Twenty-four months extension granted.	<input type="checkbox"/>
10	Delays 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.	Medium Risk (M)	Low Risk (L)	Online training, webinars, and productive meetings continued to be conducted by the project and stakeholders with great success	Several online and webinars continued to be conducted after the period of the pandemic with success and attendance from the different stakeholders and interested parties. The tropicalization program webinar series was a great success, and further material can be accessed in our social medias and annexes from this report	<input type="checkbox"/>
	Newly identified risks	(i) Risk level FY 22	(i) Risk level FY 23	(i) Mitigation measures	(ii) Progress to-date	New defined risk⁶
1	Delays in the implementation of the demonstration projects,	N.A.	Medium Risk (Medium)	(1)A project extension request will be submitted to the donor (2)	There were significant delays in the implementation of two of the four demonstration units. At the EnerDinBo plant, the problem was the Project	

				<p>Project technical support on project implementation</p>	<p>Owner's cash flow. We monitored and maintained a direct dialogue with the main supplier of the biomethane refinery to ensure that the deals were not cancelled. The biomethane refinery is already installed and operational, with only the installation of a set of sensors remaining to enable monitoring of production in real time. We are working to enable the payment of activities already carried out and verified to ensure that the Project Owner has the resources to complete the implementation.</p> <p>The most impactful delay occurs at the Granja Master plant. The proponent of the demonstration plant is Luming, a company that provides energy as a service from the biogas produced at Granja Master. Luming underwent a corporate restructuring process, with a change in financing partners. This delayed the implementation by more than a year, with incipient and ineffective communication by the company. After a series of problem-solving actions, we were able to resume implementation with the installation of equipment similar to those designed, adjustments to processes and day-to-day monitoring of progress. At this moment, we are still waiting for the installation of a key piece of equipment, the waste dryer, which is the biggest investment to be made by the project in the plant. Documents proving the purchase and shipment of the equipment from China were forwarded by Luming, and we are following the customs clearance, which will be followed by the installation.</p> <p>In addition, we identified the need for additional investments in safety and accessibility in several plants. An action plan has been prepared, including a budget for additional investments as of Output 3.1.2, and is awaiting PSC approval for implementation. Such</p>	
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					<p>investments are not indispensable for the operation of the plants, however, they will be essential to make public visits possible in the future</p> <p>As a result of delays in the implementation of the demonstration projects, monitoring of the plants has been delayed and is expected to start in the fourth quarter of 2023.</p> <p>Considering the need to monitor operations for a period of 12 months, an extension will be needed. The extension will be at no cost: only a budget revision will have to be conducted. An adjustment to the work plan and budget is being prepared and will be submitted to the PSC for approval.</p> <p>In particular, the delays affect the project's ability to measure plant emissions and verify the GHG emissions reduction. The methodology is already prepared and a consultant is waiting for the implementations to follow up.</p>	
2	Delays in the installation and start of the monitoring system	N.A.	High Risk (H)	(1)A project extension request will be submitted to the donor.	<p>As a result of delays in the implementation of the demonstration projects, monitoring of the plants has been delayed and is expected to start in the fourth quarter of 2023.</p> <p>Considering the need to monitor operations for a period of 12 months, an extension will be needed. The extension will be at no cost: only a budget revision will have to be conducted. An adjustment to the work plan and budget is being prepared and will be submitted to the PSC for approval.</p> <p>In particular, the delays affect the project's ability to measure plant emissions and verify the GHG emissions reduction. The methodology is already prepared and a consultant is waiting for the implementations to follow up.</p>	<input type="checkbox"/>

3	Failure to achieve the total number of inter-ministerial meetings	N.A.	Low Risk (L)	A project extension request will be submitted to the donor	<p>Following the inauguration of the new president in January 2023, considerable changes in the composition of the ministries were announced.</p> <p>The Ministry of Science, Technology and Innovation (MCTI), the leading government counterpart of the project, requested to validate all members of the PSC and the inter-ministerial unit.</p> <p>This request was only sent in July 2023, and we have not yet received all confirmations from the ministries. It is expected that by the end of August, confirmation should be received.</p>	<input type="checkbox"/>
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2. If the project received a **sub-optimal risk rating (H, S)** in the previous reporting period, please state the **actions taken** since then to mitigate the relevant risks and improve the related risk rating. Please also elaborate on reasons that may have impeded any of the sub-optimal risk ratings from improving in the current reporting cycle; please indicate actions planned for the next reporting cycle to remediate this.

<p>1. Delays to implement improvements to the policy and regulatory framework would impede biogas and biomethane market development.</p> <p>This item was reassessed from Medium Risk to Low Risk.</p> <p>This reevaluation was driven by notable progress and the effective implementation of mitigation strategies. Biogas was integrated into government policies on energy and is now part of programs such as the Low Carbon Agriculture Plan (Plano ABC+).</p> <p>Furthermore, the project's role in offering specialized technical and legal support for a municipal waste management bidding process in the Federal District has contributed significantly to advancing knowledge about biogas production within solid waste management.</p> <p>As a result, the regulatory framework is now less constraining on the development of the biogas market.</p> <p>3. Lack of confidence in biogas technology would lead to agro-industries refraining from implementing biogas projects.</p> <p>This risk was reevaluated from High Risk to Medium Risk.</p> <p>The change was made due to improvements seen in the development of the biogas sector in Brazil. The market is growing, with investments in biogas planned by major agroindustrial stakeholders. The Project has contributed by sharing knowledge on good practices, manuals and resources. The success of the Project in this space was highlighted, inter alia, by the fact that JBS Group has approached the Project for support to develop a biogas business plan.</p> <p>4. Lack of adequate technological support would undermine the success of the proposed biogas demonstration pilots.</p> <p>This risk was reassessed from High Risk to Medium Risk.</p> <p>This adjustment reflects the influence of the Project mitigating measures as well as other sector initiatives. The project has supported capacity building efforts, thereby strengthening the local ability to provide technological support. In particular, the Project has been publishing products and developing capacity-building packages to consolidate technical knowledge on biogas. The Tropicalization Program promoted knowledge partnerships within Brazilian and foreign companies, strengthening suppliers, and the Biogas Training Trail, a 270-hour free online course on biogas production, has provided 3,745 certificates and received an award in 2021 from the World Biogas Association.</p>
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9. Delay from the national approval process of the project that impacted the project activities start with 16 months of delay.

This risk was reevaluated from High Risk to Low Risk.

This change was made since the project had a 24-month extension granted. The extension was granted to compensate for the initial delay, and activities have been implemented and most of the project indicators have been achieved and surpassed

10. Delays 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.

This risk was reassessed from Medium Risk to Low Risk.

This change was made considering that the online training alternatives developed during the COVID-19 pandemic proved to be effective and capable of meeting project needs. Online courses and webinars have enabled engagement with a wider audience, facilitating communication and knowledge sharing. In addition, in May 2023, the WHO declared the end to COVID-19 as a global health emergency.

3. Please indicate any implication of the COVID-19 pandemic on the progress of the project.

With the exceptions of the demonstration units, project implementation progressed according to plans despite some social distancing in 2022. For 2022/2023, remote work became part of the daily routine as a legacy from the pandemic and online events such as webinars continued gaining momentum and acceptance in the project activities.

The disruption of supply chains provoked by the COVID-19 pandemic significantly impacted the ability of the vendors to supply the equipment for the demonstration units on time. The delays compromised the implementation of the planned improvements in some biogas plants, thereby affecting the entire timeline of the output, which includes 1-year monitoring of the plants that, to date, has not yet started.

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

The project is facing delays regarding the implementation and monitoring of the demonstration projects, as detailed in the newly identified risks table under point 1, Section III. The risks identified were: 1. Implementation of demonstration projects has experienced significant delays, with cash flow issues and administrative restructures. 2. Monitoring system installation and operation start have been delayed until Q4 2023 due to demonstration project delays, preventing access to GHG emissions reduction data. And 3. The government transition in 2023 led to changes in ministry composition, which are still underway, delaying the achievement of the total number of inter-ministerial meetings required.

As per the approved project document, at least four demonstration projects should be monitored for a period of 12 months. Of the seven biogas plants selected to implement improvements, six managed to proceed with the project. As of 30 June 2023, only one is fully operational to monitor end-to-end, including flares. We therefore foresee an additional extension request as delays in the implementation units are expected to surpass August 2023, thereby not allowing a 12-month monitoring of the demonstration units before the current project closure.

In addition, the extension of the project would allow to continue the work on Municipal Solid Waste and inter-ministerial Unit, where important results, and proposals for improvements in public policies could be carried out, and thus assist in decision making in a national level and reducing the greenhouse gas emission when the mechanical and biological treatment units will implemented.

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

“Key Findings of the Evaluation Project Design

The project components, as formulated in the GEF CEO Endorsement, are sound, appropriate, and consistent with the stated project objective. The GEF Biogas Brazil Project remains relevant today, and the main outputs and the outcomes remain unchanged. The institutional and implementation arrangements also remain valid and relevant. The GEF CEO Endorsement defined the quantitative goals and main project objective as well as clearly identified, assessed, rated and proposed mitigation measures for the project risks, which are still adequate. However, four risks were not foreseen at the project design stage: (i) delay in the country project approval, (ii) difficulty in establishing the interministerial unit, (iii) digestate management and (iv) COVID-19 pandemic. The Project Results Framework (PRF) includes an adequate structure with outcomes and outputs including specific, measurable, attainable, reachable and time bound target indicators. It describes the assumptions at output and outcome level, but not the risks. The indicators seem, in general, appropriate to measure the expected outputs quantitatively and qualitatively. However, the Review Team found that it could (i) be directly linked to the outcome/output level, (ii) be more specific in some cases, (iii) reflect the different audiences to be reached, (iv) follow a pattern and (v) be consistent in terms of the metric units in which they are to be measured.”

“Recommendations

R1. The Project Management Unit should consider revising the current implementation plan and adapt it to new circumstances and challenges encountered. The Review Team has suggested a follow-up plan that can help the Project Management Unit with the implementation and monitoring of GEF Biogas Brazil Project’s activities.

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%.

R2. UNIDO Headquarters and Project Management Unit should request a project extension to GEF based on the delay of 16 months to start the project due to the national approval process as well as due to the COVID-19 pandemic, which has not enabled the implementation of activities that require physical presence, such as the onsite 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. 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.

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

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

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 Monitoring & Evaluation plan clearly indicates the minimal reporting information. • It includes a budget to build the capacity of the Project Management Unit in the implementation of the project’s Monitoring & Evaluation 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 Project Results Framework and the Chronograms of Implementation. • There is a budget integrated for communication activities. Integrate more media coverage, advertising, and communication activities.

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 Monitoring & Evaluation plan.

R6. The Project Management Unit should compile and maintain a record of partnerships built throughout the project implementation as well as establish partnerships with stakeholders from other areas than the biogas sector that have climate change as the main area of action to sensitize new actors with whom the project may collaborate in the future.

Action followed: the National Water Agency joined the Interministerial Unit, participating in the meetings held, and a partnership was established with SENAI (National Service of Industrial Training) to train the trainers and leave a legacy on knowledge sharing from the biogas trainings the project had delivered in the previous years.

R7. Given the opportunities that exist for biogas development in Brazil as well as across South America, the identified potential for scalability and replicability as well as the partnerships that have been established, there are opportunities for a follow up project. The Review Team recommends that the Project Management Unit together with the UNIDO Headquarters 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 the GEF Biogas Brazil Project and enlarge its 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.

IV. Environmental and Social Safeguards (ESS)

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

Category A project

Category B project

Category C project

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

Please expand the table as needed.

	E&S risk	Mitigation measures undertaken during the reporting period	Monitoring methods and procedures used in the reporting period
(i) Risks identified in ESMP at time of CEO Endorsement	<ul style="list-style-type: none"> - Effluent leakages (groundwater contamination, and soil pollution) - Gas leakages - Increase in agricultural activities (e.g., energy-crop cultivation for co-digestion to increase the plant’s efficiency) - Increased transportation emissions 	<p>A process was carried out in the previous reporting period to hire specialized monitoring services for the plants, through which real-time monitoring systems will be guaranteed with the main indicators necessary to guarantee safety and efficiency. The installation of the systems occurred in April 2023, and the monitoring will take place for a minimum period of 12 months.</p>	<p>On-site due diligence, and process of contracting specialized services for real-time monitoring started on Q3 2022 and services were mainly completed in April 2023. There are still pending issues regarding the flare installation for the full commissioning of the monitoring system.</p>

(ii) New risks identified during project implementation (if not applicable, please insert 'NA' in each box)		NA	NA
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V. Stakeholder Engagement

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

In the reported period, the project created partnerships with several actors in the territory, strengthening the value chain and the governance and providing support to the new stakeholders that reached the GEF project based on the success of previous best practices well disseminated.

Heineken approached the project to look for a suitable option to integrate biogas into their operations, an ideal business model. For the reporting period, they were working with the project executing partner CIBiogas to solve the beer and soft drinks residues issue from their factories.

Eletrobrás SC reached the project looking for new business models based on the GEF Biogas Project Best practices disseminations in the South Region of Brazil.

JBS cluster in RS reached out to the project for support on a business model to provide solutions for their cluster to convert biogas into biomethane and energy.

The Mato Grosso State engaged with the project and is working closely to implement a follow-up GEF project in their state, based on the great results from the Brazil GEF Biogas Project.

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

The general coordinator of Sectorial Technologies of the MCTI's Secretariat for Technological Development and Innovation (SETEC), Rafael Menezes, highlights the GEF Biogas Brazil project as one of the Ministry's main initiatives to support the chain of production and use of biogas.

"At SETEC, we seek through programs, management of incentives and initiatives, such as the GEF Biogás Brazil project, to articulate bridges between academia and the productive sector, with the objective of developing and applying innovative technologies in strategic sectors and areas for the country. The GEF project has already developed a series of products and deliveries for the biogas and biomethane sector, especially in the South Region", says Rafael Menezes.

SETEC/MCTI's advisor Gustavo Ramos explains the role of the project's Tropicalization Program for the development of biogas in Brazil.

"The Program works with specific bottlenecks in certain industrial enterprises where it is possible to increase performance through biogas, replicating results to other production units. The main goal is to disseminate the benefits and best practices obtained in projects of excellence supported by the GEF project, so that these results can be replicated in other projects and other regions of Brazil", says Gustavo Ramos.

The director of Vogelsang in Brazil, Drausio Lima, says that the experience with the project's Tropicalization Program was very positive.

"The work that the Tropicalization Program provided us brought to us many valuable insights into the pains and needs of industrial biogas in Brazil. We are prepared, and we believe it is an important technological vector in the development of the sector", says the director.

"I am really happy to have done this work and participated in the Tropicalization Program", says Bioconservacion's general manager, Alfonso Alejandro Gutierrez Ramirez.

"We are beginning to reap the fruits of the work carried out in previous years, we have many results now and many to come", said Alessandro Amadio, then UNIDO representative for Brazil and Venezuela.

Clovis Zapata, then deputy representative of UNIDO for Brazil and Venezuela, said that the project is successful and has received positive feedback: *"We have been collecting various feedbacks, from the most technical ministries to the broader ministries, and they are all positive. I believe that this can be a project implementation model for several other areas in many other themes".*

The national coordinator of the Project and then deputy coordinator of Innovation and Sectorial Technologies at MCTI, Gustavo Ramos, emphasized the importance of the technical visits and the participation of the project in the World Biogas Summit: *"Our presence demonstrates the country's interest in the biogas value chain and allows us to present major initiatives aimed at the development of biogas and biomethane".*

"Energy is a very relevant topic for all of us. UNIDO deals with energy applied to production processes. It is an indispensable subject for small and medium-sized businesses. We see, through the GEF Biogas Brazil project, how effectively this is relevant. And, in addition, we see how technology can become effective and efficient once it is inserted within the specific context of each company, each group, each cooperative", said Clovis Zapata, local UNIDO representative in Brazil, during the event "Energia 50+50", held by the Brazilian Micro and Small Business Support Service (Sebrae).

The president of Aurora Coop, Neivor Canton, stressed the importance of the partnership with the project: *"It is a pleasure to have a committed team that has a dream of living in favor of such an important cause brought by our great partner, Sebrae. We expect to achieve excellent results for producers, agribusiness, and the environment".*

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

- Project Steering Committee minutes
- Aide Memoire
- Meeting Agenda, etc.
- All attachments are to be named as per the GEF required format, i.e.: "GEFID_Document Title", e.g. 9714_PSC minutes.
- Banner – Invitation to answer sector form
- Blog Posts – Sector Manuals
- Book – Methodologies for Integrating Biogas in the Agribusiness Value Chain (English, Portuguese and Spanish versions)
- Communication Cards
- BiogasInvest Campaign
- Digital Brochure – Job Indicators in the Biogas Sector

- Communication Flyers
- Infographics: Job Indicators in the Biogas Sector and Technological Routes for Digital App
- Instagram Posts
- Instagram Stories
- Job Indicators in the Biogas Sector Campaign
- Steering Committee minutes from the meeting of August 2022
- Monitoring Report approved in the Steering Committee meeting of August 2022
- Monthly newsletters from July 2022 until June 2023
- Project News Reports from July 2022 until June 2023
- Thumbnails for the Tropicalization Webinars – June 2023
- List of Project YouTube videos from July 2022 until June 2023
- Webinars invitations
- Workplan approved in the Steering Committee meeting of August 2022
- Workshop invitations
- YouTube Statistics for the webinars held during June 2023

VI. Gender Mainstreaming

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

The project provides special attention in the fulfilment of gender-related goals in training and capacity-building actions. The project staff is formed with 50% female in the PMU, 42% in contracted individual services, and 20% in the PSC. Terms of Reference for contracting staff and (individual) consultants/services encourage women to apply. Capacity building activities encouraged the participation of women.

The project supported the nomination of Danieli Rambo, owner of the Kist and Froelich Biogas Plant to the Woman on Biogas award category for the AD Biogas Awards presented at the World Biogas Summit in Birmingham. As a final nominee, the project sponsored her participation at the event, promoting the gender leadership on a male dominated environment. Danieli's participation attracted several highlights to the Brazilian media, including a front page at the MCTI news:

- <https://www.gov.br/mcti/pt-br/acompanhe-o-mcti/noticias/2023/03/empreendedora-brasileira-e-finalista-em-premio-internacional-sobre-mulheres-no-biogas>
- <https://www.gefbiogas.org.br/noticias/projeto-gef-biogas-brasil-participa-de-forum-internacional-no-reino-unido>
- <https://brasil.un.org/pt-br/225781-projeto-gef-biog%C3%A1s-brasil-participa-de-f%C3%B3rum-internacional-no-reino-unido>

VII. Knowledge Management

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

Throughout the reporting period, many products and reports delivered by the project team were published and have received the International Standard Book Number from the MCTI library, to organize all the knowledge the project has been producing and delivering to the sector.

The communication tools such as the Biogas Information Platform, Data Sebrae, the Youtube channel and the Instagram profile are key in supporting knowledge management and sharing efforts. Information from the project, as well as eventual articles for both UNIDO and GEF newsletters and websites, are made widely accessible and approachable. A LinkedIn account is being created as well to share knowledge and information on a network with the professional and specialized public.

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

- *Biogas Information Platform, where all relevant products from the project are published – <https://www.gov.br/mcti/pt-br/acompanhe-o-mcti/pibiogas>*
- *Report Library on the Website DataSebrae, including all public reports developed by the project: <https://datasebrae.com.br/biblioteca-relatorios-biogas/>*
- *YouTube Project Channel – <https://www.youtube.com/channel/UCH3EdWqVjVwWejisu1D7Q>*
- *Project Website – www.gefbiogas.org.br*
- *The project also makes available the results produced through the Field Office Brazil page: <https://www.unido.org/who-we-are/unido-worldwide/latin-america-and-caribbean-offices/brazil>*
- *Instagram Profile: @gefbiogasbrasil*
- *Monthly newsletter with main activities about the project for internal communication*
- *Customized Communications on whatsapp to the Biogas Sector, especially in the Group Women in the Biogas.*

VIII. Implementation progress

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

The project is progressing to its end and there are still very relevant results to be monitored and achieved:

In component one, the MRV system tool was published and is ready to measure the GHG emission reductions once the demonstration projects are fully operational and the monitoring system is running. The meetings from inter-ministerial unit are on hold until the newly elected government appoints the new members.

Component two has achieved all the results foreseen in the project document. Nevertheless, for the project, it is relevant to maintain the governance in the territory, continue sharing the best practices with the stakeholders, and support the value chain, the business modelling, and the financial investment opportunities by leveraging the project network and providing continuous guidance to the biogas sector that is still developing in Brazil. The activity that concluded Component 2 was the Tropicalization program with a webinar series where companies shared their experiences with the biogas sector and now are better prepared to operate in the Brazilian market.

Component three is the one that currently needs the most attention. As of 30 June 2023, the project faced several delays for different reasons. Delays on the implementations are prejudicing the start of the monitoring, which needs to run for 12 months to produce reliable results on the best performance indicators for the six demonstration projects. The project team currently foresees that, by September, equipment will be in place and monitoring will start in all six biogas plants.

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

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

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

<input type="checkbox"/>	Results Framework	N/A
<input type="checkbox"/>	Components and Cost	N/A
<input type="checkbox"/>	Institutional and Implementation Arrangements	N/A
<input type="checkbox"/>	Financial Management	N/A
<input checked="" type="checkbox"/>	Implementation Schedule	<i>The project will request an extension. Implementation schedule has moved from August 2022 to August 2024.</i>
<input type="checkbox"/>	Executing Entity	N/A
<input type="checkbox"/>	Executing Entity Category	N/A
<input type="checkbox"/>	Minor Project Objective Change	N/A
<input type="checkbox"/>	Safeguards	N/A
<input type="checkbox"/>	Risk Analysis	N/A
<input type="checkbox"/>	Increase of GEF Project Financing Up to 5%	N/A
<input checked="" type="checkbox"/>	Co-Financing	<i>Several stakeholders have joined the co-finance of the project: Adecoagro, BEP, BRDE, Castrolanda, Klabin, MDR, Sebrae, Sebrae PR, Heineken, Eletrobras, Tropicalization Companies, JBS, MT State,</i>
<input type="checkbox"/>	Location of Project Activities	N/A
<input type="checkbox"/>	Others	N/A

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

The project still has 16,3% of the budget to implement the remaining activities up to August 2024, as the project was extended. As the local currency had devaluated significantly, the budget in USD allowed to implement and deliver all the activities planned as per the CEO Endorsement and beyond, with a substantive positive impact locally and nationally in the biogas and biomethane sector.

Component 1 is 92,5% implemented, Component 2 is 100% implemented and Component 3 is 35% implemented. The project is 73,8% complete at this stage and has obligated 83,7% of the budget. Although the implementation does not correspond with the expenditure, the demonstration pilots are about to finalize the improvements and start the monitoring, which will raise the implementation status and get closer to the expenditure figures.

The financial report will be attached to this document.

IX. Work Plan and Budget

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

Work plan and budget will be submitted as an annex to this report, i.e. [9057_WorkPlan-PSC-Meeting-20220824](#) and [9057_Project Delivery Report by Grant and SP and SC Detail](#)

X. Synergies

1. **Synergies** achieved:

Since the beginning of its implementation, the Project has prioritized the construction of network partnerships, aimed at identifying priority actions of high impact in the short term, as well as with a view to the continuity of actions in a sustained manner.

This model has brought to light several opportunities for partnership and learning for UNIDO and its partners, especially the Brazilian government. An arrangement based on territorial dialogue has several positive

impacts for the construction of synergies. However, it is worth noting that the identification of short-impact priority actions, when observed within the scope of UNIDO as an implementing and executing party, has allowed the Agency to participate directly in the development of solutions and the delivery of results.

From this direct action, a growing number of actors recognise UNIDO's role, and consequently, the organisation has been called to act as a reference in the renewable energy and circular economy sector (e.g. at a strategy-building level), both in the public and in the private sectors. Several ministries have sought to engage UNIDO to build solutions in similar to the project as they see great added value by the presence and effectiveness of the works implemented and executed by UNIDO.

This perception is verifiable by the results achieved. The numbers related to the engagement of actors far exceed the objectives established in the project's design. With the planned resource, the project should also impact a larger territory than expected, in addition to expanding its benefits to the biogas value chain well beyond just applications in the agroindustry.

In the current reporting period, the project actively participated in the Biogas Week in synergy with Kenya , Türkiye, South Africa, and Tanzania, sharing best practices and bringing along two representatives from the Brazilian Government. The engagement from both representatives from the Ministry of Science, Technology and Innovation, and the Ministry of Agriculture and Livestock strengthen the Brazil GEF Biogas Project during the event and opened new opportunities to future cooperations.

Moving forwards, opportunities for South-South cooperation will be sought among there participating countries and activities are already planned for the extension period foreseen as the government representatives strongly support the initiative during the event and beyond.

3. Stories to be shared (Optional)

Danieli Andrea Rambo, 34, is a determined livestock entrepreneur and leading business partner of the Kist and Froelich pig farm, located in the southern Brazilian state of Rio Grande do Sul. Her farm is a local pioneer in the use of animal-origin organic waste for energy applications. Due to its successful practices, the Kist and Froelich pig farm is widely regarded by the local biogas market as a model in sustainability. As a working mother, Danieli has overcome adversities that are unique to male-dominated professional environments and has used her previous experience in the grain sector to successfully launch herself into the biogas market. As a result of her efforts in this sector, the Kist and Froelich farm was selected by a public bidding for receiving international investments from our GEF Biogas Brazil project for structural improvements in the biogas-making process of the farm. In March this year, Danieli was on the final nomination for the Woman on Biogas category for the AD Biogas Awards presented at the World Biogas Summit in Birmingham, England. Danieli attended the Awards Ceremony representing the project and all the women that strive to succeed in a male-dominated environment such as the biogas sector. Although she didn't receive the award, the visibility gained, and the experience brought even more strength to continue developing her business in Southern Brazil.

XI. GEO LOCATION INFORMATION

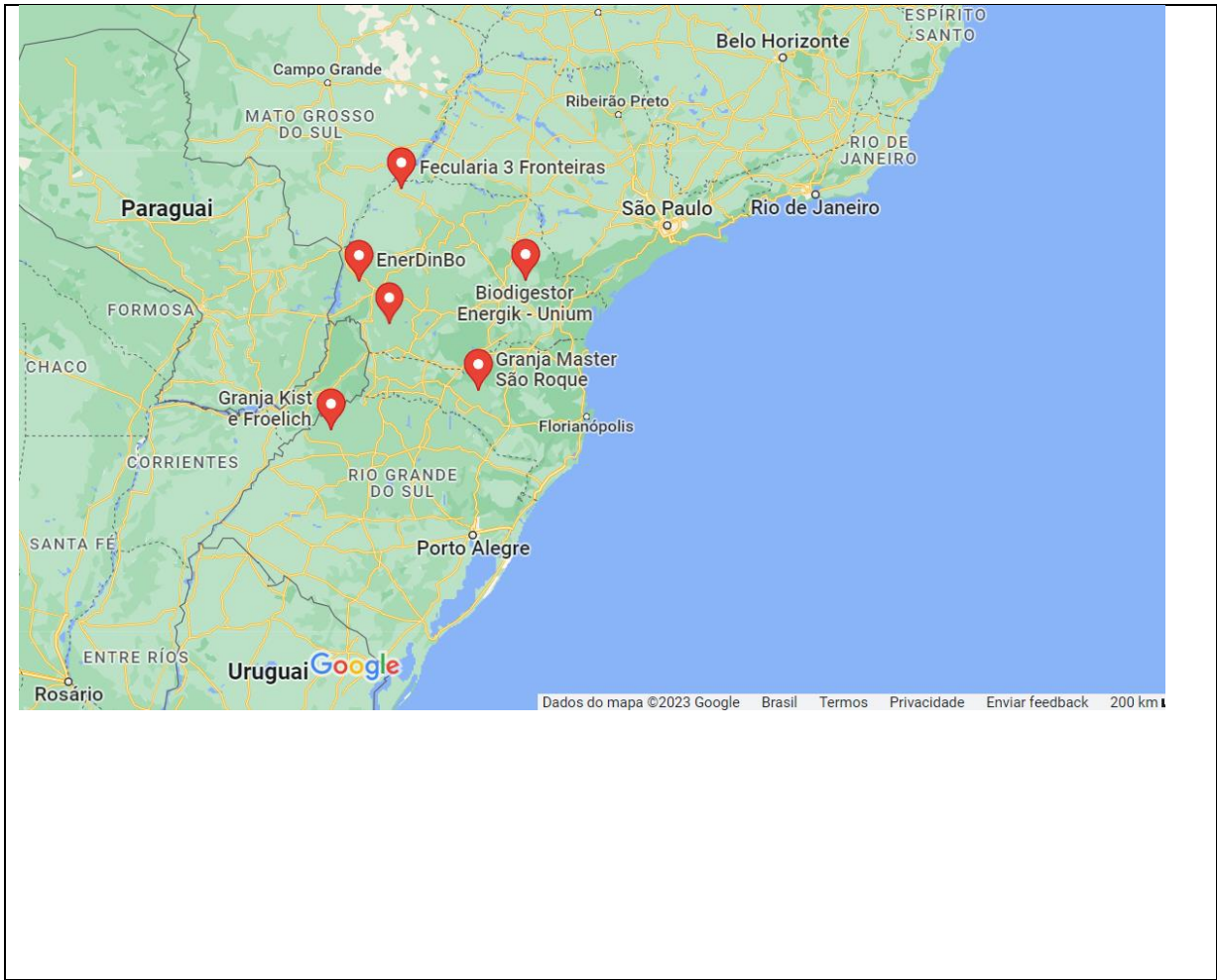
The Location Name, Latitude and Longitude are required fields insofar as an Agency chooses to enter a project location under the set format. The Geo Name ID is required in instances where the location is not exact, such as in the case of a city, as opposed to the exact site of a physical infrastructure. The Location & Activity Description fields are optional. Project longitude and latitude must follow the Decimal Degrees WGS84 format and Agencies are encouraged to use at least four decimal points for greater accuracy. Users may add as many locations as appropriate.

Web mapping applications such as [OpenStreetMap](#) or [GeoNames](#) use this format. Consider using a conversion tool as needed, such as: <https://coordinates-converter.com>

Please see the Geocoding User Guide by clicking [here](#)

Location Name	Latitude	Longitude	Geo Name ID	Location and Activity Description
Fecularia Três Fronteiras Ltda.	-22.759181873869625	-52.89600118024038		Demonstration project within a starch industry with improvements implemented in the biogas plant.
3Gs Adubos Orgânicos	-25.646449862316768,	-53.17836018755772		Demonstration project within a fertilizer industry with improvements implemented in the biogas plant.
Cooperativa Castrolanda	-24.715169872911638,	-49.99677475819004		Demonstration project within an agroindustry cooperative with improvements implemented in the biogas plant.
EnerDinBo Geradora de Energia LTDA	-24.746180724680716,	-53.895670360594416		Demonstration project within a renewable energy industry with improvements implemented in the biogas plant.
Granja Kist e Froelich	-27.847872610808334,	-54.55066527400197		Demonstration project within a poultry industry with improvements implemented in the biogas plant.
Granja Master - São Roque	-27.043073070034644,	-51.09274572239156		Demonstration project within a poultry industry with improvements implemented in the biogas plant.

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



EXPLANATORY NOTE

1. **Timing & duration:** Each report covers a twelve-month period, i.e. 1 July 2022 – 30 June 2023.
2. **Responsibility:** The responsibility for preparing the report lies with the project manager in consultation with the Division Chief and Director.
3. **Evaluation:** For the report to be used effectively as a tool for annual self-evaluation, project counterparts need to be fully involved. The (main) counterpart can provide any additional information considered essential, including a simple rating of project progress.
4. **Results-based management:** The annual project/programme progress reports are required by the RBM programme component focal points to obtain information on outcomes observed.

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

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

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