



GEF-6 GEF SECRETARIAT REVIEW FOR FULL-SIZED/MEDIUM-SIZED PROJECTS THE GEF/LDCF/SCCF TRUST FUND

GEF ID:	9057		
Country/Region:	Brazil		
Project Title:	Biogas Applications for the Brazilian Agro-industry		
GEF Agency:	UNIDO	GEF Agency Project ID:	
Type of Trust Fund:	GEF Trust Fund	GEF Focal Area (s):	Climate Change
GEF-6 Focal Area/ LDCF/SCCF Objective (s):	CCM-1 Program 1;		
Anticipated Financing PPG:	\$200,000	Project Grant:	\$7,000,000
Co-financing:	\$58,392,070	Total Project Cost:	\$65,592,070
PIF Approval:	September 14, 2015	Council Approval/Expected:	October 21, 2015
CEO Endorsement/Approval		Expected Project Start Date:	
Program Manager:	David Elrie Rodgers	Agency Contact Person:	Nina Zetsche

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Review Criteria	Questions	Secretariat Comment	Agency Response
Project Consistency	1. Is the project aligned with the relevant GEF strategic objectives and results framework? ¹	DER, April 3, 2015. Yes. The project is aligned with GEF-6 focal area objective CCM-1, Program 1.	N/A
	2. Is the project consistent with the recipient country's national strategies and plans or reports and assessments under relevant conventions?	DER, April 3, 2015. Please address the following comments: a) References to Brazil's NC are included. We would like to see references to Brazil's TNA, and on-going work on NAMAs to see how the role of biogas fits with other energy sources and drivers of environmental emissions.	UNIDO July 28, 2015 a) Please note that Brazil has not yet performed a TNA. In fact, the implementation of a TNA exercise is one of the priorities set forth by the Government of Brazil for GEF-6 CCM support. Please see the attached document "OfÃ-cio-Circular nÂ° 06 SEAIN-MP"

¹ For BD projects: has the project explicitly articulated which Aichi Target(s) the project will help achieve and are SMART indicators identified, that will be used to track the project's contribution toward achieving the Aichi Target(s)?

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		<p>b) We would like to see an explanation of growth potential for biogas as an energy source compared to wind power. How many GW of biomass power does Brazil plan to support to meet its goals?</p> <p>DER, August 24, 2015.</p> <p>a) The response notes that Brazil has not completed a TNA. However, the project is aligned with several national initiative and legislative efforts. Comment cleared.</p> <p>b) The response reports that The potential for biomass power (electricity) capacity is expected to grow significantly and on par with wind power. Estimates for the potential for biogas are approximately 10% of natural gas use, which is significant. Comment cleared.</p>	<p>for further reference. No NAMA has been submitted by Brazil to the NAMA Registry as of yet.</p> <p>However, on December 29, 2009, the National Policy on Climate Change was put in place, which provides for the adoption of voluntary actions to mitigate greenhouse gas emissions at national level with a view to reducing Brazil's projected emissions by 36.1% - 38.9% by 2020. The measures to implement the policy have been launched, with a view to establishing sectoral plans to achieve the goal expressed in the policy mitigation actions. Please note that these sectoral plans are often considered as NAMAs . Five such plans for the reduction of GHG emissions are already in place: (i) Action Plan for the Prevention and Control of Deforestation in the Legal Amazon; (ii) Action Plan for Prevention and Control of Deforestation and Fires in Cerrado; (iii) National Ten-Year Plan for Energy Expansion; (iv) Plan for Reducing Emissions of the Steel Industry (Charcoal); and (v) Plan for Mitigation and Adaptation to Climate Change for the Consolidation of a Low Carbon Economy in Agriculture.</p> <p>While efforts to curb deforestation constitute one of the main focus areas to limit GHG emissions in Brazil, efforts are</p>

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			<p>also being made to limit such emissions via a greater emphasis on renewable energies as well as mitigation activities in the agricultural sector. This is reflected in the above mentioned National Ten-Year Plan for Energy Expansion, which targets particularly an increase in wind, small hydropower and biomass energy (apart from large-scale hydropower), as well as the Plan for the Mitigation and Adaptation to Climate Change for the Consolidation of a Low Carbon Economy in Agriculture, which, amongst others, foresees a greater uptake of manure treatment technologies, among which anaerobic digestion would be included.</p> <p>National environmental concerns are also reflected in the mentioned ABC programme. Anaerobic digestion is one of the technology options that fit into a low-emission path for the agricultural and livestock sector.</p> <p>However, full recognition of the potential of biogas as an energy source for Brazil can be seen to be still pending, although recent advances have been made (ANP resolution No. 08/2015 and EPE Technical Note 13/14, which are mentioned in the PIF).</p> <p>b) According to the latest National Ten-Year Plan for Energy Expansion (PDE</p>

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			<p>2023), wind power is expected to increase from approximately 2 GW in 2013 to approximately 22 GW in 2023 and biomass power is predicted to grow from approximately 10 GW in 2013 to approximately 14 GW in 2023.</p> <p>With regards to biogas, no specific figures have been included in the National Ten-Year Plan for Energy Expansion. However, a rough estimate of the biogas energy potential has been made in a 'Technical Note' published by the Energy Planning Company (EPE) in October 2014 . Here the theoretical biogas potential from agricultural waste products from dairy cows, swine and chicken is estimated to be 10,543,000 tonnes of oil equivalent annually. The German Energy Agency (DENA) also made an analysis in 2010 for the state of Rio Grande de Sul, and estimated a generation potential of 111.3 million cubic metres of biogas per year or 76.8 million cubic metres of methane. This represents 1% of the electricity consumed in Rio Grande do Sul (electricity consumption amounted to 23,629 GWh in 2007). If the biogas was treated, the resulting biomethane would be sufficient to replace 10% of the natural gas consumed (based on natural gas sales of 795 million cubic metres in 2006).</p> <p>This demonstrates the relevance of biogas</p>

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			for energy production in Brazil in comparison with other renewable energy options.
Project Design	3. Does the PIF sufficiently indicate the drivers ² of global environmental degradation, issues of sustainability, market transformation, scaling, and innovation?	<p>DER, April 3, 2015. Please respond to the following comments:</p> <p>a) Biogas in the agro-industry in Brazil should be ready for rapid commercialization and scaling. The project as described does not adequately explain the barriers to replication of a successful technology, or how a small GEF project can address those barriers.</p> <p>b) We would expect a project that addresses the drivers of environmental degradation in Brazil to have a much bigger impact and employ financing schemes that ensure scaling. This project is too diffuse and unfocused.</p> <p>DER, August 24, 2015.</p> <p>a) The revised project justifies the focus of the GEF project on small-scale piloting of biogas for vehicles based on the need for alternatives to oil based fuels in the agricultural sector and the potential new business models that provide multiple off-take opportunities for biogas production. Comment cleared.</p>	<p>UNIDO July 28, 2015</p> <p>a) There was strong interest in biogas production in Brazil in the 1970s and 1980s, but the efforts undertaken were largely unsuccessful due to technical limitations (lack of knowledge and operational support) . Interest was renewed in the uptake of biogas in the Brazilian agro-industry from 2000 onwards, but, as indicated, in 2014, there were only 25 biogas plants connected to the electricity grid and only 12 off-grid systems are found in agricultural businesses. Flaring is common; the use of biogas as a vehicle fuel is rare.</p> <p>A range of barriers is in place that impedes rapid commercialization and up-scaling of biogas in the agricultural and agro-industrial sector. These barriers are briefly outlined in the revised PIF, Part II, section 1, sub-section1. The context of low energy prices on the electricity market and unfavorable contract modalities for small, non-conventional renewables, makes fine-tuning of globally available technology slower than expected. Business models become less</p>

² Need not apply to LDCF/SCCF projects.

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		<p>b) The revised project is much more focused on testing business models for use of biogas recognizing the need for systems oriented thinking that looks at the full supply chain. In particular, discussion with the project proponents confirmed they do not intend to repeat failed approaches tried in other countries but instead plan to build a robust biogas production, collection, distribution and marketing pilot that will economically viable. Comment cleared.</p>	<p>straightforward, which makes investors turn towards alternative opportunities. Also, access to finance is affected by a range of systemic issues, as also experienced by the ABC Programme. For a complex technology such as biogas, which operates embedded in a productive process, this situation implies a disadvantage compared to a more standardized, equipment based technology such as wind turbines.</p> <p>Based on these considerations, the project proponents conclude that biogas in Brazil is not ready for rapid up-scaling. While acknowledging that addressing the finance and on-grid business models lies beyond the capacity of a small GEF project, it is proposed to tackle the key barriers specific to biogas: (a) technologies not adapted to local circumstances and conditions; (b) weak or incipient supply chain; (c) lack of tested and viable business models. And, to a lesser extent, to advocate for more proactive, supportive policy for biogas applications by fostering policy dialogue and issuing specific proposals.</p> <p>Considering the greater emphasis of the PROBIOGÁS project on municipal waste and sewage treatment, it is proposed to focus the project on the agricultural sector, for which valorization</p>

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			<p>of residues is a key factor to increase competitiveness, and where biogas technology may become a necessity for effluent treatment for all sizes of farms in terms of environmental legislation. These factors are closely aligned with UNIDO's core objectives and comparative advantage.</p> <p>By successful demonstration of biogas solutions and close engagement with the targeted agro-businesses to evaluate potential business cases, the project is expected to accelerate market demand for biogas, initially envisaged for the animal farming sector in the State of Paraná. At the moment, biogas for local mobility has been identified as the most promising business case, with some work already done by some of the project partners. This option, alongside possible alternative business cases, will be further assessed and detailed during the PPG phase.</p> <p>b) Noted. Kindly refer to the response under 3a).</p> <p>Further note the revisions made to the proposed outcomes and outputs (PIF, Part I. Table B and Part II. section 1, sub-section 3) to clarify the project strategy, focus and approach. Direct linkages have been established with climate funding schemes to ensure scaling. Rather than</p>

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			<p>pursuing such schemes within the project itself (with the risk of losing focus and overstretching management capacities and impact generation), benefit is taken from the fact that climate funding, specifically under performance based payment schemes, are prioritized by the Government for support under parallel GEF-6 initiatives. For more information, please refer to the attached document "OfÃ-cio-Circular nÂ° 06 SEAIN-MP".</p>
	<p>4. Is the project designed with sound incremental reasoning?</p>	<p>DER, April 3, 2015. No. Please see the following comments: a) If one of the barriers is lack of incentives, this does not bode well for sustainable market transformation. Please explain a business model for biogas that can succeed without incentives, especially in a country where power prices are declining due to large scale wind power production. b) The proposal describes several major Brazilian policy initiatives for biogas, however it also describes a patchwork of efforts, some urban, some rural, and some mixed, with little market assessment of where biogas can be truly successful. The project should be re-scoped to focus on a sub-sector where a project of this size can be truly trans-formative. c) A project cannot focus on biogas as electricity, biogas as fuel, upgrading, filling stations, and all the various</p>	<p>UNIDO July 28, 2015</p> <p>a) Noted. Please refer to the revised logical framework and the paragraph on incremental reasoning in the revised PIF (Part I. Table B. and Part II. section 1, sub-section 4). The project will explicitly focus on those market niches for biogas energy usage that are financially attractive for the actors involved and do not need subsidies. Biogas mobility is one such option, allowing the biogas sector to develop and become competitive, thereby opening itself to other markets.</p> <p>Notwithstanding, it must be noted that biogas production by anaerobic digestors involves internalization of externalities, which are currently not valued. Finally, biogas can contribute to local job generation and economic development. Additional revenue streams from public or private sources may contribute to the</p>

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		<p>pieces of multiple sectors. Please focus.</p> <p>d) The incremental reasoning is weak, as with so many baseline activities, the project does not describe how to make a substantial difference. The knowledge management and TA functions are too small to be of use in such a diffuse manner. The investment components are not transformative. Brazil does not need "solutions" demonstrated, it needs investors to build projects.</p> <p>e) The coordination of so many ministries is not attractive. By re-scoping the project to be more focused, there is an opportunity to succeed without spending so much time engaging with multiple and potentially competing ministry motivations.</p> <p>f) We see very little learning in this project from the many existing biogas facilities in Brazil and elsewhere.</p> <p>DER, August 24, 2015.</p> <p>a) Project is redesigned to focus on sustainable business models. Comment cleared.</p> <p>b) Revised project is much more focused. Comment cleared.</p> <p>c) Revised project clearly describes a more successful approach. Comment cleared.</p>	<p>financial viability of biogas projects, but should be based on sound economic principles.</p> <p>b) Noted. The baseline section in the PIF has been amended to provide a more structured overview of policy initiatives and achievements so far. Please also see Part II. section 1, sub-section 2 of the revised PIF.</p> <p>Building upon these and considering the energy- and fuel-intensity of the Brazilian agro-industry (34% of domestic electricity is consumed by this sector and transportation between farms, processors and off-takers consumes significant amounts of diesel on a daily basis) the proposed project will focus on the uptake of biogas in rural areas. A target region will be decided upon during the PPG phase in order to bundle efforts and assure that the funding requested for the proposed project can have a truly transformative impact. Kindly note that due to the high intensity of animal farming in the Southern Brazilian states, the target region will most likely be located in the State of Paraná.</p> <p>c) Noted. The PIF has been streamlined to focus on and promote the use of biogas as a vehicle fuel. Please see Part I. Table B. and Part II. section 1 of the revised PIF</p>

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		<p>d) Comment cleared.</p> <p>e) Project design is simplified. Comment cleared.</p> <p>f) Revised project aims to build on lessons learned. Comment cleared.</p>	<p>for further details.</p> <p>d) Noted. Kindly refer to response 3a).</p> <p>e) This concern is fully shared and efforts have been made to clarify roles and institutional arrangements in the revised PIF (Part II. section 2). Involved ministries are differentiated between the key project partner (MCTI “ SETEC/CGTS) and other ministries.</p> <p>Please note that the Ministry of Cities is involved due to its function as the host entity for PROBIOGÁS, which is part of the baseline. Coordination of activities will, in principle, take place at the level of PROBIOGÁS. The ministries MME, MAPA, MDA will be involved at the activity level to act as counterparts for policy and programme development. The Ministry of Environment is a key partner with respect to climate funding and coordination of the GEF CCM portfolio.</p> <p>It is acknowledged that institutional coordination at the ministry level can be challenging. In fact, component 1 aims to facilitate such coordination, which is essential to develop effective policy and regulatory framework for a cross-sectoral technology such as biogas. Coordination issues, if any, might affect the quality of outcome 1.</p>

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			<p>At the more operational level of outcomes 2 and 3, we believe that the project arrangements are fairly straightforward and effective.</p> <p>f) Please note that biogas technology is far from ubiquitous in Brazil and a solid, state-of-the-art supply chain and know-how base are lacking. On the other hand, a learning process has already started, for example through the PROBIOGÁS project, but also national initiatives such as pursued by CIBiogás-ER. Foreign expertise is drawn in to develop new technology and business models, but it is recognized that less capital-intensive equipment would be more suitable for the market in Brazil (and most of the other countries in Latin America).</p> <p>The proposed project aims to overcome this situation through various measures; foremost through the establishment of a Biogas Innovation Centre (BIC). This centre shall strengthen the national biogas supply chain through the evaluation of past practices and the creation, dissemination and promotion of best practices. In addition, the project will benefit from the direct involvement of Itaipu Binacional / CIBiogás-ER in its execution.</p>

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			<p>Furthermore, the proposed project foresees an active exchange with on-going similar projects in the country and region. Linkages with on-going projects undertaken by other implementing agencies in Brazil will be explored during the PPG phase. Joint regional workshops with the on-going GEF-5 and GEF-6 CCM projects by UNIDO in the region are already in planning (first one to take place in Uruguay in October 2015) and further synergies will also be explored. Please refer to Part II. section 5 of the revised PIF for further details.</p>
	<p>5. Are the components in Table B sound and sufficiently clear and appropriate to achieve project objectives and the GEBs?</p>	<p>DER, April 3, 2015. No. See comments in box 4.</p> <p>DER, August 24, 2015. The revised project will focus on sustainable business models for biogas for vehicles in the agricultural sector. The estimated GHG emissions reduction are 3.57 million tCO₂e. Comment cleared.</p>	<p>UNIDO July 28, 2015</p> <p>Please refer to the explanations provided in response to the comments received under Question 4. In addition, kindly refer to Part I. Table B, which has been adjusted accordingly in the revised PIF.</p>
	<p>6. Are socio-economic aspects, including relevant gender elements, indigenous people, and CSOs considered?</p>	<p>DER, April 3, 2015. The project proposal does describe these, but this will have to be re-visited if a re-designed project is submitted.</p> <p>DER, August 24, 2015. Comment cleared.</p>	<p>UNIDO July 28, 2015</p> <p>Please note that socio-economic aspects, particularly gender elements have been revisited during the revision of the PIF. Guiding principle of the proposed project remains that the project will ensure that both women and men are provided equal opportunities to access, participate in, and benefit from the project, without</p>

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			<p>compromising the technical quality of the project results.</p> <p>Furthermore, kindly note that while the project will engage with a broad range of key stakeholders on a national, regional as well as international level (including CSOs such as trade associations and chambers of commerce and industry of the export and industrial sector), engagement with indigenous people, is specifically not foreseen for this project.</p>
Availability of Resources	7. Is the proposed Grant (including the Agency fee) within the resources available from (mark all that apply):		
	<ul style="list-style-type: none"> • The STAR allocation? 	<p>DER, April 3, 2015. No letter of endorsement is supplied. Review cannot proceed.</p> <p>DER, August 24, 2015. A letter of endorsement signed on June 19, 2015, is attached. Comment cleared.</p>	<p>UNIDO, July 28, 2015. Please note that the Letter of Endorsement has been provided by the Brazilian Ministry of Planning, Budget and Management, Secretariat of International Affairs (SEAIN). Please find "Ofício Endosso nº 72 SEAIN-MP", dated 19th June 2015 attached.</p> <p>Table A in Part III. of the PIF has been revised accordingly.</p>
	<ul style="list-style-type: none"> • The focal area allocation? 		
	<ul style="list-style-type: none"> • The LDCF under the principle of equitable access 		
	<ul style="list-style-type: none"> • The SCCF (Adaptation or Technology Transfer)? 		
	<ul style="list-style-type: none"> • Focal area set-aside? 		

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Recommendations	<p>8. Is the PIF being recommended for clearance and PPG (if additional amount beyond the norm) justified?</p>	<p>DER, April 3, 2015. No. We understand the Government of Brazil has not completed its planning for the GEF-6 portfolio. We recommend no further development of this project until the Government has completed its planning and prioritization. Further, we urge a technical discussion with the agency and Secretariat to better understand how a project on this topic can be properly scoped to better address the comments above.</p> <p>DER, August 24, 2015. A technical discussion was arranged with agency and country representatives in June 2015 that helped clarify numerous questions and concerns over the project. The government has identified this project as a priority and has included a letter of endorsement. All comments cleared. The program manager recommends CEO PIF clearance.</p>	<p>UNIDO July 28, 2015</p> <p>Kindly refer to response 2a) and the attached document "Ofício-Circular n.º 06 SEAIN-MP" by the Brazilian Ministry of Planning, Budget and Management, Secretariat of International Affairs (SEAIN) that outlines the national GEF priorities, which became available only after the original submission of the PIF to the GEF. This document dated 26th March 2015 was formally shared with UNIDO on 19th June 2015.</p> <p>The proposed Project is aligned with priority (iv) "Technology Development for Renewable Energy Source", which foresees the promotion and development of processes and technologies for energy generation "electricity and/or fuel" from renewable sources obtained from solid and liquid agricultural and urban waste (pg. 4). Moreover, proposals to be submitted under this priority shall address the obstacles presently impeding large-scale deployment by seeking to develop technologies and solutions that involve the public and private sector and consider technical, economic, social and environmental aspects. The proposals shall include an analysis of the viability for energy application and, in the case of electricity generation, should specify the regulatory challenges that need to be met</p>

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			<p>for integration into the national electricity system in Brazil (pg. 5).</p> <p>Based on the outline above, the present proposal is considered fully aligned with the established priorities of the Government of Brazil. Development of the project has thus been continued with the viability of the pursued business models further elaborated in the revised PIF. Additional analysis and quantification of the proposed model shall also be undertaken during the PPG phase.</p> <p>Kindly note that a technical meeting to exchange viewpoints and expectations between the GEF Secretariat, the Brazilian proponents and UNIDO was held in Vienna on 19th June 2015.</p>
Review Date	Review	April 03, 2015	
	Additional Review (as necessary)	August 24, 2015	
	Additional Review (as necessary)		

CEO endorsement Review

Review Criteria	Questions	Secretariat Comment at CEO Endorsement	Response to Secretariat comments
Project Design and Financing	1. If there are any changes from that presented in the PIF, have justifications been provided?	DER, May 4, 2017. Yes. All changes have been justified.	
	2. Is the project structure/ design appropriate to achieve the expected outcomes and outputs?	DER, May 4, 2017. Yes.	
	3. Is the financing adequate and does the project demonstrate a cost-effective approach to meet the project objective?	DER, May 4, 2017. Yes.	
	4. Does the project take into account potential major risks, including the consequences of climate change, and describes sufficient risk response measures? (e.g., measures to enhance climate resilience)	DER, May 4, 2017. Yes.	
	5. Is co-financing confirmed and evidence provided?	DER, May 4, 2017. Yes.	
	6. Are relevant tracking tools completed?	DER, May 4, 2017. Yes.	
	7. <i>Only for Non-Grant Instrument:</i> Has a reflow calendar been presented?	DER, May 4, 2017. NA	
	8. Is the project coordinated with other related initiatives and national/regional plans in the country or in the region?	DER, May 4, 2017. Yes.	
	9. Does the project include a budgeted M&E Plan that monitors and measures results with indicators and targets?	DER, May 4, 2017. Yes.	
	10. Does the project have descriptions of a knowledge management plan?	DER, May 4, 2017. Yes.	

Agency Responses	11. Has the Agency adequately responded to comments at the PIF ³ stage from:		
	• GEFSEC	DER, May 4, 2017. Yes.	
	• STAP	DER, May 4, 2017. Yes. The CEO endorsement document includes response to the comments in Annex B.	
	• GEF Council	DER, May 4, 2017. Yes. The CEO endorsement document includes response to the comments in Annex B.	
	• Convention Secretariat	DER, May 4, 2017. NA	
Recommendation	12. Is CEO endorsement recommended?	DER, May 4, 2017. Yes. The CEO endorsement package is complete; all comments cleared. The program manager recommends CEO endorsement.	
Review Date	Review	May 04, 2017	
	Additional Review (as necessary)		
	Additional Review (as necessary)		

³ If it is a child project under a program, assess if the components of the child project align with the program criteria set for selection of child projects.