



PROJECT IDENTIFICATION FORM (PIF)

PROJECT TYPE: FULL-SIZED PROJECT

TYPE OF TRUST FUND: GEF TF

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PART I: PROJECT INFORMATION

Project Title:	Sustainable business models for biogas production from organic municipal solid waste.		
Country(ies):	Argentina	GEF Project ID: ¹	5734
GEF Agency(ies):	UNDP	GEF Agency Project ID:	5345
Other Executing Partner(s):	Secretariat of Environment and Sustainable Management (SAyDS)	Submission Date:	March 2014
GEF Focal Area (s):	CCM-3	Project Duration (Months)	48 months
Name of parent program (if applicable):		Project Agency Fee (\$):	\$264,086
<ul style="list-style-type: none"> For SFM/REDD+ <input type="checkbox"/> For SGP <input type="checkbox"/> For PPP <input type="checkbox"/> 			

A. INDICATIVE FOCAL AREA STRATEGY FRAMEWORK²:

Focal Area Objectives	Trust Fund	Indicative Grant Amount (\$)	Indicative Co-financing (\$)
CCM 3: Favorable policy and regulatory environment created for renewable energy investments	GEF TF	979,849	2,549,824
CCM 3: Investment in renewable energy technologies increased	GEF TF	1,800,000	10,115,176
(select) (select)	(select)		
(select) (select)	(select)		
(select) (select)	(select)		
Total Project Cost		2,779,849	12,665,000

B. INDICATIVE PROJECT DESCRIPTION SUMMARY

Project Objective: To introduce biogas technologies for energy generation as part of the National Strategy for integrated municipal waste management.						
Project Component	Grant Type ³	Expected Outcomes	Expected Outputs	Trust Fund	Indicative Grant Amount (\$)	Indicative Cofinancing (\$)
I. Strengthening of institutional capacities	TA	1. Biogas-based energy technologies are included in Integrated MSW Management Plans of provinces and municipalities.	1. Design of business models for electricity and/or heat production based on biogas (digestors and methane capture) from MSW for a range of plant sizes and operations model. 2. MSW biogas systems are technically and economically adapted to local conditions. 3. Integration of biogas	GEF TF	949,849	2,425,000

¹ Project ID number will be assigned by GEFSEC.

² Refer to the reference attached on the [Focal Area Results Framework and LDCF/SCCF Framework](#) when completing Table A.

³ TA includes capacity building, and research and development.

			<p>technology for energy generation into the national GIRSU and GENREN Programmes.</p> <p>4. Implementation of a mid and long term strategy for the replication of biogas projects</p> <p>5. Compilation and enactment of proposals to enhance the regulatory framework for MSW biogas.</p> <p>6. Promotion of MSW biogas technology among municipalities, project developers, industries and the general public.</p>			
II. Demonstration and Investment	INV	2. Demonstration biogas plants using MSW feedstock are procured and fully operational.	<p>1. Execution of feasibility studies, permitting procedures and final engineering plans for the envisaged biogas digestors and power plants.</p> <p>2. Procurement and operation of one (1) biogas demonstration plant in a medium-size town using MSW feedstock.</p> <p>3. Procurement of one (1) biogas plant in a larger town, including delivery of electric energy and heat to a buyer under a long-term contract (PPA).</p> <p>4. Monitoring and evaluation of project implementation and demonstration plants, including compilation of lessons learnt.</p>	GEF TF	1,700,000	9,620,000
Subtotal					2,649,849	12,045,000
Project Management Cost (PMC) ⁴				GEF TF	130,000	620,000
Total Project Cost					2,779,849	12,665,000

⁴ To be calculated as percent of subtotal.

C. INDICATIVE CO-FINANCING FOR THE PROJECT BY SOURCE AND BY NAME IF AVAILABLE, (\$)

Sources of Cofinancing	Name of Cofinancier	Type of Cofinancing	Amount (\$)
National Government	SAyDS (GIRSU)	Cash	2,523,000
National Government	SAyDS (GIRSU)	Loan	10,092,000
GEF Agency	UNDP	Cash	50,000
Total Co-financing			12,665,000

D. INDICATIVE TRUST FUND RESOURCES (\$) REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY¹

GEF Agency	Type of Trust Fund	Focal Area	Country Name/Global	Grant Amount (\$) (a)	Agency Fee (\$) (b) ²	Total (\$) c=a+b
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
Total Grant Resources				0	0	0

¹ In case of a single focal area, single country, single GEF Agency project, and single trust fund project, no need to provide information for this table. PMC amount from Table B should be included proportionately to the focal area amount in this table.

² Indicate fees related to this project.

E. PROJECT PREPARATION GRANT (PPG)⁵

Please check on the appropriate box for PPG as needed for the project according to the GEF Project Grant:

	<u>Amount Requested (\$)</u>	<u>Agency Fee for PPG (\$)⁶</u>
• No PPG required.	-- 0--	--0--
• (upto) \$50k for projects up to & including \$1 million		
• (upto)\$100k for projects up to & including \$3 million	75,000	7,125
• (upto)\$150k for projects up to & including \$6 million		
• (upto)\$200k for projects up to & including \$10 million		
• (upto)\$300k for projects above \$10 million		

PPG AMOUNT REQUESTED BY AGENCY(IES), FOCAL AREA(S) AND COUNTRY(IES) FOR MFA AND/OR MTF PROJECT ONLY

Trust Fund	GEF Agency	Focal Area	Country Name/Global	(in \$)		
				PPG (a)	Agency Fee (b)	Total c = a + b
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
Total PPG Amount				0	0	0

MFA: Multi-focal area projects; MTF: Multi-Trust Fund projects.

⁵ On an exceptional basis, PPG amount may differ upon detailed discussion and justification with the GEFSEC.

⁶ PPG fee percentage follows the percentage of the GEF Project Grant amount requested.

PART II: PROJECT JUSTIFICATION⁷

A. PROJECT OVERVIEW

A.1. PROJECT DESCRIPTION. BRIEFLY DESCRIBE THE PROJECT, INCLUDING ; 1) THE GLOBAL ENVIRONMENTAL PROBLEMS, ROOT CAUSES AND BARRIERS THAT NEED TO BE ADDRESSED; 2) THE BASELINE SCENARIO AND ANY ASSOCIATED BASELINE PROJECTS, 3) THE PROPOSED ALTERNATIVE SCENARIO, WITH A BRIEF DESCRIPTION OF EXPECTED OUTCOMES AND COMPONENTS OF THE PROJECT, 4) INCREMENTAL/ADDITIONAL COST REASONING AND EXPECTED CONTRIBUTIONS FROM THE BASELINE , THE GEFTF, LDCF/SCCF AND CO-FINANCING; 5) GLOBAL ENVIRONMENTAL BENEFITS (GEFTF, NPIF) AND/OR ADAPTATION BENEFITS (LDCF/SCCF); 6) INNOVATIVENESS, SUSTAINABILITY AND POTENTIAL FOR SCALING UP

Project context

Argentina, the second-largest country in South America with a continental territory of 2,780,400 km² and a population of 40.1 million people, relies almost entirely on fossil fuels to meet its energy demand (natural gas and oil are nearly 90% of primary energy sources). Natural gas is also the main secondary energy carrier (49%), for which an extended supply infrastructure was created after the discovery of large domestic resources; other secondary energy carriers are: gas oil (15%) and electricity (13%)⁸. Since domestic production of energy sources did not keep up with demand growth, Argentina has become a net importer of natural gas, electricity and gas oil. Electricity production is predominantly based on fossil fuels (66.2%) and large hydropower (27.6%). Demand growth is 4.3%, with an average demand per household of 2,761 kWh (2010). The electricity coverage is high (98%); however, nearly half a million people still lack access to grid-quality electricity.

The use of non-conventional renewable energies has been very limited until now in spite of the country's huge potential. Biomass accounts for only 5% of primary energy consumption, which is very low for the region. Argentina is known for its excellent wind resources in Patagonia, which featured the first wind turbine developments in Latin America in the early 1990s. However, electricity and natural gas prices for end-users are heavily subsidized, making renewable energy projects unattractive for private investors. Macro-economic difficulties, including inflation and exchange rate issues have also hampered investment in renewable energies. While reverting the system of energy subsidies would imply a long political process, the Government took action in 2006 by declaring hydrocarbon self-sufficiency a national priority (Law 26.741), and went on to support renewable energies through Law 26.093, which demands a minimum share of biofuels in transport fuels⁹, and Law 26.190, which stipulates that 8% of electricity generation be derived from non-conventional renewable energy sources by 2016.

In 2010, state-owned energy company ENARSA, following instructions of the Secretary of Energy¹⁰, issued a bidding for 1,015 MW of renewable energy-based, electricity generating capacity (grid connected) under its GENREN programme. As a result of the bidding, a total 895 MW was granted as follows: wind energy (754 MW), biofuel-based thermal power systems (110.4 MW), small hydro power (10.6 MW), and solar PV projects (20 MW). The prices offered (at the point of connection) vary according to the RE technology: wind energy 126.9 US\$/MWh; biofuel-based thermal power 287.6 US\$/MWh; small hydro 162.4 US\$/MWh; and solar PV 571.6 US\$/MWh. These projects will

⁷ Part II should not be longer than 5 pages.

⁸ The following sources of primary energy are used in Argentina: natural gas (51%), oil (35%), nuclear (3%), coal (1%), biomass (5%), renewable energies (1%), and hydropower (5%). Total energy demand (2010) is 53,637 ktep; annual demand growth is 3.1% (2003-2010). Source: Final report, G. Rabinovich, UNDP - IADB Project Sustainable Energy for All (Buenos Aires, 21 Nov. 2012).

⁹ The law requires a 7% blend of biodiesel in gas oil and 5% ethanol in gasoline fuels by 2010.

¹⁰ Secretaría de Energía de la Nación, Resolución 712/2009.

be offered a fixed price for a 15-year period¹¹, which should guarantee bankability and an acceptable return on investment.¹² The GENREN programme is an important step forward towards increasing the share of renewable energies into Argentina's energy mix. However, most of the awarded projects are delayed or have difficulties to secure financing, as the risk of defaulting on the offered PPAs is perceived as high by the investors¹³. This risk is primarily a political risk. In principle, the offered prices are lower than the system's marginal generation costs, implying a net economic benefit for the State by off-setting tariff subsidies.

Biogas has significant potential for electricity and heat generation, and also as a transport fuel and, after upgrading, as "green gas" for injection into Argentina's extensive natural gas distribution system¹⁴. The main sources of biogas in Argentina are agriculture and livestock, municipal solid waste (MSW), and industrial processes. Biogas is obtained by methane capture from landfill sites and by anaerobic digestion of organic waste flows, including manure from cattle. Besides offsetting fossil energy sources, biogas also reduces uncontrolled releases of methane (a powerful greenhouse gas) into the atmosphere. Biogas from landfill sites will expectedly be included in the next round of the GENREN programme. Small-scale biodigester technology is applied at a pilot scale on farms and in rural villages, assisted by national research institutes¹⁵. Agroindustries use anaerobic biodigestors for processing of residues or effluents; in some cases the biogas is used for process heat. There are further a number of wastewater treatment facilities using anaerobic digester technology, which flare the biogas produced. Argentina's Technology Needs Assessment identifies a potential generation of 460,000-700,000 MWh annually from biogas based on Municipal Solid Waste, which is significant both in terms of generation and associated GHG emission reductions.

Biogas energy technology applied to organic MSW faces a number of challenges: (i) Process operation and maintenance. Biogas systems may have problems to maintain the digestion process, which depends on the activity of micro-organisms. MSW-based systems require a stable flow of feedstock and adequate control of process parameters (such as temperature). This may be difficult to achieve, or require additional investment in control equipment and training of skilled operators¹⁶. On the contrary, feedstock from agroindustrial processes is usually stable in terms of volume and composition, thereby facilitating automatic operation. (ii) Financial sustainability of biogas-based energy generation may be difficult to achieve, since the unit energy costs often exceed the cost of grid electricity¹⁷. Also, project risks are higher if the operator has limited control on the supply of organic feedstock¹⁸. By result, conventional business models (IPP) and project finance may not work. An integrated ownership and operational model, as applied by agroindustries, may prove more effective. (iii) Sites for waste treatment and disposal cause local social and environmental impacts, which can affect the development of biogas plants. Impacts include: interference with traditional, often informal waste collection, separation and recycling; nuisance and health risks for nearby residential areas; impact on aquifers; emissions and odors.

¹¹ With the exception of biofuel projects, for which the price is maintained for a 10-year period.

¹² Source: Ministerio de Planificación Federal, Inversión Pública y Servicios, Secretaría de Energía <http://energia3.mecon.gov.ar/contenidos/verpagina.php?idpagina=3291>.

¹³ See: http://www.clarin.com/politica/Energia-fracaso-Enarsa-nuevas-licitaciones_0_1043895670.html.

¹⁴ For more information about green gas see, for example: <http://www.greengasgrids.eu/>.

¹⁵ Including the National Institute for Agriculture and Livestock Technology INTA, which executes the national Bioenergy Programme. See: <http://inta.gob.ar/noticias/noticias-de-bioenergia-1/>. INTA is an autonomous entity ascribed to the national Ministry of Agriculture, Livestock and Fishery (MinAgri).

¹⁶ Lessons can be drawn from the UNDP/GEF Project "*Reduction of Methane Emissions and Utilization of Municipal Waste for Energy in Amman*", Jordan (PIMS #55), which combined landfill biogas production with a dedicated biodigester system to process separately collected organic waste. Fluctuations in the quality and amount of feedstock for the large digester caused reliability issues while methane capture proved quite successful. See: http://www.thegef.org/gef/project_detail?projID=280.

¹⁷ For the same reason, biogas technology can be a least-cost option in rural areas, where grid electricity is not available, or as a source of distributed power generation in weak grids.

¹⁸ A particular problem with MSW-based biogas digester technology is the potential presence of toxic substances (such as heavy metals) in the feedstock.

Technical capacity in the field of biogas is fairly well developed in Argentina¹⁹. The National Institute for Industrial Technology (INTI) and the National Institute for Agricultural and Livestock Technology (INTA) have research groups and programmes targeting the development and implementation of biogas technology. A preliminary inventory of biogas plants in Argentina lists a total of 35 initiatives using anaerobic digestion technology in 6 provinces, including pilots and demonstration plants. About 10 are large commercial systems (1,000-35,000 m³) based on membrane or UASB technology are in use for treatment of process waste flows. These systems are built by Argentinian engineering companies. The biogas is generally used for process heat. Several smaller systems were built for educational purposes (schools) and are no longer used. Some small and medium-size plants (< 800 m³) were suspended due to management problems and/or a lack of maintenance. Out of the 35 systems, 12 digest (or co-digest) organic municipal solid waste. Several MSW systems are successful for small-scale heat generation²⁰. There is virtually no experience with electricity generation based on biogas. The only landfill site presently producing small volumes of electricity is at Neuquen (approx. 300,000 people), which was inaugurated 22 May 2013²¹.

The Secretary of Environment and Sustainable Development (SAyDS) developed the National Strategy for Integrated MSW Management (ENGIRSU)²², funded by the World Bank²³. ENGIRSU aims to address the environmental, public health and social issues related to the traditional open dumps, which are common practice outside the main urban centres. "Integrated" waste management refers to the comprehensive approach followed by the programme to the reduction and recycling of MSW, composting, efficient collection, and the construction of adequate sanitary landfill sites as centres for final disposal, thereby offering complete solutions. The operation of the landfill sites and the waste collection and recycling service is assumed either by the local municipality itself or by a concessionary (a private company); citizens are charged for the service to allow cost-recovery.

A dedicated Project Implementation Unit (PIU) was set up for executing the *National Urban Solid Waste Management Project* World Bank loan (7362-AR), formally created by resolution N° 250 (1 March 2007). The World Bank loan envisages creating adequate MSW infrastructure in 31 municipalities, closure of existing open dumps, building of institutional and management capacity, and social inclusion of waste pickers and their families²⁴. For each municipality where GIRSU is active, waste flow surveys, feasibility studies and detailed technical designs are carried out prior to the construction of a modern waste management facility. Consultancies, civil works and equipment are procured under a tender mechanism, issued by SAyDS and managed and supervised by the GIRSU Project Unit. The Programme is financed by the national Government (SAyDS) under sovereign multilateral loans. In 2013, additional funding has been negotiated with IADB. (The set of projects and loan instruments implement by the GIRSU Project Implementation Unit, will be referred to as the "GIRSU Programme" in this PIF.) The GIRSU programme introduces state-of-the-art technical and management solutions for waste management in Argentina and is presented by the World Bank as a best practice in this area²⁵.

Biogas is a relevant aspect of municipal solid waste management in more advanced countries, and can be obtained by capture of landfill gas or on methane production based on anaerobic digestion of selected, organic residue streams in a controlled biodigester process. Biogas for energy generation fits into an integrated approach to waste management to exploit the value of waste flows. Biogas capture

¹⁹ A recent case is, for example, the use of biogas for electricity and heat self-supply at the Yanquetruz pig farm in the Province of San Luis (<http://intainforma.inta.gov.ar/?p=12127>).

²⁰ These systems are typically 10-20 m³. One larger (200 m³) biodigester using MSW, is operating at a school (Escuela Agrotécnica Alberdi) in Oro Verde (Entre Ríos Province). More information about 35 projects can be provided on request.

²¹ See: <http://www.rionegro.com.ar/diario/inauguran-planta-de-biogas-en-el-basurero-municipal-1169369-9862-nota.aspx>.

²² ENGIRSU: Estrategia Nacional para la Gestión Integral de Residuos Sólidos Urbanos (RSU).

²³ World Bank Project "National Urban Solid Waste Management" P089926 (loan BIRF 7362-AR, US\$ 40 million). Also IADB provides funding under loans AR-L1151 (US\$ 150 million) and AR-L1868 (US\$ 60 million, focused on smaller municipalities with tourism potential).

²⁴ For more information, please refer to: <http://documents.worldbank.org/curated/en/docsearch/projects/P089926%5EP089926>.

²⁵ For more information, please consult: <http://www.worldbank.org/en/news/feature/2012/10/26/argentina-urban-solid-waste-management-best-practices>.

and flaring is applied at the larger sanitary landfills that are being built under the GIRSU programme, and was considered as an opportunity to generate revenues under the CDM mechanism. Biogas for energy production has not been pursued so far under the GIRSU programme. With renewable energies now being prioritized in Argentina, biogas should be treated as a valuable energy resource that can create a revenue stream for municipal authorities or their concessionaries in charge of MSW.

However, a number of barriers are in place impeding the widespread application of biogas energy technology, including: (i) lack of secondary regulatory instruments facilitating grid connection and dispatch of distributed power systems; (ii) lack of regulation concerning safety of installations and transport of digestate; (iii) limited knowledge of energy systems in waste sector, and weak coordination between authorities; (iv) lack of economically and financially viable business models (including valorization of delivered environmental services); and (v) lack of successful examples of biogas-based, on-grid electricity generation. The proposed UNDP/GEF project aims to address these barriers and open up the market potential for biogas (landfill and anaerobic digester) technology from MSW in Argentina²⁶.

Baseline project

The baseline project consists of the "GIRSU Programme", aimed at modernizing waste collection and disposal in the entire territory of Argentina in line with the National Strategy ENGIRSU. This Strategy, launched in 2004, develops integrated waste management solutions for the individual municipalities²⁷ in the country. The programme is implemented by the Secretary for Environment and Sustainable Development (SAyDS). The GIRSU Project Implementation Unit is well established and will be continued by SAyDS. The objective of ENGIRSU is to have adequate and sustainable waste management solutions implemented throughout Argentina by the year 2025. The GIRSU Project Unit thereby acts as a catalyst, linking together the federal, provincial and municipal government levels and mobilizing the private sector, academic community, civil society organizations and stakeholders with respect to MSW. Up to now, the GIRSU programme does not consider biogas energy plants in the selected municipalities. Biogas energy systems can be included in the current GIRSU tender system as a relatively small "add-on". However, municipalities, SAyDS, and the multilateral banks will not feel confident to invest in MSW biogas technology in the absence of successful precedents in Argentina.

Meanwhile, the Secretary of Energy is pushing forward the use of renewable energy sources (based on Law 26.190). Following Government instructions, the national energy company ENARSA can issue calls for tender inviting proponents to present renewable energy (RE) projects. The tenders are open up to a maximum capacity (MW) per type of technology and offer a preferential, fixed price per kWh electricity delivered. These prices vary per technology and are fixed for 15 years. For on-grid electricity generation, biogas will expectedly be included in the next tender round of the GENREN programme. However, the GENREN programme does not address specific barriers for renewable energy technologies other from the financial barrier. Under the incipient market for renewable energies created by GENREN, project developers will first exploit the larger, rewarding projects before heading to smaller project such as biogas.

Under the baseline scenario, the following mechanisms are devised to develop a market for MSW-based biogas: (i) Short-term, by demanding biogas energy technology to be incorporated in integrated waste management facilities. This can be done under the ongoing GIRSU programme for self-supply and sales of electricity and heat. (ii) Medium-term, by project developers proposing on-grid biogas for independent power production (IPP) under the GENREN programme. Both mechanisms would require removal of identified barriers, which provides the rationale for GEF involvement.

Complementary to the baseline project, private companies, predominantly agroindustries, implement

²⁶ An exhaustive assessment of the barriers for renewable energy technologies in Argentina was performed under a project of the Secretary of Energy, REEEP and Fundación Bariloche *"Estudio prospectivo de energías renovables destinado a remover barreras técnicas, económicas, regulatorias y financieras a la generación de electricidad"* (June 2009).

²⁷ Argentina counts 23 provinces, the autonomous city of Buenos Aires, and about 9,100 municipalities.

biogas systems to control effluents and produce energy for self-supply; and federal research institutes (including INTI and INTA) and municipalities assisted by researchers and NGOs, explore the use of small-scale biodigester installations for a variety of purposes. Jointly with the Ministry of Agriculture, Livestock and Fishery (MAGyP), the use of biomass flows under the PROBIOMASA initiative (including resources suitable for biogas production) is promoted²⁸.

Under the baseline project, the application of biogas technology for MSW treatment and energy generation is expected to increase very slowly due to the indicated barriers and the lack of successful examples. Moreover, the progressive implementation of the GIRSU Programme may translate into a lost opportunity if biogas energy technology is not included timely. GEF support under CCM-3 is particularly relevant as the waste sector lacks the specific knowledge to integrate renewable energy technologies into the MSW management solutions offered under the baseline GIRSU Programme.

Proposed solution

The proposed solution envisages embedding support for municipal biogas systems into the GIRSU Programme, thereby taking advantage of the strong institutional capacity of the latter, including its capacity to organize stakeholders and concentrate available know-how and resources. This will be achieved through: (a) strengthening of institutional capacities by mobilizing technological and business expertise available in Argentina towards MSW processing; (b) development of business models enabling the sustainable operation of biogas-based energy production at the municipal level; (c) compilation and approval of proposals to enhance the regulatory framework for MSW biogas in coordination with the Secretary of Energy; and (d) demonstration of biogas energy technologies for a range of plant sizes relevant for medium, and larger towns in Argentina. The Project will push municipal biogas technology from the level of small-scale, non-consolidated initiatives to technologically mature and reliable projects, based on standardized components and approaches.

At Project termination, MSW biogas technology will have demonstrated its potential to contribute to Argentina's renewable energy targets. At this point, widespread deployment will take place: (i) by SAsyDS, demanding biogas energy systems to be built at waste treatment sites where this is feasible, and negotiating investment budget to this purpose; (ii) by private project developers proposing MSW biogas plants for connection to the grid as an independent power producer, presumably selling electricity to ENARSA under the GENREN programme. Proposals to enhance the regulatory framework for MSW biogas utilization will be prepared and presented to the Secretary of Energy for approval.

The objective of the proposed UNDP/GEF Project "*Sustainable business models for biogas production from organic municipal solid waste*" is: to introduce biogas technologies for energy production as part of integrated management plans for municipal solid waste (MSW). The Project will envisagedly be structured into two main components, as follows:

Component I (Strengthening of institutional capacities)

Outcome 1: Biogas-based energy technologies are included in Integrated MSW Management Plans of provinces and municipalities. (GEF: US\$ 855,000; cofinance: US\$ 2,425,000).

1. Design of business models for electricity and/or heat production based on biogas (digestors and methane capture) from MSW for a range of plant sizes. The Project envisages to improve financial sustainability of biogas installations by integrating biogas technology into MSW management businesses and exploring local energy uses, rather than focusing on the IPP modality alone. As such, energy generation fits into a business approach aimed at maximizing the revenues obtained from waste collection, recycling and disposal. These business concepts and necessary skills are presently not developed for biogas projects in the waste sector. The purpose of this output is to define a set of

²⁸ PROBIOMASA: Project for the Promotion of Biomass-based Energy, implemented with technical assistance from FAO. See: <http://www.probiomasa.gob.ar/>.

generic business models for biogas energy generation, per project type and management model. Parameters include: electricity, heat, organic fertilizer, self-supply, sales to third-parties, including the grid; project scale; socio-economic and geographical context. This output will draw on the management models developed under GIRSU and experiences with energy production from MSW-based biogas in other countries. (GEF: US\$ 150,000; cofinance: US\$ 175,000).

2. MSW biogas systems are technically and economically adapted to local conditions. The design of biodigester systems depends on local conditions, including ambient temperature, feedstock composition, the availability of components on the national market, operational costs, logistics and safety aspects. For biodigestors operated with MSW, feedstock needs to be characterized as part of the feasibility study. There is a lack of consolidated data in Argentina characterizing feedstock under "typical conditions", which is an obstacle to project development and design²⁹. Data on MSW composition obtained under the GIRSU baseline programme, must therefore be complemented by detailed chemical analyses of the organic component for each biogas project site. During project operation, monitoring of the feedstock composition and the origin of organic waste streams remains needed. This output will finance consultancies, including laboratory tests and process engineering, to adapt existing biogas technology to the local requirements. It will draw on the know-how of research institutes and the lessons learnt from scattered MSW initiatives, with the aim to propose a set of standardized designs and guidelines for biogas energy generation, as part of MSW plants. (GEF: US\$ 150,000; cofinance: US\$ 500,000).

3. Integration of biogas technology for energy generation into the national GIRSU and GENREN Programmes. This output pursues making available technical and financial information and guidelines for MSW-based biogas project development, as well as evaluation criteria, to the SAYDS, municipalities and tendering companies involved in the design and implementation of municipal waste facilities. This output will also establish criteria for MSW management with the aim of ensuring optimal biogas production. This will be incorporated into standard waste management practices, thus facilitating the use of biogas by eventual energy generation enterprises. Once demonstration pilots are successfully operating, the Project will advocate the allocation of investment budget for biogas plants under the GIRSU programme. This output will also liaise with the Secretary of Energy to support the inclusion of biogas generation under the national GENREN programme for on-grid renewable energy sources. (GEF: US\$ 150,000; cofinance: US\$ 300,000).

4. Implementation of a mid and long term strategy for the replication of biogas projects. This output focuses on establishing the conditions for additional investment in biogas energy generation in the medium and long term, both by state and private investors. In the medium term, the main replication strategy is to incorporate biogas generation into the GIRSU program, which would result in the development of approximately 30 additional generation facilities (the municipalities where GIRSU is expected to operate in the coming years). A portfolio of 3 pre-feasibility studies will be developed, providing GIRSU (and/or potentially interested IPPs) with firm data for project development. Likewise, the project will work with GIRSU in incorporating biogas based generation in its financial package. As GIRSU's MSW program is financed through MDBs, this will entail assessing the best means to incorporate biogas generation into the lending program. The project will also work with GIRSU and the MDBs in designing potential financial risk mitigation measures within the loan packages to stimulate investment. This may include guarantee mechanisms and/or financing schemes for project preparation costs, among others. The GEF project is not expected to provide financing for such mechanisms but will support their establishment and design as necessary. In the long run (post project) the replication will occur through GIRSU, but also through strengthened participation of the private sector in response to the GENREN programme. This support is provided mainly through the

²⁹ For comparison, Germany has extensive numeric data specifying many types of agro-industrial feedstock, critical concentration ranges of chemical components and inhibitors, suitable control equipment and parameters. The availability of "rules of thumb" and best practices is of great help for project developers and farmers to assess the feasibility and cost of a biogas plant. See, for example, KTBL Darmstadt (www.ktbl.de). Argentina has not reached this point yet, not for agro-industrial residues, nor for organic MSW. Preliminary studies on biogas are based on rough estimates that are not validated for Argentina..

activities in Output 1.3 and 1.5. (GEF US\$199,849; cofinance US\$ 300,000)

5. Compilation and enactment of proposals to enhance the regulatory framework for MSW biogas utilization as part of the national ENGIRSU strategy. In order to actively promote the development of renewable energies (RE), specifically biogas, in Argentina, further work is needed to address remaining barriers. Besides creating appropriate financial incentives for RE investors and operators³⁰, technical aspects include grid access and dispatch, grid infrastructure, model PPAs for small generators, among others. For MSW-based biogas projects, one can further add: compliance with environmental and safety standards, simplified permitting procedures, valorization of environmental and social benefits. Under this output, identified barriers will be analyzed, and proposals and recommendations to amend the current framework will be compiled and discussed with stakeholders. (GEF: US\$ 200,000; cofinance: US\$ 800,000).

6. Promotion of MSW biogas technology among municipalities, project developers, industries and the general public. This output aims to create awareness about the benefits and the state of biogas technology in Argentina, drawing on work done by researchers and successful projects in the private sector. This output builds upon the strength of the GIRSU baseline project to mobilize stakeholders in the waste sector. Specific activities include: national and regional events, seminars, and promotion material. It includes training of selected public officers at the municipal and provincial level. (GEF: US\$ 100,000; cofinance: US\$ 350,000).

Component II (Demonstration and investment)

Outcome 2: Demonstration biogas plants using MSW feedstock are procured and fully operational (GEF: US\$ 1,785,859; cofinance: US\$ 9,620,000).

1. Execution of feasibility studies, permitting procedures and final engineering plans for the envisaged biogas digestors and power plants. This output comprises project development activities, including finalization of feasibility studies and technical designs, securing of all necessary permits, formalization of contractual arrangements, and securing of investment capital. (GEF: US\$ 200,000; cofinance: US\$ 300,000).

2. Procurement and operation of one (1) biogas demonstration plant in a medium-size town using MSW feedstock. This output consists of the construction, procurement, testing and initial operation of one biogas plants for electricity and/or heat generation. GEF funding will be used for co-investment to establish a successful showcase of biogas utilization as part of integrated MSW treatment facilities in a medium-size town³¹. Once installed, the technical and economic performance will be monitored to achieve further optimization, and to draw lessons for future replication. (GEF: US\$ 500,000; cofinance: US\$ 2,525,000).

3. Procurement of one (1) biogas plant in a larger town, including delivery of electric energy and heat to a buyer under a long-term contract (PPA). It is assumed that large-scale technology is technologically mature and can be delivered turn-key. This output aims to provide financial support for the construction and sustainable operation of a biogas plant for electricity and heat production at a large MSW site. This plant will expectedly be developed and financed by SAYDS under the GIRSU programme and operated by the local Municipality or its concessionaire (private company) in charge of the waste management. It is envisaged to deliver electric energy to a buyer (local public or private consumer, or the grid) under a long-term power purchase agreement (PPA). With a view on replication, it is proposed to use the GEF funds as follows: (i) 50% as an investment subsidy, thereby reducing project risks and capital costs for the investor; and (ii) 50% as a performance-based payment

³⁰ For biogas plant feeding into the grid, a price incentive will be provided under the GENREN programme. Other envisaged financial support instruments include project development grants (pre-investment phase) and carbon credits,

³¹ As small towns are considered those with less than 20,000 inhabitants. Medium-size towns have less than 200,000 people. Above 200,000, places are considered as large cities in Argentina. Tentatively, the following towns have been identified to implement the biogas demonstration plants: Gualaguaychú (medium), and Mar del Plata (large).

for delivered energy³² during the first two years of operation to improve the overall cash flow of the biogas plant, which mimics the GENREN programme. The performance-based mechanism is proposed to ensure that bankability, PPA contract negotiations, and project risks are adequately addressed. This exercise will provide useful lessons to enhance the design of financial incentives, primarily the GENREN programme. (GEF: US\$ 900,000; cofinance: US\$ 6,300,000)

4. Monitoring and evaluation of project implementation and demonstration plants, including compilation of lessons learnt. This project output encompasses GEF funding of project monitoring and evaluation activities, inception workshops, and field visits to verify project progress. Cofunding under this output covers supervision of consultancies and construction works of the envisaged biogas energy plants. (GEF: US\$ 100,000; cofinance: US\$ 500,000).

The estimated total project budget is US\$ 15,444,849, for which a contribution of US\$ 2,779,849 is sought from the GEF to cover incremental costs. The proposed GEF-funded activities trigger market development for a renewable energy technology (biogas), which would not take place under the baseline project alone. GEF-funded activities further create investment opportunities, thereby mobilizing capital resources from third parties.

Environmental benefits

The Project is expected to deliver reductions of global GHG emissions by offsetting the use of fossil fuels for generating grid electricity (11,000 MWh/yr) and by reducing the use of LPG for local heat production (25,700 MWh/yr). These direct benefits are estimated of the order of 80 kton CO_{2eq} over a 10-year period through the replacement of grid electricity. For combined heat and electricity generation, the GHG benefits will be of the order of 250 kton CO_{2eq}. The indirect benefits that can be ascribed to the Project as a result of increased utilization of biogas energy technology in the waste sector, are estimated at 0.72 Mton CO_{2eq} during the Project's impact horizon (10 years).³³

Significant additional benefits will result by avoiding the release of methane into the atmosphere, considering that digester technology can be applied at smaller sites where methane capture and flaring would not be implemented. These environmental benefits are relevant, as 35% of the MSW in Argentina is deposited in open dumps in the smaller municipalities. These benefits will be assessed in detail during the PPG phase, but will not be claimed by the proposed GEF Project under CCM-3.

The indicative cost-effectiveness of the Project is estimated at US\$ 11 per ton directly avoided CO_{2eq}, and US\$ 2.9 including indirect emission reductions.

Sustainability and replicability

Large-scale and small-scale anaerobic biogas digester technology has become technically mature during the last decade. Large-scale digestors are commonly applied by agroindustries to reduce the oxygen demand of organic waste flows. The technology also fits into a cleaner production approach to recover and utilize valuable by-products (including biogas and nutrients). Large digester systems can benefit from economy of scale, which allows the use of state-of-the-art technology and components. Small-scale systems are especially attractive in rural areas to produce gas for heating, cooking, and lighting, and as a fuel for producing electricity. The processed substrate can be used as a fertilizer.

³² Per unit of electric energy (kWh) and heat (BTU) delivered up to a yearly maximum.

³³ The presented calculation is based on simulations of biogas production for a module at the projected landfill site of Gualaguaychú (one of the envisaged demonstration plants) prepared under GIRSU. The following, averaged input data are derived: biogas production (over lifetime) 143 m³/ton MSW; energy content 2.55 million BTU/ton MSW, equivalent to 0.75 MWh/ton MSW; specific energy content 5.2 kWh/m³ biogas. Average MSW production is 0.45 kg MSW/(person-day), equivalent to 0.16 ton MSW/(person-day). Note that the specific energy content for landfill gas (5.2 kWh/m³) is comparable to biogas produced in a digester (about 6 kWh/m³). For the calculation of direct emissions, the three demonstration biogas plants are expected to process the MSW of 300,000 people, generating 493 kton MSW over a 10 year lifetime. Biodigester technology is assumed for simplicity, which avoids accounting for the slow release of biogas from landfill beyond the Project's time horizon. The emission reductions are based on an estimated CO₂ intensity factor of 0.7 kg CO_{2eq}/kWh for the national electricity grid.

Biogas obtained through methane capture from landfill sites is commonly applied and technically mature. Biodigester technology based on MSW requires some control over the feedstock supply chain, as well as technical measures to verify its composition. Properly designed and operated biogas systems are technically sustainable and proven by now. The initial experiences with small biogas plants in Argentina indicate that the importance of operation and maintenance was sometimes underestimated.

The economic and financial sustainability of biogas technology depends on the value of the energy produced compared to the cost of alternative energy supplies. The currently low, subsidized energy prices are a systemic barrier affecting the financial sustainability of investments in renewable energy sources. However, the potential of renewable energy sources for the national economy is also acknowledged. The presented Project aims to include biogas-based energy generation into a business approach to waste management that seeks adding value from residue streams. Integrated business models are expected to be more robust than the IPP modality focused on grid-electricity supply alone. Presently, there is a lack of practical project data to evaluate the weight of capital costs, O&M, repair, and project development, for a biogas-based energy generation project in Argentina. Such data exist for other countries, such as Germany, but cannot directly be applied to Argentina.

Based on the first GENREN tender, prices offered by ENARSA for biogas-based electricity will expectedly be in the range of 15-25 US\$ct per kWh³⁴. The generation costs of MSW-based electricity are estimated between 11-22 US\$ct per kWh. These figures are based on data for landfill gas (11.5 US\$ct) and biogas from waste water systems (21.5 US\$ct) in a recent study for Chile³⁵. Although specific data for digestors are not available, this suggests that MSW-based biogas projects can be economically feasible. However, the validity of foreign project data for Argentina needs to be verified. MSW-based biogas installations for energy generation have a large replication potential in Argentina and other countries in the region. Biogas produced in landfills is presently not used for energy production. Large biodigester systems, combined with landfill gas, provide an interesting option for the (initially 31) municipalities targeted by the GIRSU project to generate electricity and heat. Open dumps are common practice in the rural municipalities in the provinces. The replication potential for smaller biodigestors here is estimated of the order of several thousand units for heat production based on organic MSW. The proposed GEF project aims to address the key barriers to unleash this potential, primarily the identification of viable business models enabling technical and financial sustainability, thereby creating new opportunities for investment.

It is expected that a short term, replication of MSW-based biogas energy systems will take place by their incorporation in the GIRSU programme, financed by SAYDS. In the medium term, replication will also start by private project developers proposing biogas generation for sales of electricity to ENARSA under the GENREN programme.

A.2. Stakeholders. Identify key stakeholders (including civil society organizations, indigenous people, gender groups, and others as relevant) and describe how they will be engaged in project preparation:

The GIRSU Programme establishes detailed procedures and criteria for social and environmental management³⁶. The municipalities, provinces and developers of the landfill sites are primarily responsible for the proper design and enforcement of environmental management plans (EMPs) and social inclusion plans (PISs). Local stakeholders are included through the PISs, which addresses issues such as: (i) relocation of residents due to change in land use; (ii) loss of traditional, informal jobs and subsistence strategies; (iii) cost of MSW service for lower-income families; (iv) nearby residents who are subject to nuisance and pathogens; (v) acceptance of MSW flows from other municipalities. In relevant areas, indigenous people will be involved through informed participation and proper mitigation measures, if necessary³⁷.

³⁴ Source: Final report, G. Rabinovich, UNDP - IADB Project Sustainable Energy for All, par.24.10 (Buenos Aires, 21 Nov. 2012).

³⁵ Source: C. Bidart, A Techno-economic Assessment of the Generation and Usage of Biogenic Gases in Chile as a Substitute of Natural Gas (PhD Thesis), Karlsruhe 2013.

³⁶ These are described and detailed in Section 6 of the Operations Manual, World Bank loan 7362-AF (January 2008).

³⁷ The project sites envisaged under the UNDP/GEF project are not in indigenous areas.

A.3 Risk. Indicate risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, propose measures that address these risks to be further developed during the project design (table format acceptable):

RISKS	RATING	MITIGATION MEASURES
1. Government support for the proposed Project would not be continued and project results would not be mainstreamed.	Low	The proposed UNDP/GEF Project takes benefit from the National Strategy for Integrated MSW Management (ENGIRSU), which targets prioritized social, environmental and public health objectives. The Project is instrumental for Argentina's growing renewable energy market, as supported by Law No. 26.741 and No. 26.190. The Project also fits into Argentina's Climate Change Mitigation agenda, being biogas capture and production an effective means for avoiding the release of methane from landfill sites into the atmosphere.
2. The executing agency would have insufficient capacity to implement the Project.	Low	The envisaged national counterpart, SAYDS's GIRSU Project Implementation Unit, has ample experience executing programmes financed by multilateral agencies (Worldbank, IADB), and has strong working relations with provinces authorities and target municipalities. The project team is well positioned to convoke national biogas experts, including INTI, INTA, universities and consultants for technical backstopping. The project team is well acquainted with the preparation and supervision of infrastructural works.
3. Social acceptance of biogas technology would impede its widespread application.	Low	Changes in waste collection and management practices can affect local interest and livelihoods. The GIRSU Programme has established protocols and criteria to ensure proper stakeholder participation and mitigation measures through the development of social inclusion plans. Since the implementation thereof is closely monitored by the Project team and multilateral agencies, issues related to social acceptance issues are not expected. With regard to converting MSW into energy, it is acknowledged that people may confuse biogas production with waste incineration, which often receives opposition. The principles and benefits of biogas utilization will therefore be included in communication plans, and safety measures involving the production and storage of biogas will adhere to the best international practices and standards.
4. Technical issues would reduce the applicability of biogas technology based on organic MSW.	Moderate	The successful construction and operation of the envisaged demonstration biogas energy plants assumes that the technology is mature. This is generally the case, as biogas technology is used worldwide. However, specific issues may affect successful operation, including: feedstock composition, traces of inhibitors and/or toxic substances (such as heavy metals), and temperature control. The application of biogas technology for MSW is more challenging than in agroindustrial processes. Therefore, feedstock analysis will be part of project preparation and, if necessary, measures will be taken to ensure correct operation. This will provide useful lessons for future replication of biogas technology for MSW in Argentina.
5. Regulatory issues would hamper investment in biogas-based electricity generation.	Moderate	Secondary regulation for biogas energy installations still exhibits substantial voids, including: need for guaranteed access to the electricity grid, favorable dispatch rules, safety aspects of installations, and criteria for the safe use and transport of

		<p>digestate. Expectedly, these will not affect the envisaged demonstration pilots. However, effective regulation needs to be in place to reduce project costs in the future and ensure bankability. The Project includes activities to draft proposals and recommendations to accelerate market development.</p>
6. Anaerobic digester technology for biogas production from MSW would prove to be not an economically feasible solution.	Moderate	<p>The design of adequate business models for biogas-based energy plants at MSW sites is one of the main challenges for the proposed GEF Project. Presently, there is no experience in this field in Argentina. Biogas production can be part of an integrated business model for MSW concessionaries, in which recycled material streams and energy are revalued to generate additional revenues. Payment for delivered environmental benefits (including carbon credits) fits into such an approach.</p> <p>The demonstration projects will generate field data about operational costs, technical performance, investment costs, and operational sustainability. Based on this first experience, the economic feasibility of future biogas projects can be assessed with more accuracy.</p>
7. Biogas investments for energy generation would prove financially not sustainable.	Moderate	<p>Electricity and natural gas prices for end-users in Argentina are subsidized. Investments in energy projects to supply grid electricity as an Independent Power Producer (IPP) are therefore only rewarding if a higher price can be paid. Law No. 26.190, which sets a goal with respect to the minimum share of renewable-energy based electricity generation, creates the legal basis for the Government to award such higher prices, as done under the current GENREN programme. The economic and financial benefits for the Government consist in avoided subsidies, which reflect the actual costs of conventional energy sources. However, a financial risk remains present for renewable energy producers, as there is uncertainty if the State is willing and able to maintain the higher price offers in the longer term. This risk is closely related to the general country risk.</p> <p>The project envisages to improve financial sustainability of biogas installations by integrating biogas technology into MSW management businesses and exploring local energy uses, rather than focusing on the IPP modality alone.</p>
8. Project implementation and investment would be affected by inflation and currency risks.	Moderate	<p>Macro-economic factors in Argentina have led to significant inflation and exchange rate fluctuations in the past. Debt financing through loans from multilateral banks is usually in foreign currency (US\$). Adverse macro-economic indicators will likely raise the cost of capital for Argentina. It is expected that the purchase capacity of the GEF grant and cofinancing capital (in US\$) is not substantially affected by price inflation in the local currency. An inflation forecast in US\$ prices for Argentina would be required to assess this risk.</p>

A.4. Coordination. Outline the coordination with other relevant GEF financed and other initiatives:

The proposed UNDP/GEF Project will be closely coordinated with other multilateral agency-funded initiatives implemented by the GIRSU Project Unit, including the World Bank loan 7362-AR, and IDB loans AR-L1151 and AR-L1025. In this context, the recently cancelled IADB/GEF project proposal "*Sustainable Use of Biogas from Agro Industrial and Solid Waste Applications (GEF ID 4213)*", to be executed by the National Institute for Agriculture and Livestock Technology (INTA) is also mentioned. The proposed Project will draw on national technological capacities existing in INTA and INTI (the

National Institute of Industrial Technology). The Project will further coordinate with the national PROBIOMASA programme (a joint initiative of the Secretary of Energy and MAGyP, with FAO) to avoid doubling of efforts, specifically in the field of capacity building and promotion). Synergies with PROBIOMASA in the field of policy development to accelerate the implementation of renewable energy technologies will also be explored

B. DESCRIPTION OF THE CONSISTENCY OF THE PROJECT WITH:

B.1 National strategies and plans or reports and assessments under relevant conventions, if applicable, i.e. NAPAs, NAPs, NBSAPs, national communications, TNAs, NCSAs, NIPs, PRSPs, NPFE, Biennial Update Reports, etc.:

The proposed initiative is aligned with the National Climate Change Strategy, Lines of Action 7 "To promote energy production and its rational and efficient use", and 8 "To promote and expand the integration of clean, and technically, economically, environmental and socially acceptable, energy sources in the national energy matrix". The potential of biogas capture was also identified in Argentina's Second National Communication to the UNFCCC³⁸. The project is also fully consistent with Argentina's Mitigation Technology Needs Assessment, which has an entire section focused on waste management and clearly identifies biogas based generation as a potential renewable energy source.

Biogas development is firmly embedded in national legislation and sector policies and plans, including the ENGIRSU (SAyDS), renewable energy development (GENREN programme).

B.2. GEF focal area and/or fund(s) strategies, eligibility criteria and priorities:

The objective of the Project is to introduce biogas technologies for energy production as part of integrated management plans for municipal solid waste (MSW). This will be achieved through: a) strengthening of institutional capacities by mobilizing technological and business expertise available in Argentina towards MSW processing; b) development of business models enabling the sustainable operation of biogas-based energy production at the municipal level; and c) demonstration of biogas energy technologies for a range of plant sizes relevant for small, medium, and larger towns in Argentina. The Project will contribute to market development for distributed, renewable energy technologies in Argentina, by addressing present barriers in the field of grid access and sales contracts for heat and electricity. Global greenhouse gas benefits claimed by the project are achieved by reducing baseline consumption of fossil fuels for heat and electricity generation. In addition, anaerobic treatment of organic MSW fractions brings along substantial emission reductions of methane, which is a powerful greenhouse gas. While larger landfill sites are nowadays equipped with a methane collection and flaring system, open waste dumps are still common practice in smaller towns and villages³⁹.

This objective is consistent with the GEF-5 Objective CCM-3 ("Promote investment in renewable energy technologies"). As a result of the proposed UNDP/GEF intervention, the identified barriers related to technology (project design and operation), institutional capacity (supportive institutional framework and human resources), and delivery models (sustainable business models) will be greatly reduced. The Project aims to demonstrate the successful operation of biogas energy technology as a viable option for MSW treatment, thereby generating best practices towards achieving long-term economic sustainability (early market development). The proposed GEF Project provides a unique opportunity to foster biogas technology in Argentina by building upon the institutional and financial strength of the government-driven national programme for Integrated Municipal Waste Management (GIRSU)⁴⁰. The proposed

³⁸ Second NC, Section 7.3 (p.124).

³⁹ Methane collection and flaring was triggered in Argentina under CDM and has contributed to sanitizing of the largest landfill sites. To address open dumps across the territory, the National Strategy ENGIRSU was devised, now being implemented under the authority of SAyDS with financial support from the World Bank and the Inter-American Development Bank.

⁴⁰ Which departs from the perspective of waste management rather than valorization of waste flows (including energy generation).

results and activities are deemed fully incremental as biogas technology is actually not covered by the GIRSU Programme.

B.3 The GEF Agency's comparative advantage for implementing this project:

UNDP efforts are contributing to an enhanced capacity of the Secretariat of the Environment and Sustainable Development (SAyDS) to lead the process of policy dialogue and formulation through the Governmental Committee on Climate Change (GCCC), which is the main public body dealing with climate change policy, programs and projects. The GCCC involves all government levels (national, provincial and local) with a dynamic participation of the Federal Environmental Council, representatives from trade unions, the civil society and the private sector.

In agreement with the National Government the following three general objectives and corresponding activities have been established:

a) Support knowledge generation and transfer, allowing a positioning of Climate Change in the design of development policies and strategies.

- Coordination and development of instruments with provinces related to sector emissions for decision-making processes and generation of comparable data across districts.
- Creation of software for municipalities to assess their impacts on Climate Change through a carbon footprint calculator.
- Creation of software for the private sector to assess their impacts on CC.

b) Develop capacities by promoting sector-based dialogue and synergies in existing plans, programs and policies.

- Development of instruments for measuring carbon footprint in agro-industrial chains.
- Development of 5 NAMA's and MRV strategies in the Fertilizer and Petrochemical Sector.
- Creation of 1 NAMA at the Solid Waste Management Sector.
- Design of Carbon footprint for the wine sector.

c) Design and implement an advocacy and communications plan on Climate Change to better position the subject into the political agenda.

- Creation and promotion of the Inter-governmental Platform of Climate Change gathering ministries, secretaries and undersecretaries from all areas of the national government.
- Support to the national strategy on sustainable development.
- Development of a Road Map for the implementation of CC related policies.

UNDP has significant track record in developing and implementing GEF projects related to biogas, including initiatives in Jordan, China, and India. The recent UNDP/GEF portfolio includes similar project in Botswana and Algeria which are currently under development. As such, this project is not only fully embedded in UNDP's support to Argentina on Climate Change related issues, but is also embedded in a global context of support to biogas related renewable energy projects.

UNDP has been involved in waste management initiatives, worldwide and in Argentina, including the Global Healthcare Waste Project⁴¹, activities supportive to the Basel Convention, elimination of pesticides and polychlorinated biphenyls (PCBs). At PIF stage UNDP has committed its support (cash) during project preparation and execution to an amount of US\$ 50,000. UNDP CO further provides in-kind and cash support during the project preparation phase. The UNDP Regional Coordination Unit (RCU) for Latin America and the Caribbean (based in Panama) provides technical backstopping as well as support during project implementation and monitoring. The RCU counts with highly experienced staff in the field of climate change and energy programmes, and counts with a pool of associated experts.


⁴¹ See: <http://www.gefmedwaste.org/index.php>.

PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)

- A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S):** (Please attach the [Operational Focal Point endorsement letter\(s\)](#) with this template. For SGP, use this [OFP endorsement letter](#)).

NAME	POSITION	MINISTRY	DATE (MM/dd/yyyy)
Diana Celia Vega	Director, Secretary of Environment and Sustainable Development	JEFATURA DE GABINETE DE MINISTROS	02/27/2014

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF/LDCF/SCCF/NPIF policies and procedures and meets the GEF/LDCF/SCCF/NPIF criteria for project identification and preparation.					
Agency Coordinator, Agency name	Signature	DATE (MM/dd/yyyy)	Project Contact Person	Telephone	Email
Adriana Dinu, UNDP-GEF Executive Coordinator and Director a.i.		March 20, 2014	Oliver Page, UNDP-GEF Regional Technical Advisor	507-302-4548	oliver.page@undp.org