



PROJECT IDENTIFICATION FORM (PIF) ¹

PROJECT TYPE: Full-sized Project

TYPE OF TRUST FUND: GEF Trust Fund

PART I: PROJECT IDENTIFICATION

Project Title:	Stimulating industrial competitiveness through biomass-based, grid-connected electricity generation		
Country(ies):	Dominican Republic	GEF Project ID: ²	4747
GEF Agency(ies):	UNIDO (select) (select)	GEF Agency Project ID:	XXDOM11X01
Other Executing Partner(s):	National Energy Commission (CNE)	Submission Date:	2011-11-28
		Resubmission Date:	2012-01-06
GEF Focal Area (s):	Climate Change	Project Duration (Months)	36
Name of parent program (if applicable): ➤ For SFM/REDD+ <input type="checkbox"/>		Agency Fee (\$):	130,000

A. FOCAL AREA STRATEGY FRAMEWORK³:

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Trust Fund	Indicative Grant Amount (\$)	Indicative Co-financing (\$)
CCM-3	Outcome 3.1: Favorable policy framework created for renewable energy (RE) investments in industrial and commercial applications	Output 3.1.: RE policy and regulation in place Output 3.2.: Electricity and heat produced from renewable resources	GEFTF	375,000	1,875,000
	Outcome 3.2.: Investment in RE technologies increased			873,000	5,310,000
(select) (select)			(select)		
(select) (select)			(select)		
(select) (select)			(select)		
(select) (select)			(select)		
(select) (select)			(select)		
(select) (select)	Others		(select)		
Sub-Total				1,248,000	7,185,000
Project Management Cost ⁴			(select)	52,000	298,000
Total Project Cost				1,300,000	7,483,000

¹ It is very important to consult the PIF preparation guidelines when completing this template.

² Project ID number will be assigned by GEFSEC.

³ Refer to the reference attached on the [Focal Area Results Framework](#) when filling up the table in item A.

⁴ GEF will finance management cost that is solely linked to GEF financing of the project. PMC should be charged proportionately to focal areas based on focal area project grant amount.

B. PROJECT FRAMEWORK

Project Objective: To reduce GHG emissions from industrial free zones in the Dominican Republic by stimulating the use of renewable biomass-based electricity production for self-supply and sales of surplus energy to the grid.						
Project Component	Grant Type	Expected Outcomes	Expected Outputs	Trust Fund	Indicative Grant Amount (\$)	Indicative Cofinancing (\$)
Component 1, Policy support to decentralized biomass-based electricity generation.	TA	<p>1. The institutional framework for the application of renewable energy technologies in industrial free zones has been strengthened and particular policy guidance for the application of biomass-based energy generation has been established.</p> <p>("Industrial Free Zones" are manufacturing zones, this name come from the translation used by the CNZFE).</p>	<ul style="list-style-type: none"> • Proposals for the improvement of present mechanisms to deliver electricity services in the industrial free zones have been developed covering: (i) applicable regulation; (ii) roles of key actors; (iii) quality aspects of services; (vi) ownership, maintenance and liability issues. • Detailed guidance (strategic considerations as well as implementation guidelines) to promote RE technologies - in particular biomass-based ones - in industrial free zones has been implemented. • A portfolio of RE business cases applicable to companies within the Santiago Industrial Free Zone has been developed. Moreover, an upscaling strategy to apply the RE business cases to companies in other industrial free zones has been elaborated. 	GEFTF	275,000	1,275,000
Component 2, Demonstration and finance of proven biomass-based electricity generation technology in a commercial context.	TA	<p>2. A 2,5 MWe biomass-based electricity generating facility has been designed, financed, procured and made connected to the grid at the Santiago Industrial Free Zone.</p>	<ul style="list-style-type: none"> • Feasibility and technical studies for a 2.5 MWe biomass-based electricity plant (possibly co/trigeneration) at the Santiago Industrial Free Zone, have been carried out. • A biomass sourcing strategy has been established for the Santiago area, including contractual agreements with suppliers. • An appropriate business model for the biomass plant has been agreed upon among the project partners 	GEFTF	435,000	895,000

	Inv		<ul style="list-style-type: none"> •A financial mechanism (e.g. a trust fund) has been created at the Santiago IFZ to enable the local industries and the operator CZFIS (Corporation of Santiago Industrial Free Zone) to access short/medium-term loans to scale up investments in the local energy infrastructure. Non-grant financing instruments have been explored. •The envisaged 2.5 MWe biomass plant has been financed, procured and put into operation at the Santiago IFZ. 		348,000	4,100,000
Component 3, Supportive activities for training, promotion and dissemination.	TA	3. The concepts, benefits and application potential of domestic biomass power generation have been transferred to relevant stakeholders (industries, sector associations, authorities) and the general public.	<ul style="list-style-type: none"> •Promotional activities including technical seminars, dissemination events, and drafting of technical manuals and guidelines, have been carried out. •Key personnel from industries and free zone operators have acquired specific technical skills to implement and operate renewable energy technologies (specifically: biomass). •A promotional campaign has been implemented to create awareness on energy use and the potential of renewable energy technologies amongst stakeholders of other industrial (free) zones. 	GEFTF	190,000	915,000
	(select)			(select)		
	(select)			(select)		
	(select)			(select)		
	(select)			(select)		
	(select)			(select)		
	(select)			(select)		
	(select)			(select)		
	(select)			(select)		
			Sub-Total		1,248,000	7,185,000
			Project Management Cost ⁵	(select)	52,000	298,000
			Total Project Costs		1,300,000	7,483,000

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

⁵ Same as footnote #3.

Sources of Cofinancing	Name of Cofinancier	Type of Cofinancing	Amount (\$)
National Government	CNE / CNZFE	In-kind	875,000
Others	CZFIS	Grant	400,000
Others	CZFIS and local industries	Grant	1,400,000
Others	CZFIS and local industries	Hard Loan	3,750,000
Others	CZFIS and local industries	In-kind	998,000
GEF Agency	UNIDO	Grant	60,000
(select)		(select)	
(select)		(select)	
(select)		(select)	
(select)		(select)	
Total Cofinancing			7,483,000

D. GEF/LDCF/SCCF/NPIF 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
(select)	(select)(select)	(select)				0
(select)	(select)(select)	(select)				0
(select)	(select)(select)	(select)				0
(select)	(select)(select)	(select)				0
(select)	(select)(select)	(select)				0
(select)	(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

² Please indicate fees related to this project.

PART II: PROJECT JUSTIFICATION

A. DESCRIPTION OF THE CONSISTENCY OF THE PROJECT WITH:

A.1.1 The [GEF focal area](#) strategies: Climate Change

The Project is consistent with Objective CCM-3 of the GEF-5 Results Framework (Promote investment in renewable energy technologies) by pursuing the investment in a grid-connected biomass plant for electricity supply, possibly combined with heat and cold generation for use by local industries. Important GHG mitigation effects are expected compared to the baseline situation.

The Project will directly contribute to the core outputs of the GEF-5 Results Framework “*Investment in renewable energy technologies increased*”, and “*GHG emissions avoided*”. The Project will also review the existing regulatory framework for biomass-based energy production and as such, deploy activities aligned with the core output “*Favorable policy and regulatory environment created for renewable energy investments*”. Since regulatory barriers are expected to be of minor relevance, the Project focus is on investment and emission reduction.

A.2. National strategies and plans or reports and assessments under relevant conventions, if applicable, i.e. NAPAS, NAPs, NBSAPs, national communications, TNAs, NIPs, PRSPs, NPFE, etc.:

The proposed UNIDO/GEF initiative builds upon the following national policy documents:

- National Energy Plan 2004-2015⁶;
- National Development Plan 2010-2030⁷; and
- First and Second⁸ National Communications, including national greenhouse gas inventories.

The *National Energy Plan (NEP) 2004-2015* outlines a national energy policy that builds on four pillars (par. 7.1): (i) to guarantee the secure supply of adequate energy at a minimum cost; (ii) to develop domestic energy resources; (iii) to offer freedom-of-choice for economic actors; and (iv) to consolidate the role of the State to lead and regulate the energy sector. With respect to financial sustainability and the current high generating costs of fossil-based power plants, the NEP observes (par. 7.2.6.1): “Renewable energy sources such as wind, biomass and co-generation represent opportunities that should be implemented without delay. The NEP proposes to work specifically on projects that allow reducing marginal generating costs (...)”. Further, the need for ongoing institutional strengthening of the CNE is highlighted (par. 7.2.8.4).

The *National Development Plan (NDP) 2010-2030* visualizes the country’s development path in the context of a globalized economy, sustainability challenges and social demands to increase the living standards for all citizens. Several strategic lines of action are presented, including good governance, social cohesion, and sustainable economic growth. The Project directly supports the following objectives:

- Objective 9-I.2: “Reliable and efficient energy supply: to guarantee a reliable electricity supply at a competitive price under conditions of financial and environmental sustainability.”
- Objective 9-I.5: “A differentiated productive structure that can compete in an integrated global economy: To increase productivity, competitiveness, and environmental and financial sustainability (...)”. And:
- Objective 10-I.3: “Adaptation to climate change: To advance (...) in mitigating the causes of climate change.”

The *Second National Communication (SNC)* identifies opportunities to mitigate the emissions of greenhouse gases by the use of biomass resources, including biofuels (biodiesel and ethanol), bagasse, agroindustrial residues such as rice husk, fuelwood and charcoal. The SNC points out the large contribution of the energy sector to the national GHG emissions. Renewable energies and the rational

⁶ Plan Energético Nacional 2004-2015, Comisión Nacional de Energía, Santo Domingo, July 2004. Chapter VII (p. 200-209), policy objectives 1 (national security and supply), 2 (end-user costs and rational use of energy) and 3 (development of domestic energy sources).

⁷ Anteproyecto de Ley “Estrategia Nacional de Desarrollo de la República Dominicana 2010-2030”, Ministerio de Economía, Planificación y Desarrollo. Specifically the paragraphs Art 9-I, objectives 2 (energy) and 5 (economic competitiveness) and Art 10-I, objective 3 (climate change).

⁸ - Segunda Comunicación Nacional, Proyecto Cambio Climático 2009 (p. 240-264), SEMARENA/PNUD/GEF, Secretaría de Medio Ambiente y Recursos Naturales, Santo Domingo, 2009

use of energy are proposed as key strategies to reduce this impact (and improve economic competitiveness). Most arguments concerning the importance of renewable energies given in the SNC, are adopted in the Law 57-07, including: (i) to reduce the dependence on imported fossil fuels; (ii) to stimulate private investment in renewable energy projects; and (iii) to contribute to the decentralization of electricity generation.

B. PROJECT OVERVIEW:

B.1. Describe the baseline project and the problem that it seeks to address:

The energy sector in the Dominican Republic is characterized by a heavy reliance on imported fossil fuels and among the highest energy costs for industrial end-users in the region Latin America and the Caribbean⁹. Electricity production relies for almost 90% on thermal power plants¹⁰. Rising oil prices over the last decade and the increase in energy demand quadrupled the value of oil imports between 1997 and 2007 (from roughly US\$ 814 mln to US\$ 3,267 mln)¹¹, putting great stress on the performance of the national economy. Imported oil products account for almost 70% of primary energy inputs; the associated emissions of fuel combustion for energy generation in 2008 were 19.56 Mton CO₂eq¹².

The constitution of the National Energy Committee (CNE) in 2001¹³, was a first and necessary step to devise a long-term view on energy sector development. During the last decade, bilateral organizations and development banks have assisted the CNE. The World Bank implemented two sector assistance programmes in the period 2004-2010¹⁴, basically to shape the deregulated electricity market and improve access to the grid. Technical and commercial distribution losses are well above the regional average however, and residential users below 700 kWh/month pay a subsidized tariff¹⁵.

Recent progress has been made at the generation side by adding large-scale thermal power plants and importing natural gas. In August 2011, a new 345 kV transmission line was inaugurated connecting Santo Domingo with Santiago and the surrounding Cibao Valley Region¹⁶. The same month, IADB approved loans for two wind farms with a total capacity of 80.6 MW¹⁷. In June 2011, the CNE approved new regulation allowing net metering, which opens possibilities for small-scale renewable energy generators. In 2007, Law 57-07 was approved, which establishes a number of financial benefits and tax exemptions for renewable energy investments.

In spite of this progress, end-users face frequent power outages and high energy costs. With virtually no exception, industrial and large commercial businesses have diesel generator sets installed for backup power supply. The enterprises established in the country's numerous industrial free zone areas, are greatly affected by the intermittent service and the high energy costs and become less competitive. The "industrial free zone" business model offers important tax benefits for manufacturing companies to establish themselves in the country. It has been a spearhead in national development strategies since the 1970s, offering low-skilled jobs to large numbers of people. Globalization and free trade agreements worldwide have put pressure on this model - especially in the apparel industry - and many workers have

⁹ In June 2006, price was US\$ 0.1965/kWh, twice as high as the average for the LAC region (US\$ 0.96/kWh). In June 2007, price had gone up to US\$ 0.21/kWh. For the residential sector, June 2006 prices were US\$ 0.16/kWh compared to US\$ 0.12 average for the LAC. Source: Energy Statistics Report 2007, OLADE.

¹⁰ Thermal capacity is 5,049 MW on a total installed capacity of 5,518 MW. The remainder (169 MW) is hydropwer. In 1998, total capacity was just 2,941 MW. Over the period 1998-2007, capacity was added at a rate of 7.2% per year. Source: OLADE Energy Statistics Report 2007.

¹¹ Source: Carlos Cuello, "Puntos de vista - El petróleo amenaza la estabilidad macroeconómica," listindiario.com, July 22, 2008. (<http://www.listin.com.do/app/article.aspx?id=66921>)

¹² Source: International Energy Agency, <http://www.iea.org/statist/index.htm>.

¹³ Ley General de Electricidad (LGE) No.125-01, July 26, 2001 and its revision Ley No.186-07.

¹⁴ Power Sector Technical Assistance Project 2004-2010 (Project ID: P082715); Dominican Republic Power Sector Program - Second Generation Reforms 2005-2009 (Project ID: P082712).

¹⁵ Estimations of commercial losses vary between 30-50%. Since 2007, fraude is considered a crime. See: <http://www.sie.gov.do/archivos/fraude.pdf>.

¹⁶ Source: <http://blogs.worldwatch.org/revolt/a-triumvirate-of-progress-for-the-dominican-republics-energy-sector/>.

¹⁷ Source: <http://www.iadb.org/en/news/news-releases/2011-07-13/dominican-republic-promotes-clean-energy,9456.html>.

been laid off in recent years¹⁸. Diversification, cost reduction and the efficient use of resources are key elements in a strategy to modernize the sector.

As of 2010, there were 48 free zones in the Dominican Republic concentrating a total of 555 companies and employing more than 120,000 workers. The free zones are largely clustered around Santiago in the North (45.8%) and Santo Domingo in the South (43.3%). About 1/3 of the free zones are public-owned (29.2%). Today most are private (64.6%) while a small number is mixed capital (6.2%). Free zones generally host a variety of enterprises, but can also be owned by one large company (special free zones). In 1990, the variety of different operating regimes was harmonized by new regulation through Law 08-90¹⁹. The sector is supervised by the National Free Zone Council CNZFE²⁰.

The older industrial free zones in the Dominican Republic were often funded by the State in an attempt to create attractive conditions for foreign companies. The infrastructure and buildings are generally owned by a public holding company. This company (or a subsidiary) acts as the *operator*, providing services to the hosted industries, such as rent, water, sewage, electric energy; other services can include the recruitment of local workforce. The free zone operators in the Dominican Republic are associated in ADOZONA²¹. Nowadays, many industrial free zones are owned and operated by private companies, who charge for the hosting and services. Large industries often develop their own (special) free zone. The Law 08-90 establishes criteria concerning the services and responsibilities of the operator.

Baseline Project:

In line with the National Energy Plan, CNE has entered into an agreement with CNZFE to address the critical energy situation in the industrial free zones. The conservation of employment is a top priority at the highest political level, and a more effective use of energy will contribute to maintain competitiveness. Decentralized electricity and heat generation -possibly based on renewable energy sources- is thereby recognized as a valuable option. The gradual densification of the electricity transport and distribution grid and the ample availability of domestic biomass (from agriculture) in the Dominican Republic, suggest that a scheme of decentralized, biomass-based electricity generation may become viable in the near future. The baseline project aims at promoting and implementing biomass-based power generation at the Santiago Industrial Free Zone (IFZ) “Lic. Victor M. Espailat Mera”, which is one of the largest in the country²².

The main share in the overall energy use at Santiago is made up by the textile, apparel and tobacco industries. The energy use at the Santiago IFZ is predominantly electricity-based. Electric energy in industry is used for lighting, cooling and to operate equipment. Heat is needed for conditioning of yarn production processes, dyeing, ironing etc. Cooling is required for space conditioning and humidity control in the tobacco industry. Based on preliminary data, the generating costs of decentralized, biomass-based electricity (estimated at US\$ 0.10/kWh) are well below the price currently paid by industry (US\$ 0.18/kWh), thus creating a valuable business case. The cost of biomass-based heat (US\$ 0.018/kWh) is also well below the cost of competing fuels: Fuel oil No.6 (US\$ 0.105/kWh), Diesel (US\$ 0.128 kWh/kWh) and natural gas (US\$ 0.049/kWh)²³. Although the focus for biomass generation should be on electric energy, a local power generating plant can possibly be extended to co- or tri-generation (to supply heat and cooling).

With a monthly energy consumption of about 2.7 million kWh (early 2011), the Santiago Industrial Free

¹⁸ In spite of its gradual decline, apparel and textiles still make up the largest share of companies (21.6%), followed by services (20.7%) and tabaco (9.2%). Since 2010, medical products and pharmaceuticals rank first in terms of export value (26.1%), followed by the apparel industry (23.6%) on a total of US\$ 4,080 mln. Source: Informe Estadístico Sector Zonas Francas 2010, CNZFE, Santo Domingo.

¹⁹ Ley 08-90.

²⁰ Consejo Nacional de Zonas Francas de Exportación.

²¹ Asociación de Operadores de Zonas Francas.

²² . The Santiago Industrial Free Zone (als known as Zona Franca Industrial “Lic. Victor M. Espailat Mera”) is one of the oldest and largest of the country in terms of employment and accumulated investment In 2010 it employed a total of 13,932 people (6,850 male/7,082 female), out of a total of 121,001 free zone workers nation-wide. In terms of accumulated investment, Santiago ranks second in the country (US\$ 278 mln on a total value of US\$ 2,882 mln). Source: Informe Estadístico Sector Zonas Francas 2010, CNZFE, Santo Domingo (www.cnzfe.gov.do).

²³ Internal communication with national consultant, 23 July 2011.

Zone accounts for nearly 10% of all the electric energy contracted by the national Free Zone sector. As an average for the year 2010, the associated costs were approximately US\$ 375,000. Five large industries account for nearly half (47%) of the total electricity consumption²⁴. The electricity is purchased by the operator CZFIS²⁵ at the wholesale market and distributed to the hosted companies. The local distribution grid is owned by the operator and has outsourced the maintenance service, meter reading, billing and after-sales services to an external company. CZFIS' contract with private generator will reportedly terminate in 2013. The operator has expressed his interest to evaluate alternative solutions, including local biomass generation.

The baseline project is characterized by several barriers for which GEF intervention is requested as outlined in this document. Under the baseline project, the identified barriers will not be addressed directly as a result of: (i) a lack of funding resources to embark on a comprehensive evaluation programme of biomass resources; (ii) a lack of expertise available to industrial free zone operators and industries to identify opportunities for renewable energy technologies (RETs); (c) a lack of resources and coordination between stakeholders to effectively promote RETs at the level of industrial free zones. At the present stage of development, there is not yet a "market pull" from the industrial free zones to implement biomass generation plants. Therefore, CNE has set itself the goal to promote such a market (in collaboration with CNZFE) but it lacks the required financial and human resources. The identified barriers for the baseline project are outlined below²⁶:

Policy barrier: At the level of national energy policy, renewable energies add to the reliability of the national energy system and save valuable foreign currency reserves. Decentralized electricity generation has been recognized in the National Energy Plan as a valuable scheme to strengthen the national power sector. Industry however is not primarily interested in energy generation but in reducing energy costs. The proposed GEF Project should strengthen the CNE's capacity to develop supportive policy for decentralized renewables in close collaboration with the National Free Zone Council (CNZFE) and the local industries.

Finance: Given the high cost of fossil fuels and electricity in the country, renewable energies can be a cost-effective alternative. Recent commercial projects²⁷ are backed up by large international companies, however. Local companies eager to invest in energy infrastructure reportedly have difficulties to access loan capital from commercial banks. In the case of Santiago, no public development bank has been identified. Instead, the Santiago Free Industrial Zone operator (CZFIS) plays a role to foster economic development in the region as a venture capitalist. Given the relatively short payback time of investments in energy infrastructure²⁸ at the current price level, it must be possible to address this finance barrier by reducing the risk profile of individual investments, for example by creating a local trust fund owned by the operator and local industries. The trust fund can provide equity for large investments (such as a biomass power plant) and provide loans to individual companies. Non-grant financing instruments such as a revolving fund managed by a consortium of banks or similar will be explored as viable alternative options.

Business and delivery skills barrier: Presently, free zone operator act as local distribution company, buying electricity at the wholesale market and charging for the service. This business model can be viewed as a collective solution. Ongoing deregulation of the electricity market however authorizes individual companies²⁹ to purchase directly from the generators but in practice, an industry located inside an industrial free zone depends on the operator to have access to the grid. By consequence, the mandates, roles, and financial interests of local industries and the free zone operator may diverge. GEF support can

²⁴ The annual electricity costs for the whole sector amount to RD\$ 1,654,349,155, and for Santiago RD\$ 166,844,336 (Source: Informe Estadístico Sector Zonas Francas 2010, CNZFE). This is equivalent to US\$ 44,700,000 and US\$ 4,510,000 respectively (at an exchange rate of US\$/RD\$ = 37.0). The figures for the electricity consumption is based on the electricity bills of the individual companies and amount to 2,734,398 kWh.

²⁵ Corporación Zona Franca Industrial de Santiago.

²⁶ Barrier analysis following the GEF "5-pillar" framework.

²⁷ Which is demonstrated by recent examples such as Gildan and Hanesbrand (steam production) and two commercial wind farm initiatives (under development).

²⁸ Including renewable energy generation, substitution of inefficient equipment, and energy conservation measures.

²⁹ With a contracted power of above 1 MW. This threshold value, initially 5 MW, has been lowered several times, allowing ever smaller customers to enter the wholesale market.

assist to sustain a dialogue between stakeholders under guidance of CNE and CNZFE to review applicable legislation and generate proposals to align the mandate and roles of the actors involved, with important economic benefits for all. Expectedly, a decentralized biomass generator can be run as an individual business, initially owned by the local industries and the operator for self-supply.

Informational barrier (including technical skills): Industries in the Dominican Republic are generally unaware of the characteristics and potential of renewable energy technologies (and of the rational use of energy in general). The paradigm followed is based on fuel oil or diesel (and more recently also liquified natural gas) for heat production and diesel generator sets for electric backup power. Installations are often obsolete, operated at low load factors and not properly maintained. With energy costs soaring high, companies now need to analyze their consumption from a systemic perspective and identify appropriate measures, including renewable energy generation. In the context of a deregulated market, energy contracting also acquires major importance. The free zone organizations ADOZONA and CNZFE are aware of this situation but they lack the technical skills and financial resources to embark on a national assistance programme. GEF support can provide inputs for such a programme under leadership of the National Energy Commission CNE, focusing primarily on the promotion of biomass heat and electricity generation.

Technological barrier: While biomass-based power generation is in principle technologically mature, a technological barrier exists because of the lack of experience with its design and operation for decentralized energy supply in the Dominican Republic. A successful project operating in a commercial context would therefore be a large step forward. GEF support can assist by providing specific technical training, collecting operational data and compiling lessons learnt.

As second technological barrier is related to the sourcing of biomass material. Notwithstanding the large volumes of agricultural residues available (such as bagasse and rice husk)³⁰, the Dominican Republic has little experience using biomass for energy generation³¹. Sugar mills use a small portion of the available bagasse to produce heat and electricity. Recently, two multinational textile companies have switched to biomass for heat production³² under the CDM mechanism. The project documentation³³ reveals that a specialized company is created to collect the biomass material in an efficient and cost-effective manner. In order to serve a future market of small biomass generators, the present information and management challenges need to be addressed.

B. 2. Incremental /Additional cost reasoning: describe the incremental (GEF Trust Fund/NPIF) or additional (LDCF/SCCF) activities requested for GEF/LDCF/SCCF/NPIF financing and the associated global environmental benefits (GEF Trust Fund/NPIF) or associated adaptation benefits (LDCF/SCCF) to be delivered by the project:

The present UNIDO/GEF Project aims at supporting the CNE in its efforts to improve electricity supply – and the cost thereof – for manufacturing companies located at industrial free zone areas. The objective of the proposed GEF Project “*Stimulating industrial competitiveness through biomass-based, grid-connected electricity generation*” is to reduce GHG emissions from industrial free zones in the Dominican Republic by stimulating the use of renewable biomass-based electricity production for self-supply and sales of surplus energy to the grid. To this purpose, it is envisaged to prepare and put into operation a biomass plant with an estimated capacity of 2.5 MWe at the Santiago Industrial Free Zone. The Project will pursue this through the following three components:

Component 1:

To strengthen the institutional framework to implement renewable energy technologies at industrial free zones, including business models for ownership, operation and commercialization. To this extent, the Project will provide financial and technical support to sustain a joint CNE-CNZFE task force that will prepare and implement a detailed work

³⁰ See, for example, CNE Strategic Energy Plan 2004-2015, p. 107-115.

³¹ The project considers the use of agricultural residues, such as rice husk and bagasse, which implies no direct cultivation of new crops, in order to avoid any effect on food security or on land degradation.

³² With a thermal capacity of approx. 40 MW.

³³ CDM Project Design Document Form “Steam Generation using Biomass, version 1”, 20 December 2009, developed by Gildan Activewear Dominican Republic Textile Company Inc.

programme to address the sector. This project component further responds to the need for ongoing institutional strengthening of CNE. At the end of the GEF intervention, it is expected that (i) legal and regulatory issues that may impede decentralized biomass generation, have been resolved; (ii) local power generation has become an accepted and attractive business case for industries, free zone operators, and the electricity sector in general.

Component 2:

To design, procure and put into operation a 2.5 MWe pilot plant based on biomass resources, and to establish a local financing scheme at the Santiago Industrial Free Zone. GEF support includes the detailed assessment of biomass resources in an area relevant for the Project and the subsequent definition of a sourcing strategy. The resource assessment will be initiated during the PPG phase to obtain more quantitative input data for the project design; the Computer Model for Feasibility Analysis and Reporting (COMFAR III, developed by UNIDO), will also be explored as a tool for the pre-feasibility of the biomass plant. The Project will further prepare the technical design of the biomass plant and support the local stakeholders during their negotiations. This activity includes securing good working relations, a common goal, negotiations and legal support, and will result in an established business to build and operate the biomass plant. Given the relevance of ongoing enhancement of the local energy infrastructure, the Project pursues establishing a trust fund rather than the ad-hoc financing of the biomass plant alone. After the GEF intervention, it is expected that: (i) a 2.5 MWe biomass plant is operating successfully; (ii) technical studies and business details are available for the stakeholders; (iii) a successful model for project development and negotiation, biomass sourcing, and ownership and operation, can be used for replication by the sector; and (iv) a trust fund or similar financing instrument has been established for ongoing financing of energy projects at the Santiago IFZ. Non-grant financing instruments will have been explored as viable alternative options.

Component 3:

To transfer the concepts, benefits and potential of domestic biomass power generation to stakeholders as well as other industrial (free) zones. This project component envisages improving the technical skills among key stakeholders, promoting the benefits of biomass power generation and disseminating the experiences from the Project. GEF support will assist in preparing technical material for distribution and training, organizing technical seminars and training (specifically on system design and optimization, and on operation) and promoting decentralized biomass generation as a viable business case. CNZFE and ADOZONA are important project partners to reach the primary target group of national free zones. At the end of the GEF intervention, it is expected that: (i) key personnel at Santiago's operator CZFIS and local industries are able to develop and operate a biomass generating plant; (ii) staff linked to CNZFE and ADOZONA are capable to provide technical assistance on biomass implementation within the sector, including project development and supervision; and (iii) a "market pull" to implement decentralized biomass electricity generation is starting to develop within the industrial free zones at the Dominican Republic.

A GEF funding of US\$ 1.3 million will be implemented, which will expectedly leverage the following cofinancing: (a) support from the government (CNE and CNZFE) valued at US\$ 0.875 million; (b) US\$ 0.400 million from the operator of the Santiago Industrial Free Zone (CZFIS) to co-fund the envisaged local energy trust fund; (c) estimated US\$ 1.40 million equity investment in the pilot biomass plant; (d) estimated US\$ 3.75 million debt taken by CZFIS and local industries from development and/or commercial banks; (e) support from CZFIS and local industries valued at US\$ 0.998 million; and (f) US\$ 60,000 from UNIDO for follow-up on project development. The total project budget is estimated at US\$ 7.435 million (including the requested GEF grant of US\$ 1.3 million) of which approximately US\$ 4 million investment in a 2.5 MW biomass power plant. A detailed budget breakdown, including a consolidated list of project co-funders, will be submitted at PPG stage.

Alongside important social and economic benefits, the Project will generate substantial reductions of greenhouse gas emissions, as fossil fuels are replaced by renewable biomass sources to generate electric energy. Both direct and indirect reductions are achieved. The direct emission reductions are associated to

the 2.5-MW biomass pilot plant that is to be built under this Project. These GHG savings are estimated at 184 kton CO₂eq during the lifetime of the investment (15 years)³⁴. Indirect emission reductions are achieved through market transformation effects, as other free zones are expected to install additional biomass power. Assuming 20 units of 5 MW are installed during a 10-year time horizon after project termination (representing a market penetration of 20%), the indirect benefits are estimated at 1.08 Mton CO₂eq³⁵. The combined direct and indirect savings are thus estimated at 1.26 Mtons CO₂eq³⁶.

- B.3. Describe the socioeconomic benefits to be delivered by the Project at the national and local levels, including consideration of gender dimensions, and how these will support the achievement of global environment benefits (GEF Trust Fund/NPIF) or adaptation benefits (LDCF/SCCF). As a background information, read [Mainstreaming Gender at the GEF.](#):

The Project will improve the economic competitiveness of companies established at industrial free zones by providing biomass-based electricity (and possibly heat and cold) at a substantially lower cost than is presently the case. The price difference will directly translate into reduced operating costs, hence improving the operational result of an enterprise. The Project will be especially relevant for energy-intensive industries and for sectors with relatively small profit margins.

Once demonstrated, it is expected that biomass-based (co-)generation will be adopted by other industrial free zones. Early involvement of sector stakeholders (CNZFE, ADOZONA, and sector associations) is considered as part of a strategy to disseminate the outcomes of the Project and replicate its economic and environmental benefits.

Improving the industrial performance is instrumental for preserving employment, with great social impact both at the national and provincial level. From a national perspective, the prevailing high energy costs make Dominican Republic less attractive for foreign companies as other countries can produce cheaper. Already established companies, of which many are at least partially owned by Dominican capital, face trouble to compete and may close down. Job conservation is therefore one of the Government's key priorities. This reality is particularly true in the Santiago area, which depends heavily on the economic activity in its free zones. At PIF stage, no specific gender issues have been identified. It is expected that social benefits will be shared equally by men and women, since employment per gender is roughly 50%-50%³⁷.

- B.4 Indicate risks, including climate change 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:

Risks	Likelihood	Remedial actions
1. National political support for the project would be withdrawn	Low	The Government of the Dominican Republic firmly adheres to the country's obligations under the UNFCCC. The present Project is considered instrumental to reduce GHG emissions by the industrial sector and has been endorsed at an early stage during PIF development. The Project is focused at securing employment and economic competitiveness, which are top political priorities.

³⁴ The following assumptions are made: 2.5 MW capacity; plant factor 80%; CO₂ intensity national electricity sector 0.7 ton CO₂eq/MWh. Annual energy production is 17,520 MWh, saving 12.3 kton CO₂eq/yr. The annual value of the energy produced is of the order of US\$ 1.75 mln (at 0.10 US\$/kWh). Over a 15-year period, the total GHG reductions are 184 kton CO₂eq.

³⁵ A number of 20 units of 5MW equivalent to 100 MW electric capacity. A 10-year time horizon is taken in agreement with GEF guidelines. Assuming capacity is added at a constant rate of 10 MW/yr, 100 MW will be in operation during 5.5 year over the 10-year period. The total generated energy volume is 80%*100*5.5*8,760=3,850,000 MWh. The associated emission reductions are: 2.7 Mton CO₂eq. Assuming a "GEF causality factor" of 40%, the indirect emission reductions that can effectively be ascribed to the Project are: 1.08 Mton CO₂eq.

³⁶ Please note that these GHG savings are based on the modality of decentralized electricity generation alone. Local heat and cold supply can lead to substantial additional GHG reductions by replacing fuel oil, diesel or natural gas. A more detailed estimate of total GHG reductions will be prepared during the PPG phase.

³⁷ For the free zones as a whole. The gender distribution of employment per sector will likely not be neutral and the demonstration project may therefore prove more beneficial for one of both. It can prove relevant examining this aspect in more detail at PPG stage.

<p>2. The executing agency might prove ineffective to implement and manage the Project</p>	<p>Low</p>	<p>The National Energy Committee CNE is a well-consolidated government entity with demonstrated capacity to implement donor-funded programmes. The proposed Project fits well into CNE’s mandate and agenda. The presidential elections in 2012 may cause (minor) changes in political priorities. This potential risk is dealt with by: (1) focusing the Project on technical and operational barriers rather than policy; (2) structuring the Project in components that can be implemented independently; (3) joint implementation of some Project components with the sector organization CNZFE and -to some extent- the Santiago free zone partners.</p>
<p>3. Technical and operational implications might prevent the proposed biomass pilot plant to materialize</p>	<p>Medium</p>	<p>The Project proposes to demonstrate the viability of biomass-based energy generation in the Dominican Republic. The type of power plant envisaged at PIF stage is a small-size electricity generator for self-supply and sales of excedent power to the grid. This choice would decouple the energy project from the industries themselves, thus reducing technical complexity. (Heat and cold production may be included if it does not affect the risk profile.)</p> <p>While the biomass resources in the Dominican Republic are to be investigated in detail during the PPG phase, the fact that the project is located within the vicinity of the fertile Cibao Valley – the country’s main agricultural centre – should assure sufficient supplies from agricultural waste / by-products, e.g. bagasse. Hence, risks related to sustainable feedstocks for the biomass power plant are considered manageable. A re-evaluation shall, however, take place once the detailed assessment is available.</p> <p>The major challenges however are not technical, but related to finding an adequate business model for ownership and operation. It is envisaged to advance project negotiations with local stakeholders at Santiago during PPG phase, after which this risk shall be re-evaluated.</p>
<p>4. Risk of securing investment in energy infrastructure</p>	<p>Medium</p>	<p>In recent years, there has been very substantial investment in the energy infrastructure in the Dominican Republic, presumably driven by the high energy costs at the island. However, lenders may perceive investment in small-scale biomass generation as riskful, especially if not backed-up by large companies. The Project strives at reducing such perceived risks by joining the local industries and operator CZFIS into a GEF-supported trust fund for the Santiago Free Zone, allowing lenders to establish more robust financing schemes. The risk of this trust fund not attracting enough resources for investment is considered limited as the local industries as well the operator CZFIS – the anticipated owners of the fund – are expected to have a self-interest in facilitating finance for cost-effective renewable energy sources. In fact, the GEF funding is expected to leverage US\$ 0.4 million investment from the operator to co-found the trust fund. Moreover, the planned supportive activities for promotion and dissemination are expected to create sufficient interest in the benefits of renewable energy generation within an industrial zone to generate an on-going resource commitment to the fund.</p> <p>Given the need for ongoing investment in energy infrastructure at the Free Zone, perpetuation of the trust fund is an important element of the Project’s exit strategy.</p>

B.5. Identify key stakeholders involved in the project including the private sector, civil society organizations, local and indigenous communities, and their respective roles, as applicable:

Organisation	Type of Organisation	Role in the Project
UNIDO	Multilateral agency	Project implementing agency.
CNE - National Energy Commission	Central government entity (ministry)	Project executing agency on behalf of the Government of DR.
CNZFE - National Council for Exporting Free Zones	Decentralized government entity	Associate counterpart (with CNE) to implement specific project components.
CZFIS - Santiago IFZ operator	Public company, holding real estate and supplying services (including energy) at the Santiago Free zone	Primary local counterpart for pilot implementation. Envisaged co-financier and direct project beneficiary.
Local industries at Santiago Industrial Free Zone	Private-owned commercial enterprises	Direct project beneficiaries and co-financiers (investment).

CNE and CNZFE will jointly establish a task force to lead the biomass project development at the Santiago IFZ (outcomes #1 and #2). CNE will directly implement the outcome #3 (promotion). CNE will assume the overall responsibility for the Project and deliver the national Project Director. The operator of the Santiago Industrial Free Zone (CZFIS) and the private industries located at the site will be stakeholders and direct beneficiaries of the project. Further, the association of operators of free zones (ADOZONA) can play an important role to trigger a dialogue between operators and industries together with CNZFE. Local stakeholders involve employees, suppliers and municipalities in the Santiago area. At PIF stage, no contact has been established yet with this group of (indirect) beneficiaries. An important role might also be assigned to a national or local development bank. During PIF, no such institution has been identified however in the Santiago region.

B.6. Outline the coordination with other related initiatives:

UNIDO's programme "Regional Observatory on Renewable Energy"³⁸ for Latin America and the Caribbean is a valuable platform for the exchange of information on renewable energy technologies and portfolio development. In the Dominican Republic, CNE acts as the main counterpart for this programme and is therefore well-positioned to ensure an effective use of resources. Lessons learnt from the GEF project will feed into the regional "Observatory Programme". The knowledge platform developed by this programme will provide useful background information for the formulation of the biomass project's concept.

C. DESCRIBE THE GEF AGENCY'S COMPARATIVE ADVANTAGE TO IMPLEMENT THIS PROJECT:

Since its establishment, UNIDO has built up a long track record assisting countries to implement industrial support programmes. UNIDO's Energy and Climate Change Division pursues the integration of reduced carbon objectives into industrial development policies and activities. The GEF Council document³⁹ specifically highlights UNIDO's comparative advantage in capacity building and technical assistance, which are key components of the proposed project.

UNIDO has widespread experience to interact with both high- and low-level stakeholders from the private sector and public sector as well as NGOs. The proposed GEF initiative draws on UNIDO's experience by strengthening the competitiveness of local industries and by introducing renewable energy technologies. The proposed activities range from demonstration, institution building, and policy support, involving a broad range of stakeholders. UNIDO is well-placed to implement this Project because of its experience and expertise in renewable energy projects, its long history of cooperation with key stakeholders, and its high standards of fiduciary responsibility.

³⁸ Please include a precise reference (donor, project number, grant, etc).

³⁹ GEF Council document GEF/C.31/rev.1.

C.1 Indicate the co-financing amount the GEF agency is bringing to the project:

At PIF stage UNIDO has committed its support (cash) during project preparation and execution to an amount of US\$ 60,000.

C.2 How does the project fit into the GEF agency's program (reflected in documents such as UNDAF, CAS, etc.) and staff capacity in the country to follow up project implementation:

The proposed UNIDO/GEF initiative "Stimulating Industrial Competitiveness through Biomass Energy generation" fits into two thematic areas of UNIDO: (i) "*Poverty reduction through productive activities by promoting renewable energy*" as the energy source for industrial and productive activities; and (ii) "*Energy and environment*", in which UNIDO assists its clients to solve two fundamental problems: decoupling energy intensity and material use from economic growth, and reducing the environmental impact related to energy and material uses. UNIDO's Energy Strategy aims at supporting developing countries and countries in transition to achieve the following objectives:

- To increase the competitiveness of their industries by reducing the dependence on fossil fuels;
- To reduce their impact on climate change by decreasing the carbon emissions of their industries and by promoting renewable energy technologies; and
- To increase the viability of their enterprises, particularly in rural areas, by augmenting the use of locally available renewable energy sources.

Moreover, it is important to mention that UNIDO counts with own staff in the 12 countries covered under its regional RE programme⁴⁰, including one permanent consultant in the Dominican Republic.


⁴⁰ See section B.6.

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)
Mr. Pedro García	Director of International Cooperation Projects (Director de Seguimiento a Proyectos de Cooperación Internacional)	ENVIRONMENT AND NATURAL RESOURCES	10 JUNE 2011

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 Address
MR. DMITRI PISKOUNOV, GEF FOCAL POINT & MANAGING DIRECTOR, PROGRAMME DEVELOPMENT AND TECHNICAL COOPERATION DIVISION, UNIDO		24/11/2011	MR. DIEGO MASERA CHIEF RENEWABLE ENERGY UNIT, CLIMATE CHANGE BRANCH, PTC, UNIDO	+43 (1) 26026-3879	D.MASERA@UNIDO.ORG 