Project Design Document (PDD)

e7 Galapagos / San Cristobal Wind Power Project Galapagos Islands / Ecuador

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CLEAN DEVELOPMENT MECHANISM
SIMPLIFIED PROJECT DESIGN DOCUMENT
FOR SMALL-SCALE PROJECT ACTIVITIES (SSC-CDM-PDD)
Version 02

CONTENTS

Revision history of this document

Version Number	Date	Description and reason of revision
01	21 January 2003	Initial adoption
02	8 July 2005	• The Board agreed to revise the CDM SSC PDD to reflect guidance and clarifications provided by the Board since version 01 of this document. • As a consequence, the guidelines for completing CDM SSC PDD have been revised accordingly to version 2. The latest version can be found at <http://cdm.unfccc.int/Reference/Documents>.

SECTION A. General description of the small-scale project activity

A.1. Title of the small-scale project activity:

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Full project title : e7 Galapagos / San Cristobal Wind Power Project

Short project title : San Cristobal Wind Project, (or: "the project activity")

A.2. Description of the small-scale project activity:

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Description of the project activity

The project consists of the implementation of a 2.4 MW wind farm near Puerto Baquerizo Moreno on San Cristobal Island, one of the Galapagos Islands in Ecuador. The San Cristobal Wind Project is a small wind energy project to be located in the agricultural area of the Cerro El Tropezon in the San Cristobal Island. The project activity shall be integrated to the existing diesel system and the electricity generated from the wind-diesel hybrid-system shall be evacuated to the San Cristobal grid.

The San Cristobal Wind Project is expected to produce 3,316,759 kWh the first year of operation (assuming 52 % kWh annual diesel displacement and 96.5 % wind turbine availability) and to increase generation until 4,428,767 kWh due to annual increases in electricity demand.

The San Cristobal Wind Project is a partnership among the Government of Ecuador, the United Nations Foundation (UNF), and the San Cristobal Wind Project Commercial Trust (hereafter "Commercial Trust"). The settlors of the Commercial Trust are companies of the e7 organization (American Electric Power (AEP) and RWE), the Adherant Settlor is Galapagos Electric utility (Elecgalapagos)..

The project activity shall displace part of the existing diesel combustion generated power in the San Cristobal Island with a clean energy source based on wind turbines, in order to reduce greenhouse gas emissions (GHG) and to avoid the environmental risks caused by current systems (such as oil spills). The 2.4 MW wind turbines, operating in hybrid modus with the existing diesel generator units, will provide approximately 50 % of the island's annual electricity demand from renewable energy.

Purpose of the project activity

The purpose of the project is to sell the wind energy generated output to the grid system reducing the amount of diesel fuel currently used in power generation, to assist in promoting a more sustainable energy future for the Galapagos Islands and to contribute to climate change mitigation efforts. The project will also help to reduce the ever-increasing demand and supply gap of electricity.

Further benefits of the project activity are:

- the provision of valuable experience for the global promotion of small-scale, power generation and distribution systems with renewable energies;
- the opening of a path for future wind projects in the Galapagos Islands.
- the increase in access of local population to non-conventional energy;

View of the project participants of the contribution of the project activity to sustain development

The proposed project activity has following sustainable development aspects:

Social well being: The project activity contributes to the socio-economic sustainable development of the region by strengthening local capacity to manage all issues related to operation and maintenance related to the implementation and long-term operation of the project, creating new jobs during the construction and operation phases of the wind turbines contributing to the poverty alleviation of the local community and improvement in living standards of the local population.

Finally, the project activity is designed to provide the local utility company, Elecgalapagos, with the operational, technical, environmental and financial knowledge necessary to operate wind turbines on a sustainable basis.

Environmental well being: Since the project activity is located in an area designated by UNESCO in 1978 as World Heritage area, the contribution of the project activity to the environmental well being is of special importance. It will help in conservation of natural resources and to address the issue of protection of bio-diversity through a substantial decrease in the volume of diesel annually shipped to the islands, thereby reducing the environmental threat from an oil spill that can cause great damage to the rich mix of species found in and around the islands. Currently, an important percentage of fuel imported to the Galapagos Islands is used in electricity production. Small isolated diesel-based grids supply electricity to consumers. Diesel is transported from continental Ecuador in small tankers requiring frequent deliveries, in view of the small storage capacity of the Island. Further, fuel spills are relatively frequent in San Cristobal and its number will probably increase if strong measures to curb the amount of fuel transported to the island are not taken.

Additionally, the project activity implementation will lead to less fossil-fuel burning, and thus to less GHG emissions. Finally, the project activity can be a catalyst for needed environmental improvements to the existing diesel generation plant as well as provide a road map for the development of wind-diesel hybrid projects on other Galapagos Islands, such as nearby Santa Cruz.

Economic well-being

The project activity will improve economic sustainability in the Islands in several ways. First, reducing the costs due to fuel imports to the Galapagos Islands. The increasing diesel prices and the financial gap between diesel generation costs (approx. USD 0.1585/kWh) and customer tariff (approx. USD 0.10/kWh), obliges the Government to subsidize electricity tariffs. The realization of the project would allow to deviate scarce national government funds to other needed sectors.

Secondly, tourism – the main economic activity of the Island – is threatened due to adverse publicity caused by fuel spills like when the tanker Jessica ran aground at Bahia Naufragio in the coast of San Cristobal on January 16th 2001. The implementation of the project activity will allow reducing fuel spills and thus, preserving tourism affluence.

The project activity, and its repeatability, will encourage the wider use of renewable energy technologies and will assist in the creation and strengthening of market mechanisms that provide incentives for private sector to invest in these technologies. An innovative public-private partnership to construct the San Cristobal Wind Project has been designed that allows to improve organizational methods and administrative structures.

Technical well being: The technology used in the wind park is well proven and safe.

A.3. Project participants:

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Name of Party involved ((host) indicates a host Party)	Private and/or public entity(ies) project participants (as applicable)	Kindly indicate if the Party involved wishes to be considered as project participant (Yes/No)
Ecuador (host)	Eólica San Cristóbal S.A. EOLICSA	No
Germany	RWE Power AG / e7	No

RWE Power AG is the CDM project participant on behalf of the e7 member companies involved in this project.

Contact information is listed in Annex 1.

A.4. Technical description of the small-scale project activity:

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A.4.1. Location of the small-scale project activity:

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Ecuador

A.4.1.1. Host Party(ies):

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Ecuador

A.4.1.2. Region/State/Province etc.:

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South America / Ecuador / Galapagos Province

A.4.1.3. City/Town/Community etc:

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Municipality of San Cristobal / El Progreso / Cerro El Tropezón

A.4.1.4. Detail of physical location, including information allowing the unique identification of this small-scale project activity(ies):

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The project activity is located in the Galapagos Islands, Ecuador, in the most eastern island called San Cristobal. Concretely, the location of this project activity is the hill Cerro El Tropezon (in some maps also identified as El Niño). This hill is an old volcano with no current volcanic activity. Its slopes are gradual, shaped in the form of a horseshoe with the base facing the south, with a small crater at the center. The wind turbines shall be installed on the south-facing ridge. This ridge is grassland and generally free of vegetation. The south ridge where the wind turbines will be installed is approximately 350 meters in length.

The wind park site is currently used for agricultural purposes. Cattle and horses graze freely on the hill of El Tropezon. Approximately 85 % of San Cristobal is part of the Galapagos National Park (PNG), a lower percentage when compared to other islands. This is due to the large agricultural sector in the highlands

established near the original town of El Progresso. The wind turbines will be located in this agricultural area, outside of the PNG.

The coordinates of the wind turbines are specified in the Table below:

Wind Turbine	UTM X (m)	UTM Y (m)
1	221758	9901327
2	221877	9901337
3	221997	9901338

Figure 1: San Cristobal Wind Project physical location

A.4.2. Type and category(ies) and technology of the small-scale project activity:

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Type : I. Renewable energy projects

Category : I.D. Grid connected renewable electricity generation

The project activity is a wind energy project with a nominal capacity of 2.4 MW, which is lesser than 15 MW, qualifying for small scale CDM project activity since it will not increase its capacity beyond 15 MW. As per the provisions of the "Indicative simplified baseline and monitoring methodologies for

selected small-scale CDM project activity categories" (Version 08: March 3rd 2006) and of Appendix B of Simplified Modalities and Procedures for Small Scale CDM Project Activities (Version 07: November 28th 2005)[1], Type I.D "comprises renewable energy generation units, such as photovoltaics, hydro, tidal/wave, wind, geothermal, and renewable biomass, that supply electricity to and/or displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel or non-renewable biomass fired generating unit". The project activity comprises a wind energy plant that displaces electricity generated through diesel systems (3 units x 650 kW) and supplies electricity to the San Cristobal grid system. The San Cristobal grid is supplied exclusively by diesel power generation. With the above considerations, the Type I.D is the most appropriate for the project activity. The project activity does not comprise any electricity generation from non-renewable energy sources.

Finally, one of the project's technical reports in July 2003 prepared during the Feasibility Study Phase showed that the maximum level of wind penetration feasible for El Tropezon is 2.7 MW, thus fulfilling the condition that the project activity "remains under the limits for small-scale project activity types every year over the crediting period".

Technology

In wind energy generation, kinetic energy of wind is converted into mechanical energy and subsequently into electrical energy. Wind has considerable amount of kinetic energy when blowing at high speeds. This kinetic energy, when passes through the blades of the wind turbines, is converted into mechanical energy and rotates the wind blades. When the wind blades rotate, the connected generator also rotates, thereby producing electricity. The technology is a clean technology since there are no GHG emissions associated with the electric generation.

Three individual state-of-art wind electric generators of capacity 800 kW each were selected in a tender procedure for the project activity. The salient features and technical details of the Spanish MADE produced turbines AE-59 class III –A 800 serial, are as under:

General Data:

Rated power	800 kW x 3
Rotor rotational speed range	11.33-24.93 rpm
Generator speed range	750-1650 rpm
Power control	Pitch and variable speed
Rotor diameter	59 m
Number of blades	3
Main braking type of the wind turbine	Pitching of the blades
Hub height above ground	51 m

Operating conditions:

Start up wind speed	3.5 m/s
Cut off wind speed	25 m/s
Operational ambient temperature	- 10° C - 40°C

Rotor

Rotor diameter	59 m
Swept area of the rotor	2,732 m²
Rotor rotational speed range	11.33 - 24.93 rpm
Rated blade tip speed	70 m/s
Tilt angle	5°

[1] http://cdm.unfccc.int/Projects/pac/ssclistmeth.pdf

Blade type	LM 28.6 p
Blade material	Fiberglass and polyester resin
Blade weight	2,970 kg + 3 %
Hub weight with blade bearings	5,950 kg

Generator

Type of generator	Synchronous three-phases
Maximum active power	880 kW
Main voltage	1000 V + 2 %
Frequency	50 Hz
Cooling system	Air/air

Cycle converter

Maximum active power	840 kW
Main voltage	1,000 V +/- 10 %
Frequency	50 Hz +/- 2 % (For San Cristobal Project, 60 Hz)
Topology	Diode rectifier + set-up chopper + inverter

Nacelle

Type	Tubular cone shaped, welded steel
Number of runs	Two, internally flanged
Hub height	51 m
Diameter on bottom/top	3.5 m/1.82 m

Gearbox

Type	1 Parallel Stage & 2 Helical Parallel Stages
Rated speed ratio	1:66.185

Yaw system

Yaw bearing	Ball bearing bolted to the tower through its outer ring
Yaw brake calipers	4 hydraulic brake calipers
Yaw motors	2 electrical gear-motor with electrical brake & planetary stages

Towers

Type	2 tubular cone shaped sections
Height	55 meters
Access	to the nacelle is facilitated by means of an inner ladder

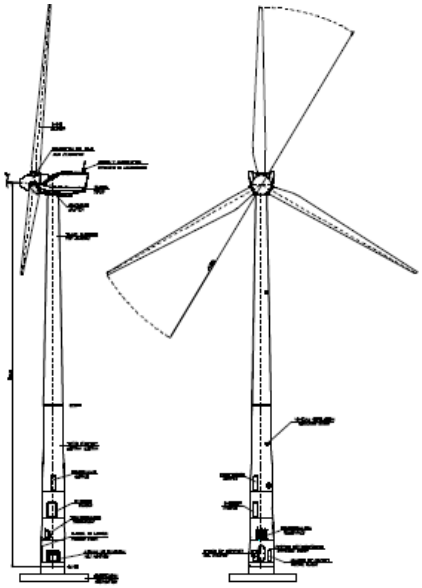

Figure 2 Machine scheme

The 800 serial, class III-A wind turbine according to the standard norm IEC 61400-1, is a machine equipped with a three bladed horizontal axis rotor. Its power control is achieved by pitching of the blades as well as by changing rotational speed.

These turbines have variable-speed, variable-pitch operation and they are regulated under a control algorithm, devoted to stabilization of grid frequency. Due to these points, the complete system continuously improves power quality, in terms of frequency and voltage stabilization. This is a required feature in isolated power systems, which is achieved with the presented stand-alone generation system.

This stand-alone wind-diesel generation system presents a major advantage consisting on that the power injected by the wind turbine can be limited to a controlled value. The power injected by the wind turbine can be adapted to the load. When the power coming from the wind is lower than the power demanded, the diesel generator increases its production in order to equal the power demand.

Know-how transfer to the Host Party

In order to warranty technology and know-how transfer to Ecuador, several capacity building activities have been foreseen. Appropriate Elecgalapagos staff shall participate in formal training on the wind turbine equipment, diesel generator control upgrades, control system, and balance of plant equipment.

The project activity proposes training in the following ways: (a) formal classroom training prior to the commissioning period; (b) on-the-job training supporting the Spanish wind turbine supplier, MADE, and the local service supplier, SANTOS, during the commissioning period; (c) on-the-job training from the MADE field team and technicians that will maintain the project during the warranty period and offer guidance on operation and (d) annual refresher training. The training is an important component in the operation and maintenance (O&M) contract to be signed with MADE. The contract shall last for two years. The two-year period allows a transition period Elecgalapagos to become more familiar and trained with the equipment before it takes additional operational responsibilities. Although MADE will be initially responsible for the wind turbines maintenance, it is anticipated that as a training measure, Elecgalapagos will assist with routine wind turbine maintenance activities.

Further, e7 members will realize a due diligence process during implementation and significant emphasis on operator training will be critical.

A.4.3. Brief explanation of how the anthropogenic emissions of anthropogenic greenhouse gas (GHGs) by sources are to be reduced by the proposed small-scale project activity, including why the emission reductions would not occur in the absence of the proposed small-scale project activity, taking into account national and/or sectoral policies and circumstances:

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The emission reductions of the project activity arise from electricity feed into the grid. The project activity is a wind energy plant generating electricity from a renewable source of energy. The renewable energy source is a source of energy that gets replenished naturally and does not suffer permanent depletion due to use. The energy supplied by project activity to the state grid would reduce anthropogenic GHG emissions since is displacing current diesel power generation systems.

During the first crediting period of 7 years, the project activity would deliver to the grid about 24,934,877 kWh generated from a renewable energy. In the absence of the project activity, the same amount of electricity would have been produced from the current diesel power plants.

The total net generation for the San Cristobal grid in 2005 was 6,546,056 kWh. To produce it, the existing power plants consumed 541,888 gal diesel since diesel power generation constitutes 100 % of the total generation in the grid. Three 650 KW diesel units (no. 1, no. 2 and no. 4), of the standard caterpillar packages with single bearing alternators, are operating. They are fitted with industrial type mufflers which are installed in the building. Unit no. 3, which was of the same type, had been dismantled and sent to another island where the load growth was significant. It was supposed to be replaced by a smaller unit (310 KW) of the same type as the ones already installed in the old portion of the building. Further, there are three additional small units in the system. The three small units no. 5, no. 6 and no. 7 are of the Caterpillar 3408 type with single bearing alternators. They are standard caterpillar packages. They are old, in bad condition, very fuel inefficient and have shown problems with smoke emission. They pose great health and safety risks because lack of protective guards on rotating parts such as the generator coupling. These engines are kept in reserve as backup units in case of an emergency.

Therefore, in the absence of the project activity, the same amount of electricity would be produced from diesel power generation with its associated GHG. The estimated total emission reduction to be achieved by the project activity is **19,947.90 tonnes of CO_2 equivalent** for the crediting period of 7 years and approximately **67,191.15 tonnes of CO_2 equivalent** for the crediting period of 7 x 3 years. Detailed estimates are in section E.

A.4.3.1 Estimated amount of emission reductions over the chosen crediting period:

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Years	Annual estimation of emission reductions in tones of CO_2 e
2007	2,653.41
2008	2,709.79
2009	2,776.85
2010	2,844.46
2011	2,912.54
2012	2,997.88
2013	3,052.97
Total estimated reductions (tones of CO_2 e)	**19,947.90**
Total number of crediting years	**7 years**
Annual average over the crediting period of estimated reduction (tones of CO_2 e)	2,849.70

A.4.4. Public funding of the small-scale project activity:

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Funding from parties included in Annex I to the Convention involved in the proposed project activity does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of those Parties. Annex 2 provides information on sources of public and private funding for the project activity from Parties included in Annex I.

A.4.5. Confirmation that the small-scale project activity is not a debundled component of a larger project activity:

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According to Appendix C to the simplified methodologies and procedures (M&P) for small-scale CDM project activities, 'debundling' is defined as the fragmentation of a large project activity into smaller parts.

With reference to the criteria mentioned, the project activity is not deemed to be a debundled component of a large project activity because there is not a registered small-scale CDM project activity or an application to register another small-scale CDM project activity:

- with the same project participants;
- in the same project category and technology/measure;
- registered within the previous 2 years; and
- whose project boundary is within 1 km of the project boundary of the proposed small-scale activity at the closes point.

Hence, the project activity is eligible as a small-scale CDM project and can use the simplified M&P for small-scale CDM project activities.

SECTION B. Application of a baseline methodology:

B.1. Title and reference of the approved baseline methodology applied to the small-scale project activity:

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Title	:	Grid connected renewable electricity generation in accordance with approved small scale methodology AMS I.D.
Type I	:	Renewable energy project
Category I.D.	:	Grid connected renewable electricity generation
Reference	:	Latest amended Version 08 (3rd March 2006) of the "Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories"

Comment [ED1]: wrong version of the methodology, the apply version have to be ***I.D./Version 9 Scope 1 28 July 2006***

B.2 Project category applicable to the small-scale project activity:

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The project category is a renewable electricity generation for a grid system, which is exclusively fed by fossil fuel fired generating plants (diesel power plants) and with no non-fossil fuel based generating plants. Also, the aggregate installed capacity after adding the new units (case 1 of paragraph 4 of the I.D/Version 08) is lower than 15 MW.

Hence, the applicable baseline is the annual kWh generated by the renewable units times an emission coefficient for a modern diesel generating unit of the relevant capacity operating at optimal load as given in Table I.D.1 of the "Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories", I.D./Version 08 (3rd March 2006).

Since the unit added to the grid system will have both renewable and non-renewable components (i.e. a wind/diesel unit), the eligibility limit of 15MW for a small-scale CDM project activity applies only to the renewable component, which is 2.4 MW in the San Cristobal Wind Project.

B.3. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered small-scale CDM project activity:

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Justification for application of simplified methodologies to the project activity

The installed capacity of the project activity is planed to be 2.4 MW, which is less than the limit capacity of 15 MW and is thus eligible to use small-scale simplified methodologies. Further, the project activity consists on generation of electricity for a grid system using wind potential. Thus, the type and category of the project activity matches with I.D. as specified in the "Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories", I.D./Version 08 (March, 3rd 2006).

Justification for additionality of the project activity

UNFCCC simplified M&Ps seek to establish additionality of project activities as per Attachment A to Appendix B, that lists various barriers, out of which, at least one barrier shall be identified due to which the project would not have occurred anyway. Project participants identified the following barriers for the proposed project activity:

Barrier Analysis:

- **Investment barrier: high investment costs**

The investment costs in terms of costs per installed kW of wind energy are in general higher than setting up other power plants. Moreover, the capital costs of settling a project in a uniqueness site like San Cristobal, are higher than in other regions and estimated at USD 9,952,790 for 2.4 MW installed capacity. The high capital costs are due to several components:

Costs due to proper integration of the existing diesel generators to a wind-diesel hybrid system need to be incurred.

In the San Cristobal Wind Project, a 12 km transmission line is needed to transport the generated energy from the wind park to the interconnection point with the utility grid located at the Elecgalapagos diesel plant. The transmission line also includes an expensive 3,000 meter underground transmission line in an area where the endangered Galapagos Petrel is known to frequent.

Despite site access is very good, construction costs for a new access road around the north side of El Tropezon to access the south-ridge from the east have to be incurred to minimize the potential storm-water runoff to a small fresh water lake that is located south west of El Tropezon.

High costs of shipping equipment and extended rental costs created by the remote island location had to be considered in the project budget. San Cristobal lacks basic construction infrastructure; the majority of construction equipment including a concrete plant need to be imported to the island, and the project budget includes building a new small pier for the unloading of equipment.

Finally, and considering the uniqueness of the Galapagos as a World Heritage Site, the project activity has relatively high project development and environmental costs. The project proposes to undertake and fund a protection program for the endangered Galapagos petrel which nests on San Cristobal Island.

The Commercial Trust intends to use import duty and value added tax exemptions available to this renewable energy project to overcome some of the investment costs barriers.

- **Power purchase tariff**

The power purchase tariff is settled by law at USD 0.01282 / kWh for a period of 12 years counted from the date the Permit Contract is signed with CONELEC (Consejo Nacional de Electricidad = National Council of Electricity). The Permit Contract has been signed on May 8th, 2006, so that this barrier does not represent a risk any more. On the other side, the policy and procedure concerning the price rate beyond the 12-year period in which the renewable price is set is unknown. Under the new Renewable Energy Regulation, while it appears there may be no need to negotiate a Power Purchase Agreement (PPA) for the first 12-year period, the Commercial Trust intends to investigate and mitigate risk in this area by drafting a framework within a PPA on how the price would be determined at the end of the 12-year period. Other payment factors will also be addressed in the PPA.

Another barrier on the revenues to be generated through the power tariff is the fact that CENAE, the National Center of Energy Control, and the Distribution Companies and large Power Consumers, that provide payment to the Generators for the electricity sold to the main interconnected system and isolated grids, have not had sufficient funds to meet all of its financial obligations. To minimize financial risk to the wind project sustainability, a mechanism has been accepted by CONELEC whereby the Wind Project can be paid via the current mechanism used for payment to Elecgalapagos by the government , should the approach outlined in Renewable Regulation prove unworkable or unreliable.

- **Technological barrier**

The project activity is the “first of this kind” in the Island, since no previous wind energy project has been realized in the Galapagos. Thus, there is a lack of technological know-how in installing, operating and

maintaining wind parks. This lack of technological know-how, was already identified as the most critical barrier at the beginning of the project development. To address this concern, as described earlier in this document, the wind project has contracted with MADE to provide maintenance of the wind turbines and operational support and training for Elecgalapagos has been included as a fundamental part of the project activity.

- **Regulatory barrier**

In Ecuador in the last decade, the electricity sector has been de-regulated and mainland systems where unbundled into separate generating, transmission, and distribution companies. A separation of the utility involved in the project organization, Elecgalapagos – which currently holds a Concession Contract (dated July 27th, 2000 and issued by CONELEC) for providing vertically integrated electrical services - , could threaten the original structure of the project activity. Fortunately, integrated systems such as the Galapagos have been allowed to retain a traditional vertical integration utility structure where all services (generation, transmission, and distribution) are provided by a single provider.

- **Other barrier: wind speed**

A wind map realized by the consultant engineers Lahmeyer International within the framework of the pre-feasibility study in 1999 for the project activity, proposed that the most appropriate site at the San Cristobal Island to install the wind park was Cerro San Joaquin. Nevertheless, and as a result of a follow-on environmental assessment, the project has been moved to the site located on Cerro El Tropezon. The wind resources at the El Tropezon site are less but are adequate for the needs of the project. The minimal environmental impact associated with the El Tropezon site made it the clear choice for the project when wind resources were determined to be adequate.

Logistical challenges

Since the project activity is located in a remote area, the logistical challenges were considered as part of a conceptual design study, which showed that the island infrastructure can support the installation of the 800 kW sized wind turbines. One of the measures taken to address the logistical challenges was to contract with a major in-country Constructor, Santos-CMI, who has extensive experience with undertaking major projects in remote areas of Ecuador. Off-loading of the large equipment in the harbor was a major concern, and Santos-CMI has developed an approved plan to use an existing port facility with a small supplemental pier to be constructed for the project.

Stakeholder involvement

Local stakeholder involvement in the project activity implementation was recognized in 2000 as one of the keys for success in the project implementation. Therefore, during last years local stakeholders were continuously involved in the project development through participation in workshops, training, share participation in the project, licensing.

Risk of supply

A project in the Galapagos Islands affords a risk of supply: project participants had to place a contract for few turbine units in a remote part of the world that is difficult to service, major industry players in the wind turbine market might not be interested in a 2-4 unit tender when they are pursuing contracts for very large unit orders. This barrier has been overcome with the signature of a supply agreement with MADE in 2006.

Environmental barriers

The location of the project activity in the Galapagos Islands, and its location in the influence zone of the Galapagos National Park (PNG), could have constituted an environmental barrier. The project activity was required to develop several procedures to obtain the environmental license. After the development of

the Definitive Environmental Impact Assessment (EIAD) and the approval of both CONELEC and the Ministry of Environment, the project activity has obtained the environmental license on March 14th 2006. The Galapagos National Park (PNG), part of the Ministry of Environment, was very involved in the EIAD process, and it has endorsed the Wind Project and its environmental components.

B.4. Description of how the definition of the project boundary related to the baseline methodology selected is applied to the small-scale project activity:

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As per "Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories", I.D./Version 08 (March 3rd, 2006), "the project boundary encompasses the physical, geographical site of the renewable electricity generation source".

Hence, the project boundary is composed of the wind turbines, the metering equipment for the project activity, and the grid which is used to transmit the generated wind power.

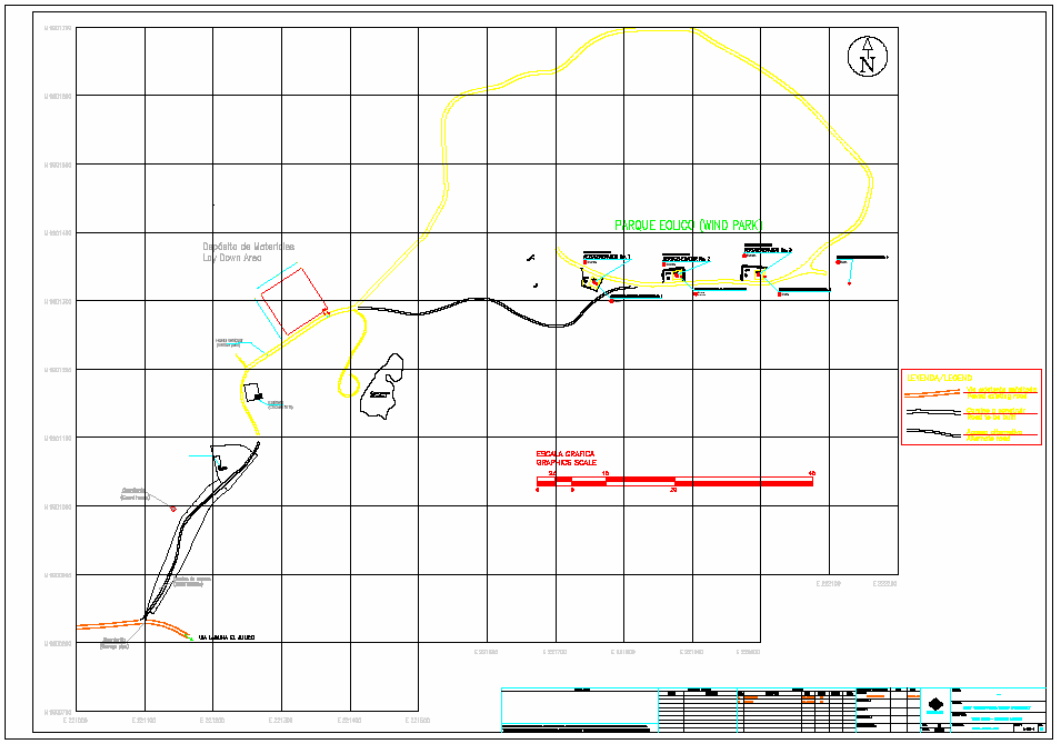

Figure 3: Location of project activity / project boundaries

B.5. Details of the baseline and its development:

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The project's baseline calculation takes the option specified in methodology AMS-I.D, for a system where **all** the generators use exclusively fuel oil/or diesel fuel. The baseline formula used is detailed under E.1.2. The applicable baseline is the annual kWh generated by the renewable units times an

emission coefficient for a modern diesel generating unit of the relevant capacity operating at optimal load as given in Table I.D.1.

Table I.D.1 (Emission factors for diesel generator systems (in kg CO2equ/kWh) for three different levels of load factor) of AMS-I.D is as follows:

Table 1: Table I.D.1

Cases	**Mini-grid with 24 hour service**	**i) Mini-grid with temporary service (4-6 hr/day) ii) Productive applications iii) Water pumps**	**Mini-grid with storage**
Load factors (%)	25%	**50%**	100%
<15 kW	2.4	1.4	1.2
>=15<35 kW	1.9	1.3	1.1
>=35<135 kW	1.3	1.0	1.0
>=135<200 kW	0.9	0.8	0.8
>200 kW	**0.8**	0.8	0.8

The emission factor 0.8 in bold is applicable in this project activity.

Whereas, a conversion factor of 3.2 kg CO2 per kg of diesel has been used (following revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories), the load factor figures are derived from fuel curves in the online manual of RETScreen International's PV 2000 model, downloadable from http://retscreen.net and the applicable values for the San Cristobal Wind Project are in bold.

The annual kWh generated by the renewable (wind energy) unit, has been calculated based on increasing annual demand and diesel displacement. Demand is estimated to increase annually at a rate of 4.5 % the first four operational years, a 4.0 % the following six years, a 3.0 % from 2017 to 2020 and a 2.0 % afterwards. Demand estimates have been based on historical load data from 2000 to 2004 as specified in the table below:

Table 2: Load Growth (2000-2004)[2]

Year	San Cristobal Annual Generation (kWh)	Annual Increase (kWh)	Annual Increase (%)
1999	4,707,354	n/a	n/a
2000	4,847,610	140,256	2,98 %
2001	5,155,573	307,963	6.35 %
2002	5,342,799	187,226	3.63 %
2003	5,763,414	420,615	7.87 %
2004	5,970,261	206,847	3.59 %

The predicted future generation demand increase appears modest when viewed against the load growth analysis of the past several years. The number of customers for Elecgalapagos has been increasing steadily.

As part of the Feasibility Study, the wind project team in consultation with Elecgalapagos had forecast that annual generation required for 2005 would be 6,199,596 kWh, when considering annual growth rate of about 5 %. Elecgalapagos recently reported annual generation for 2005 was actually 6,546,056 kWh. This value was 9,64%, higher than the 5 % load growth forecast.

Although strict immigration policies are in place, most recent data shows grid demand actually increasing at a rate of 6 % to 12 % as can be seen in the following Figure:

[2] Source: Elecgalapagos

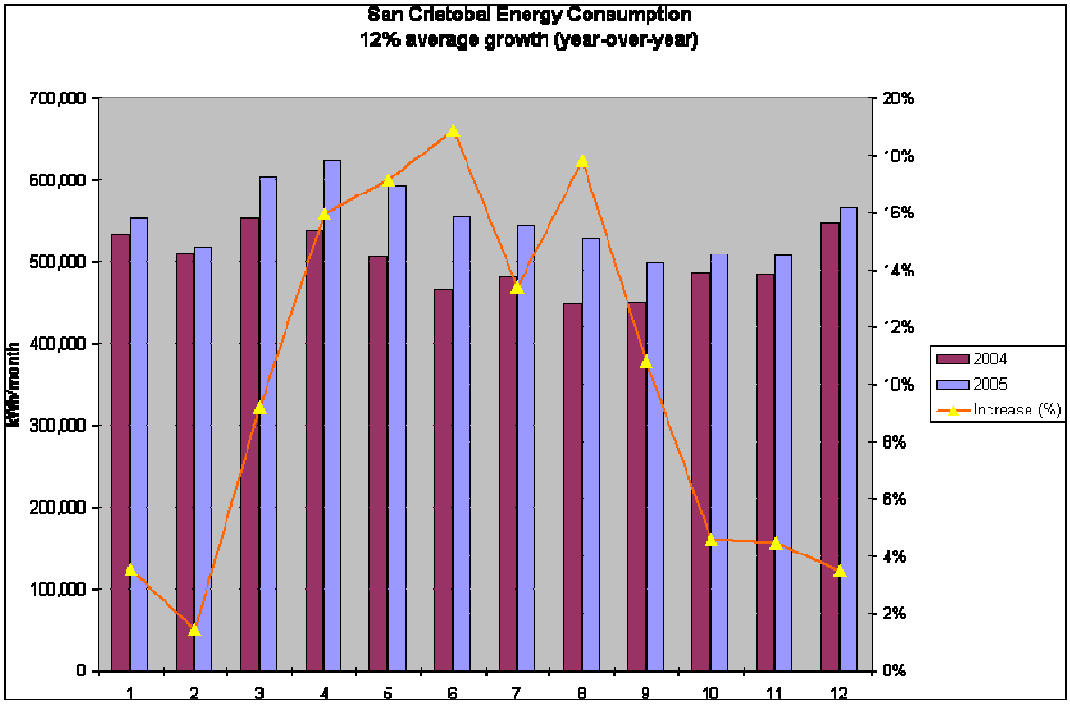

Figure 4: San Cristobal monthly energy consumption 2004-2005[3]

Data from Elecgalapagos shown in the table below indicates the following trends in customer levels:

Table 3: Elecgalapagos Customer Growth (2000-2004)[4]

Year	Total Number of Customers	Annual Increase, Number of Customers	Annual Increase (%)
June 1999	1,369	-	n/a
2000	1,566	197	14.4%
2001	1,627	61	3.89 %
2002	1,718	91	5.3 %
2003	1,809	91	5.0 %
2004	1,913	104	5.4 %

Thus, the calculation on diesel power displacement has been based on the load growth assumptions identified below. These values are though to be conservative based on trends discussed above:

[3] Source: Elecgalapagos. Data compiled on May 1st, 2006.

[4] Date has been compiled from the „Feasibility Report for San Cristobal, Galapagos, Wind Power Project“ issued for e7 Fund, on 31/12/2005.

- Load growth in 2007: 5.0 % annual increase assumed (as per Elecgalapagos)
- Load growth from 2008 to 2011: 4.5 % annual increase assumed;
- Load growth from 2012 to 2017: 4.0 % annual increase assumed;
- Load growth from 2018 to 2021: 3.0 % annual increase assumed;
- Load growth from 2022 to 2026: 2.0 % annual increase assumed.

The annual increases in grid demand will have the following effects as it relates to the project activity:

- Less "excess" wind energy will be dumped, allowing for greater wind energy use and revenues;
- Percent of diesel energy displaced by wind energy will begin to fall year after year.

As a result of modeling the load data indicated above and the wind data, the following outcome was obtained:

Table 4: Annual Generation and Diesel Displacement[5]

Operational Year	Annual Generation (MWh)	Annual Load Increase (%)	Annual Diesel Displacement (%)
2007	6,590	5.0	52.8
2011	7,762	4.5 (2008-2011)	48.6
2016	9,444	4.0 (2012-2017)	44.1
2021	11,055	3.0 (2018-2021)	40.1
2026	12,205	2.0 (2022-2026)	37.6

Date of completion the baseline study: May 15th, 2006
The baseline calculations have been done on behalf of EOLICSA - RWE/e7 by:
Lahmeyer International GmbH
Friedberger Str. 173
D-61118 Bad Vilbel, Germany

Contact:

rosa.tarrago@lahmeyer.de
Tel. +49 6101 55 1439
Fax +49 6101 55 2101

[5] Date has been compiled from the „Feasibility Report for San Cristobal, Galapagos, Wind Power Project" issued for e7 Fund, on 31/12/2005 and updated on 14/10/2005.

SECTION C. Duration of the project activity / Crediting period:

C.1. Duration of the small-scale project activity:

>>

C.1.1. Starting date of the small-scale project activity:

>>

01/09/2007

C.1.2. Expected operational lifetime of the small-scale project activity:

>>

The project has a minimum operational lifetime of 20 years

C.2. Choice of crediting period and related information:

>>

C.2.1. Renewable crediting period:

>>

C.2.1.1. Starting date of the first crediting period:

>>

01/09/2007 (expected starting date, i.e. expected start of operation)

C.2.1.2. Length of the first crediting period:

>>

Seven (7) years, with the option of two renewals of further seven (7) years each

C.2.2. Fixed crediting period:

>>

C.2.2.1. Starting date:

>>

Not applicable (renewable crediting period has been chosen)

C.2.2.2. Length:

>>

Not applicable (renewable crediting period has been chosen)

SECTION D. Application of a monitoring methodology and plan:

>>

D.1. Name and reference of approved monitoring methodology applied to the small-scale project activity:

>>

Name: Renewable electricity generation for a grid (AMS I.D)

Reference: Latest amended version 08 (March 3rd, 2006) of the simplified M&P for small-scale CDM project activities

D.2. Justification of the choice of the methodology and why it is applicable to the small-scale project activity:

>>

As discussed in Section A.4.2. of this PDD this project is qualifying for small scale CDM project activity and as procedure for small-scale CDM project activities as set out in paragraph 6 (c) of decision 17/CP.7. The project activity meets the eligibility to use simplified modalities in which the monitoring methodology and baseline are selected here.

D.3 Data to be monitored:

>>

Data type	Data variable	Data unit	Measured (m), calculated (c) or estimated	Recording frequency	Portion of data to be monitored	How will the data be archived? (electronic/paper)	For how long is archived data to be kept?	Comment
Electricity supplied to the electricity grid through the wind energy equipment	Electricity	kWh	(m)	Monthly	100%	Electronic & paper	Two years beyond Crediting Period	The metering equipment at the delivery point shall be in accordance with relevant provisions of metering code as applicable for generating stations.

D.4. Qualitative explanation of how quality control (QC) and quality assurance (QA) procedures are undertaken:

>>

Uncertainty level of data (High /Medium/ LOW)	Out line explanation why QA/QC procedures are or are not being planned.
L	The data can be very accurately measured. The meters installed on the grid connection point will be used to measure mentioned variables on a continuous basis. Every month these meter readings will be recorded by plant personnel, these records will be archived for cross-checking yearly figures. The meters at the substation will be two-way meters. Elecgalapagos officials will take the readings in these meters and the same reading may be used to determine the net power wheeled to the user and to determine the extent of mitigation of GHG over a period of time. When the main metering system and/or backup metering system and/or any component thereof is found to be outside the acceptable limits of accuracy or otherwise not functioning properly, it shall be repaired, recalibrated or replaced as soon as possibly by the project proponent or Elecgalapagos.

D.5. Please describe briefly the operational and management structure that the project participant(s) will implement in order to monitor emission reductions and any leakage effects generated by the project activity:

>>

Project activity organization and management

The project activity will be funded by the San Cristobal Wind Power Commercial Trust, founded on September 29th 2005 in Ecuador by e7 member companies for the purpose of constructing and building a wind energy project on San Cristobal Island. Whereas, corporation Eolica San Cristobal S.A. (EOLICSA), a 100 % subsidiary of the Commercial Trust, will operate the project activity and monitoring.

EOLICSA has been founded because Ecuadorian law requires the generating permit to be held by a corporation. Apart from the generating permit, EOLICSA holds the environmental license and land easement for the Wind Project. The local electric utility, Elecgalapagos S.A., has been invited in partnership to join the Commercial Trust and adhered to it as per Adhesion Agreement dated March 21st 2006.

In order to assure a successful management and operation of the project activity, Elecgalapagos has supported many activities during the development phase of the project. Elecgalapagos will be further trained in the operation and maintenance of the San Cristobal Wind Project and will be the ultimate beneficiary. In reference to the diesel equipment, Elecgalapagos retains sole ownership and complete responsibility for the existing diesel generating plant, thus having responsibility for the hybrid system.

Governance of the Commercial Trust is by a Board of Trustees. The Board of Trustees has hired a Project Technical Director, who also acts as the General Manager for EOLICSA, with technical competence to oversee the daily operation, maintenance and coordinate with Elecgalapagos. Elecgalapagos will accomplish, through an agreement with EOLICSA, the operation, maintenance and monitoring of the project activity.

Elecgalapagos, through its General Manager, will collect, process and store the data listed in Section D.3 in a systematic and reliable manner, evaluate the obtained data against quality assurance requirements. Monitoring reports will be prepared on an annual base and submitted to EOLICSA and the Commercial Trust and these, will submit it to the independent Designated Operational Entity (DOE) for verification. The monitoring report will contain all collected data, explain the performed calculations in a transparent manner and will compare the data of the respective year with the data of the last two preceding years to facilitate cross-checks.

All files with the monitored data will be based on a transparently structured format and will include English translations for all table titles, remarks and comments (if not completely held in English).

Project activity organization and management is structured in the figure below:

Error!

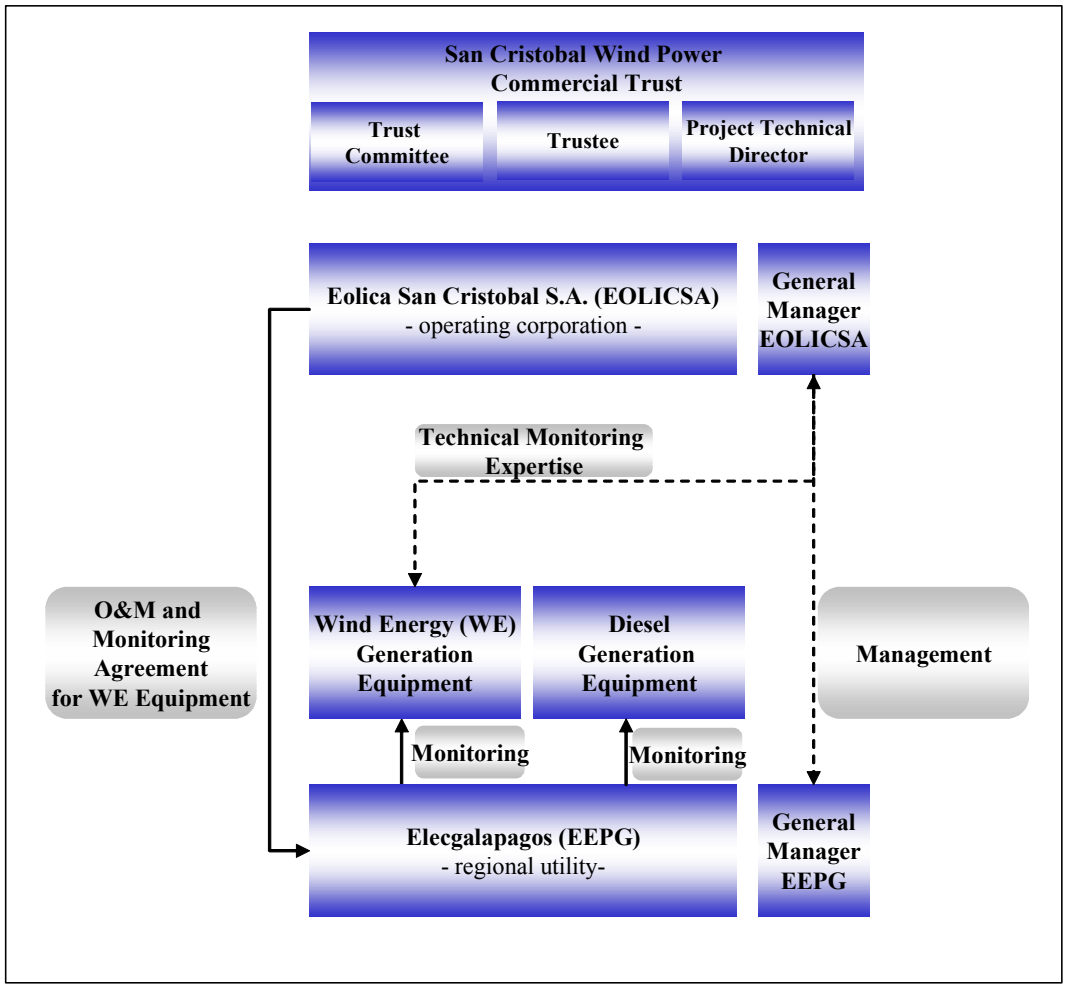

Figure 5: Operational and management structure

Monitoring

As emission reduction from the project are determined by the number of units exported to the grid, it is mandatory to have a monitoring system in place and ensure that the project activity produces and exports the rated power at the stipulated Ecuadorian norms.

The project activity will work in a frequency range of +/-2.5 % 60Hz and a with a power factor under the limits of the Ecuadorian electrical regulations.

Metering shall be performed at the delivery point at the Elecgalapagos substation. Metering equipment has been specified and shall be supplied in accordance with CONELEC regulation No. 004/03. The sealing of meters shall be certified by CENACE if regulation 004/04 is applied; otherwise it will be only a matter of verification between Elecgalapagos and EOLICSA.

The meters and all associated instruments installed at the project shall be of 0.2 % accuracy class, and will fulfill all the technical characteristics required by the Ecuadorian authorities and international standards.

Monitoring on the emission reductions achieved by San Cristobal Wind Project will be implemented and conducted under the guidance and responsibility of:

Organization:	**Eolica San Cristobal Sociedad Anonima (EOLICSA)**
Address:	Miguel Burbano N48-236 / Quito - Ecuador
Represented by:	
Title:	General Manager of EOLICSA
Name:	**Eng. Luis Vintimilla**
Direct Fax:	+ 593-2-33 00 397
Direct Telephone:	+(593-2) 33 00 397
Personal E-Mail:	lvintimi@pi.pro.ec

Leakage
The project activity essentially involves the generation of electricity from wind, the employed wind turbines can only convert wind energy into electrical energy and cannot use any other input fuel for electricity generation. Thus, no special ways and means required to monitor leakage from the project activity.

D.6. Name of person/entity determining the monitoring methodology:

>>
The monitoring methodology has been determined by EOLICSA and the RWE/e7 in collaboration with its consultants:

Lahmeyer International GmbH
Friedberger Str. 173
D-61118 Bad Vilbel, Germany

Contacts:

rosa.tarrago@lahmeyer.de

On behalf of EOLICSA:

Contact:
Mr. Luis Vintimilla
Miguel Burbano N48-236
Tel.: (593-2) 33 00 397
lvintimi@pi.pro.ec
Quito - Ecuador

SECTION E.: Estimation of GHG emissions by sources:

E.1. Formulae used:

>>

E.1.1 Selected formulae as provided in appendix B:

>>

The applicable project category from the "Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories", I.D./Version 08 (3rd March 2006), does not indicate a specific formula to calculate the GHG emission reductions by sources (neither does it the Appendix B of the simplified M&P for small-scale CDM project activities, Version 07. Since the project activity is a wind energy project, GHG emissions by sources are not applicable.

E.1.2 Description of formulae when not provided in appendix B:

>>

E.1.2.1 Describe the formulae used to estimate anthropogenic emissions by sources of GHGs due to the project activity within the project boundary:

>>

Since the project activity is a wind energy project, there are no anthropogenic emissions due to the San Cristobal Wind Project within the project boundary. Therefore, no formula is applicable to estimate GHG emissions from sources.

E.1.2.2 Describe the formulae used to estimate leakage due to the project activity, where required, for the applicable project category in appendix B of the simplified modalities and procedures for small-scale CDM project activities

>>

In the Guidelines for Completing CDM-SSC-PDD, Version 02, *leakage* is defined as "the net change of antropogenic emissions by sources of GHG which occurs outside the project boundary, and which is measurable and attributable to the CDM project activity". Since this does not apply for the project activity, there are no leakage issues associated with the project activity and hence no formula is used to estimate leakage due to the project activity.

E.1.2.3 The sum of E.1.2.1 and E.1.2.2 represents the small-scale project activity emissions:

>>

The sum of E.1.2.1 and E.1.2.2 will give the sum of GHG emissions due to the project activity and leakage, which would be the net project emissions due to the project activity. Since there are no anthropogenic emissions and no leakage due to the project activity, the sum of E.1.2.1 and E.1.2.2 will be zero. The same is given in the table below:

Year	Project emissions as per E.1.2.1	Leakage as per E.1.2.2	Sum of above (E.1.2.1 + E.1.2.2)
2007	0	0	0
2008	0	0	0
2009	0	0	0
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	0	0

E.1.2.4 Describe the formulae used to estimate the anthropogenic emissions by sources of GHGs in the baseline using the baseline methodology for the applicable project category in appendix B of the simplified modalities and procedures for small-scale CDM project activities:

>>

As per paragraph 8 of Type I.D described in the "Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories", I.D./Version 08 (3rd March 2006), and since all the generators in the system use exclusively diesel fuel, the baseline is the kWh produced by the renewable generating unit multiplied by an emission coefficient (measured in kg CO2equ/kWh) for a modern diesel generating unit of the relevant capacity operating at optimal load as given in Table I.D.1.

The baseline value is estimated through the average annual electricity output of the wind park multiplied by the coefficient 0.8. This coefficient applies for rate capacities higher than 200 kW. Thus, formulae used for estimation of the anthropogenic emissions by sources of GHG of the baseline is as under.

Emission reduction by project activity

ER = (TPexp x EF) – PE – EL,

whereas

ER = Emission reduction per year by project activity (tonnes CO2 eq/year)

TPexp = Total power exported to grid per year in kWh

EF = Baseline emission factor (kg CO2/kWh)

PE = Project emissions [=0]

EL = Emission due to leakage (tonnes of CO2 eq/year) [=0]

thus, annual emission reductions can be estimated as in the following table:

Table 5: Baseline emissions of the project activity

Year	Electricity supplied to the grid (*)	Baseline emission factor	Baseline emissions
	TP_{exp} (kWh/year)	EF_b ($kgCO_2$/kWh)	BE (ton CO_{2eq}/year)
2007	3,316,759	0.8	2,653.41
2008	3,387,240	0.8	2,709.79
2009	3,471,068	0.8	2,776.85
2010	3,555,581	0.8	2,844.46
2011	3,640,671	0.8	2,912.54
2012	3,747,344	0.8	2,997.88
2013	3,816,214	0.8	3,052.97

(*) The amount of electricity supplied to the grid has been estimated calculating an annual 96.5 % availability of the wind energy equipment.

E.1.2.5 Difference between E.1.2.4 and E.1.2.3 represents the emission reductions due to the project activity during a given period:

>>

Following formula is used to determine emission reductions:

Emission reductions due to project activity	=	Baseline emissions	-	Project emissions

The emission reductions due to the project activity during the crediting period are given in the following table:

Table 6: Emission reductions

Year	Baseline emissions	Project emissions	Emission reductions
	BE (ton CO_{2eq}/year)	PE (ton CO_{2eq}/year)	(ton CO_2)
2007	2,653.41	0	2,653.41
2008	2,709.79	0	2,709.79
2009	2,776.85	0	2,776.85
2010	2,844.46	0	2,844.46
2011	2,912.54	0	2,912.54
2012	2,997.88	0	2,997.88
2013	3,052.97	0	3,052.97
Total for 2007-13	**19,947.90**	**0**	**19.947.90**

E.2 Table providing values obtained when applying formulae above:

>>

Year	Estimation of project activity emission reductions (tonnes of CO2e)	Estimation of leakage (tonnes of CO2e)	Estimation of emission reductions (tonnes of CO2e)
2007	2,653.41	0	2,653.41
2008	2,709.79	0	2,709.79
2009	2,776.85	0	2,776.85
2010	2,844.46	0	2,844.46
2011	2,912.54	0	2,912.54
2012	2,997.88	0	2,997.88
2013	3,052.97	0	3,052.97

SECTION F.: Environmental impacts:

F.1. If required by the host Party, documentation on the analysis of the environmental impacts of the project activity:

>>

A very significant environmental concern related to the Project is the Galapagos Petrel. The Galapagos Petrel is one of the six endemic marine birds of the Galapagos Archipelago. Their nesting areas are located in the highlands of several islands, in sites with dense vegetation and excavation soils.

Due to concern of potential impact to the Galapagos Petrel, studies in cooperation with PNG and Charles Darwin Research Station (CDRS) undertook nesting, flight pattern, and mortality were developed over a two-year period. Information learned from these studies has had a direct impact on project location, equipment selection, and project design.

Further, the project location in the Galapagos Islands, and in the influence zone of the Galapagos National Park (PNG). Thus, and in order to obtain an Environmental License, the project activity was required to develop a Definitive Environmental Impact Assessment (EIAD) and receive approval from both CONELEC and the Ministry of Environment of Ecuador. When the EIAD was approved, the project proponents applied for the Environmental License, which has been obtained on March 16th 2006.

Additionally, an Environmental Management Plan has been defined. It identifies a series of mitigation and enhancement measures that will be instituted during implementation. Many of these measures focus on the Petrel. It is intent that these measures will not only act to minimize impact to the Petrel, but may actually help increase the Petrel population. A long-term monitoring program is included as part of the project activity and on-going operations.

SECTION G. Stakeholders' comments:

G.1. Brief description of how comments by local stakeholders have been invited and compiled:

>>

The local stakeholders are defined as the groups or individuals immediately affected by the proposed project activity or actions leading to the implementation of the project. The effect is on the local

environment, social life and economics. Local stakeholders have been invited to participate in the project since the very beginning, so that the San Cristobal Wind Project is a partnership among the Government of Ecuador, the United Nations Development Program (UNDP) in Ecuador, and the San Cristobal Wind Project Commercial Trust. The settlers of the Commercial Trust are companies of the e7 organization and the Galapagos Electricity utility (Elecgalapagos).

Further local stakeholders are the licensing and regulatory authorities like:

- Ministry of Energy and Mines (MEM)
- Ministry of Environment (ME)
- The National Electricity Council (CONELEC)
- Fondo de Solidaridad
- Galapagos Provincial Council
- San Cristobal – Galapagos Municipality
- The National Center of Energy Control (CENACE)
- National Galapagos Institute (INGALA)
- Galapagos National Park (PNG)
- Charles Darwin Foundation (CDF)

The project proponents have been constantly in contact with identified stakeholders like licensing and regulatory authorities. Their views are reflected in the form of permissions granted for the project. In this aspect, the following permission, licenses and/or agreements are indication of favorable impression for the project activity:

- declaration of the project activity as a "community beneficial project" by the San Cristobal municipal government;
- issue by the Ministry of Environment of Ecuador of the Environmental License, on March 14th, 2006;
- resolution by CONELEC for land easement in favour of Elecgalapagos on January 25th 2006; through the adhesion of Elecgalapagos to the Commercial Thrust, the land easement is brought to the San Cristobal Wind Project;
- signature by CONELEC of the Generation Contract on May 8th, 2006;
- issue by the Municipality of the Construction Permit on May 4th, 2006;
- signature by Elecgalapagos of its Adhesion Agreement to the Commercial Trust on March 21st, 2006.

Local population comprises of the local people in and around the project area. The roles of the local people are as a beneficiary of the project. The local population (almost 6,000 inhabitants) will be supplied from the wind park since it will generate around half of the electricity demand of the island. In addition to this, the project will also lead to local manpower working during the construction phase and monitoring. Since, the project will provide good direct and indirect (increase of tourism attractiveness of the island) employment opportunities, the local populace is encouraging the project. Further, the project does not require displacement of any local population.

As a buyer of the power, Elecgalapagos is a major stakeholder in the project. It holds the key to the commercial success of the project activity. Elecgalapagos has already joined the Commercial Trust and has agreed to sign a Power Purchase Agreement with EOLICSA.

The Government of Ecuador, through the Ministry of Environment, the Ministry of Energy and Mines, has been promoting renewable energies in the country. Thus, the project meets their requirements.

Due to the project's activity worldwide visibility and high value to be replicated, UNDP and e7 have already extensively described the administrative and project development steps to the media, stakeholders, UN agencies and government locally, nationally, regionally, and internationally. These communications will continue using these established relationships. Further, it is planned to settle a Community Outreach Program to keep the San Cristobal population informed of projects status and activities. As part of the Community Outreach Program, a project activity specific website has already been established (http://www.galapagoswind.org), where project related information is posted.

G.2. Summary of the comments received:

>>

Already at the very beginning of the project activity development, in July 2002, the project obtained very positive comments. For instance, the Planning Office attached to the Presidency of the Republic of Ecuador (ODEPLAN), declared the project activity as a national priority.

G.3. Report on how due account was taken of any comments received:

>>

No specific action was required as no adverse comment was received.

Annex 1
CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

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FAX:	+ 593-2-33 00 397
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URL:	www.galapagoswind.org
Represented by:	
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Last Name:	Vintimilla
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Personal E-Mail:	klaus.baumann@rwe.com

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

There is no public funding to constitute a diversion of official assistance, nor to count towards any financial obligation from Parties included in Annex I.

Financial requirements in an amount of USD 9,952,790 for the project implementation, are intended to be obtained from the companies/institutions as stated in the table below:

Funding Source:	Based in:	Funding amount (USD)
e7 members	Canada	2,000
e7 / Global 3e	United States	4,848,000
RWE Power AG	Germany	625,640
United Nations Foundation (UNF)	United States	931,988
Municipality of San Cristobal	Ecuador	239,643
Government of Ecuador - FERUM Subsidy (2005) -	Ecuador	1,277,604
Government of Ecuador - FERUM Subsidy (2006) -	Ecuador	2,027,915
TOTAL		**9,952,790**

The **e7 members** are nine of the world's leading utilities from the G7 countries. They are: American Electric Power (AES-USA) – which has played a crucial role in the development, technical and legal management of the project as member of e7 -, Electricité de France (EDF-France), ENEL (Italy), Hydro Quebec (Canada), Kansai Electric Power Co. (Japan), Ontario Power Generation (Canada), RWE (Germany), Tokyo Electric Power Co. (TEPCO-Japan), and now RAO (Russia) with Russia joining the G8. Created in the wake of the 1992 Rio Summit, the e7 promotes global environmental protection while considering the economic growth of developing countries. The e7 priorities include, among others, climate change and sustainable development.

The **e7 / Global 3e** is an e7-affiliated charity institution.

RWE Power AG is one of the world's leading private owned utilities in the G7 countries.

The **United Nations Foundation (UNF)**, which intends to provide a loan to immediately capitalize the construction of the San Cristobal Wind Project, is a public charity with collaborative partnerships involving the United Nations, the private sector, non-governmental organizations and foundations. The UNF-loan does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of the United Nations. In case this loan was to be identified as public funding it would not result in a diversion of official assistance and not be accounted towards any financial obligations from the United Nations. UNF does not claim or require any compensation in the form of Certified Emission Reductions for the loan.

By **Municipality of San Cristobal** it is meant in-country Ecuadorian sources derived from taxpayer's donations of their 25 % of income tax for this project qualified as "community interest project" in accordance with local applicable laws and regulations. These funds shall be transferred by the Municipality of San Cristobal to the Commercial Trust through Elecgalapagos, in which the Municipality of San Cristobal is a shareholder.

The **Rural and Urban-Marginal Electrification Fund** (FERUM Fund) was created by a National Law and it is currently managed through the National Council of Electricity (CONELEC) and Fondo de

Solidaridad. The FERUM Fund currently covers the financial gap between real costs of electricity generation through diesel power plants and customer tariff. Since the Electricity Law establishes that FERUM Funds shall be used with preference to finance renewable energy projects for rural areas, FERUM Funds have been allocated to finance the San Cristobal Wind Project.

Appendix 1

ABBREVIATIONS

AEP	American Electric Power
CDM	Clean Development Mechanism
CENACE	National Center of Energy Control
CONELEC	National Council of Electricity
EEPG	Elecgalapagos, Galapagos utility company
EIAD	Definitive Environmental Impact Assessment
GHG	Greenhouse Gas
INGALA	Galapagos National Institute
M&P	Methodologies and Procedures
ODEPLAN	Planning Office to the Presidency of the Republic of Ecuador
EOLICSA	Eolica San Cristobal Sociedad Anonima
PDD	Project Design Document
PNG	Galapagos National Park
PPA	Power Purchase Agreement
UNDP	United Nations Development Program
UTM	Universal Transverse Mercator