CLEAN DEVELOPMENT MECHANISM
PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD)
Version 03 - in effect as of: 22 December 2006

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>.
03	22 December 2006	• The Board agreed to revise the CDM project design document for small-scale activities (CDM-SSC-PDD), taking into account CDM-PDD and CDM-NM.

SECTION A. General description of small-scale project activity

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

Baltra Wind Project in the Galapagos (the "Project")

Document Version 01
Date of Completion: dd/January/2010

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

The Project is 7.5 MW wind power project on the Island of Baltra, the Galapagos Islands in Ecuador. The electricity generated from the project will be fed into a mini-grid in the Island of Santa Cruz. Santa Cruz is the most populated island in the Galapagos with nearly one half of the population of the Galapagos, and one power station (Puerto Ayora Power Station) with diesel generators is serving the daily demand. The Project will be implemented in three phases, by gradually expanding the wind capacity and gradually replacing all the electricity generated by diesel generator at the power station while meeting the increasing electricity demand on the island.

As part of the Ecuadorian government's voluntary initiative "Zero Fossil Fuel for the Galapagos Islands," the Project will contribute to the sustainable development of the Galapagos Islands and protect vulnerable ecosystems of the islands.

EIA and other preliminary studies conducted for the Project concluded that the Project will contribute to the Galapagos's sustainable development on following points:

Environmental contribution

- Reduction of emissions of VOCs from loading and unloading diesel used for power generation at the Puerto Ayora Power station
- Reduction of emissions of CO_2, SO_2, CO, PMs and NO_x from the diesel generator at the power station
- Reduction of land contamination at the power station
- Less risk of oil spill and damage to the fragile ecosystem of the Galapagos by reducing the diesel use for the power generation

Economic contribution

- Alleviation of fuel supply dependence on mainland Ecuador by introducing renewable energy to the islands
- Bolstering the islands' global image as a model of sustainable life, serving as a showcase for tourism, the main income source for the island inhabitants

Social contribution

- Reduction of noise from the power station, which is located in the capital city of the Santa Cruz
- Education campaign by raising awareness of the people on renewable energy and energy saving, with a common goal to achieve a completely sustainable energy system

A.3. Project participants:

Table 1: Table of project participant

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)	**Fideicomiso Mercantil Energía Renovable para Galápagos** (Public entity)	Yes
(*) In accordance with the CDM modalities and procedures, at the time of making the CDM-PDD public at the stage of validation, a Party involved may or may not have provided its approval. At the time of requesting registration, the approval by the Party(ies) involved is required.		

See contact information in the Annex 1 of this PDD.

Fideicomiso Mercantil Energía Renovable para Galápagos is responsible for financing the renewable energy projects in the Galapagos Islands.

Energías Renovables para Galápagos (ERGAL) will be a designated as a responsible organization for the project implementation and CDM.

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

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

A.4.1.1. Host Party(ies):

Ecuador

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

Island of Baltra, Galapagos Province

A.4.1.3. City/Town/Community etc:

Galapagos National Park

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

The proposed project site is located on the Island of Baltra, in the Galapagos Islands, Ecuador.

Geographical coordinates:

P1(805400, 9949600), P2 (805900, 9949800)
P3 (805800, 9948900), P4 (806100, 9949200)

Figure 1- Map of the Galapagos Islands (Courtesy of Wikipedia)

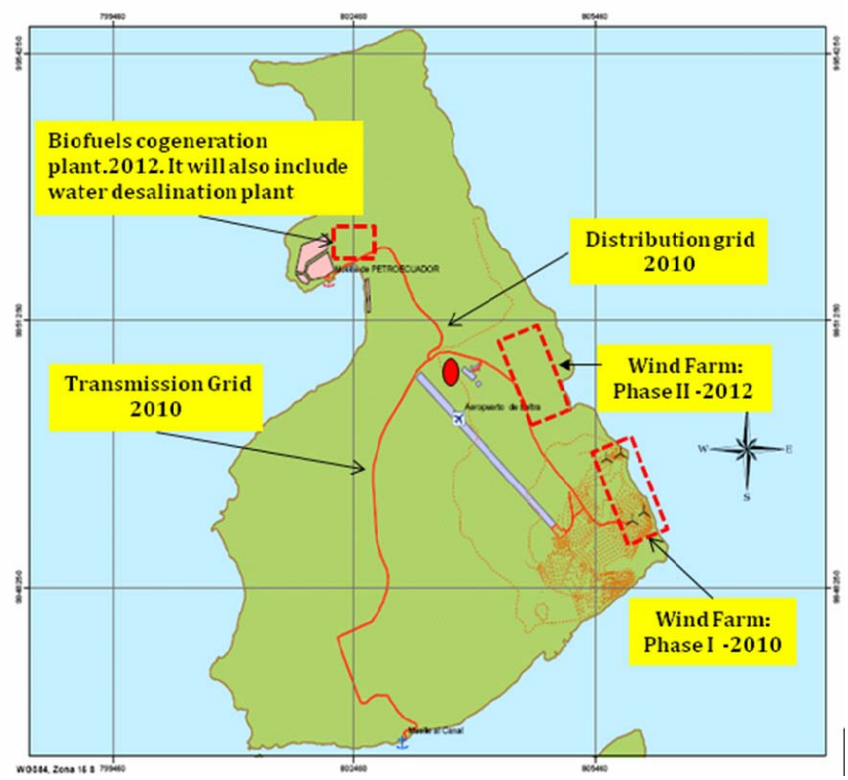

Figure 2- Map of the Island of Baltra and project site location

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

The Project activity falls under the following type and category:

AMS-I.D.
Type I: Renewable energy projects
Category D: Grid connected renewable electricity generation
Reference: Version 15, Scope 1, in effect as of 30 October, 2009

Technology Applied:

The proposed project activity is a wind energy project, which is going to be implemented in different phases:

Phases	Expected Operation Stating Date	Turbine Size and Number of Turbines to be Installed	Total Installed Capacity
Phase I	January, 2011	750 kW x 3	2.25 MW
Phase II (expansion)	January 2012	750 kW x 6	4.5 MW

Although Phase III is under consideration for start in 2015, projects covered under this CDM project activity are the ones implemented in the Phase I and II.

Wind turbine characteristics

- 3-blade, air-foil, up-wind rotor
- Class III IEC wind turbine
- Active yawing
- Pitch control
- Multiple fail & safety systems
- Full automatic operation, interface for remote control & monitoring
- Free-standing tubular steel tower (no guy wires)

Transmission line characteristics

- Length: 50 km
- Material: Aluminum alloy wire for electrical purposes
- Voltage: 34.5 kV
- Submarine cable, air compact cable, and underground cable are considered to be installed

The turbines will be transported from abroad and mounted with special caution.

A.4.3 Estimated amount of emission reductions over the chosen crediting period:

Table 1 – Estimated emission reductions

Years	Estimation of emission reductions in tonnes of CO_2e
2011	3,840
2012	3,840
2013	14,112
2014	14,112
2015	14,112
2016	14,112
2017	14,112
Total estimated reductions (tonnes of CO_2e)	78,240
Total number of crediting years	7 years
Annual average over the crediting period of estimated reductions (tonnes of CO_2e)	11,177

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

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The Project is not receiving any funds from Annex I countries, and therefore, it does not result in the diversion of official development assistance.

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

As defined in paragraph 2 of Appendix C of the SSC M&P, a proposed small-scale project activity shall be deemed to be a debundled component of a large project activity if there is a registered small-scale CDM project activity or a request for registration by another small-scale project activity:

- By 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 closest point.

The proposed project activity is not a debundled component of any larger project activity as there is no other small-scale project activity that fulfils the abovementioned criteria.

SECTION B. Application of a baseline and monitoring methodology

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

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The approved baseline and monitoring methodology applicable to the project activity is as follows:

AMS-I.D.
Type I: Renewable energy projects
Category D: Grid connected renewable electricity generation
Reference: Version 15, Scope 1, in effect as of 30 October, 2009

B.2 Justification of the choice of the project category:

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The Project meets all the applicability conditions set forth by the methodology as presented below:

Table 3: Applicability conditions

	Applicability condition	Project case
1	This category 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 fired generating unit.	The Project is a wind project, which displaces electricity from a mini-grid.
2	Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology: • The project activity is implemented in an existing reservoir with no change in the volume of reservoir; • The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m2; • The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the Project Emissions section, is greater than 4 W/m2.	Not applicable. The Project is not a hydro power plant activity.
3	If the unit added has both renewable and non-renewable components (e.g. a wind/diesel unit), the eligibility limit of 15MW for a small-scale CDM project activity applies only to the	The wind power turbine will be installed in phases, and the total installed capacity of the unit is 7.5MW, which is under the 15MW threshold of the small-scale CDM.

	renewable component. If the unit added co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15MW.	
4	Combined heat and power (co-generation) systems are not eligible under this category.	Not applicable. The Project does not involve co-generation.
5	In the case of project activities that involve the addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the unit added by the project should be lower than 15MW and should be physically distinct from the existing units.	Not applicable. The Project does not add to existing renewable power generation units.
6	Project activities that seek to retrofit or modify an existing facility for renewable energy generation are included in this category. To qualify as a small-scale project, the total output of the modified or retrofitted unit shall not exceed the limit of 15MW.	Not applicable. The project activity does not involve retrofitting or modifying an existing facility for renewable energy generation.

B.3. Description of the project boundary:

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In accordance with the methodology AMS-I.D. which states the project boundary being the physical, geographical site of the renewable generation source, the boundary for this proposed Project will be the site where wind energy is generated.

B.4. Description of baseline and its development:

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< E minus (E-) case >

The Project is implemented under the Ecuadorian voluntary initiative "Zero Fossil Fuel for the Galapagos Islands", which was launched in April, 2007. The Zero Fossil Fuel Initiative is a reaction of the tragic oil spill by the Tanker Jessica in 2001, which killed a huge population of sea iguanas and seriously damaged the vulnerable ecosystems in the Galapagos. As the name describes, this challenging initiative is to gradually decrease the fossil fuel consumption in the Galapagos to the zero level, especially in the power and transportation sectors.

For this reason, the Project is considered an E- case, where favourable conditions are given to promote sustainable energy after 2001. Therefore, the baseline will not take into consider the Zero Fossil Fuel Initiative.

The baseline is determined in line with paragraph 9 of AMS-I.D., which allows using the default emission factor for diesel generator systems shown in Table I.D.1, if the system is using exclusively fuel oil and/or diesel fuel.

The Project activity involves replacement of an electricity mini-grid in the island of Santa Cruz, the Galapagos. The mini-grid is fed by one power station located in Puerto Ayora, where only diesel generators of the total installed capacity of 4.35MW are running 24 hours/day throughout the year.

Therefore, the emission factor is a mini-grid with 24 hour service for over 200kW in Table I.D.1, and the baseline emission is the annual kWh generated by the wind project times an emission factor of 0.8 kg CO_2e/kWh.

B.5. 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:

In line with the Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities, the Project is deemed to be additional if it faces at least one of the following barriers:

(a) Investment barriers
(b) Technological barriers
(c) Barrier due to prevailing practice
(d) Other barriers

It is identified that the Project faces following barriers in implementation without CDM.

Technological barriers

This Project is the second wind project to be realized in the Galapagos and Ecuador. The Galapagos, being an island as well as a UNESCO World Heritage Site, requires much more complexity in mounting the wind turbine and extending the transmission line than projects in main land Ecuador. Technological barriers mentioned in this section directly contribute to raising costs, which is discussed under the investment barriers.

<Constraints on Site Location >
The Project was originally proposed to be implemented on the Island of Santa Cruz where the majority of the electricity demand is. However, in a study conducted by Charles Darwin Foundation[1] in 2006 prior to the EIA, habitats of birds and bats were observed at the candidate sites on the Santa Cruz, which limited the project site to be within the Galapagos National Park on the island of Baltra. Due to further studies, the site location was limited to the area parallel to the international airport on Baltra. This resulted in the requirement of a longer and more complicated transmission line than what was originally planned. However, this also caused a limitation in the height of the wind turbine due to Airport regulation, resulting in a lower installed capacity of each turbine than what the wind conditions allow in the area and increased the initial capital expenditure.

< Constrains on the designing of the transmission line >
Having the project site on Baltra requires crossing the national park and harbour to reach Santa Cruz. Extending the Santa Cruz grid within the island without significantly disturbing the ecosystems is already

[1] Charles Darwin Foundation is a renown NGO for protection of ecosystems in the Galapagos.

technologically challenging, but extending it from Baltra has made the construction process much more sophisticated than originally planned. Baltra is the host of the Galapagos Land Iguana (a vulnerable species[2]) and crossing the strait between the two islands requires a submarine cable. The Environmental management plan (EMP) of the Environmental Impact Assessment (EIA) has specified the way to have the least disturbance of the endangered species and ecosystems during the installation of the equipment as well as the operation.

< Limited small-scale wind turbine supplier >
Due to regulation of the international airport on Baltra, the wind turbine height is limited to the maximum 82 m. This constrains the individual wind turbine size to be a maximum of 900 kW of theoretical installed capacity. However, due to a boost in the wind market worldwide in recent years, there is an over demand for the wind turbines. When the Ecuadorian government opened a public bidding for equipment supply in December 2008, only 5 turbine manufacturers showed their interest for the Project, mainly due to the fact of its small size, remote location, significant environmental restrictions for delivery and construction, and technical complexity[3]. This also limited the bargaining power to bring down the initial investment costs.

Investment barriers

The Project was originally planned to be implemented with a mixture of funds from both international donors and the Ecuadorian government. The government secured the funds for the Phase I implementation based on the initial estimation of the costs. However, due to the unexpected increase in the initial installation costs owing to the protection of fragile ecosystems on both Baltra and Santa Cruz, the Project is currently short of funds. For this reason, the Ecuadorian government has decided to use the CDM scheme to attract CER buyers. Current estimate of the total investment cost is 15 million USD for the Phase I alone, and it still lacks 3.4 million USD for the full implementation.

A tender for the wind equipment supply has already commenced, and it is under negotiation with the equipment supplier. However, the tender for the transmission line has not been opened yet, and depending on the outcome of the tender, as well as the possible increase during the construction phase taking into consideration the Galapagos' specific conditions, the initial investment costs may increase further.

Ecuador is an oil producing country; the government's budgetary source is heavily reliant upon the income from crude oil sales. The governmental budget is designed based on the forecast price of crude oil. For the year 2009 national budget, the reference oil price was set at 85 USD/bbl. However, the oil price later dropped to lower than 60 USD/bbl which significantly affected public investment in various projects.

As in any other country, publicly-funded projects are not risk-free, and it is under constant threat from fund shortage and cancellation of projects. In the Galapagos, for instance, the Ecuadorian government once planned a water desalination project using a 14 million USD loan from the Spanish government in 2004. However, an underestimation of the costs for civil works resulted in a shortfall of funds. The government recognized the need for redesigning a completely different system for the desalination project,

[2] IUCN Red List of Threatened Species, March 2009 http://www.iucnredlist.org/apps/redlist/details/5240/0
[3] Due to the energy supply security issue, the wind plant's operation is coordinated with diesel generators in Santa Cruz during the Phase I so that 50% of the electricity demand to the island is supplied by the diesel generators. This will be shifted to 100% of the demand covered by the wind project during the Phase II. For this reason, additional synchronization and remote control equipment is required to be installed for the Project.

and the project was cancelled in 2008. The proposed Project is facing the same situation as this desalination project, caused by the underestimation of the initial investment costs.

The situation for public financing has become even more difficult recently. In November 2009, Ecuador experienced a nation-wide power crisis due to a water shortage at the one of the main hydropower stations in the country. This has prompted the government to review the public power plan to accelerate construction of thermal power plants by cancelling some projects with designated funds. The Galapagos project is a small project and is not treated with the same priority as the thermal power plants, and the Project may not receive any additional financial resources until the government identifies a new funding source. This is specifically the reason why the project proponent decided to use the CDM to cover the initial investment costs.

Though the distinguishing features of the Project renders it unsuitable for using the investment analysis method suggested by the additionality tool, the project internal rate of return (IRR) is calculated to demonstrate its financial situation. For Phase I, since 11.6 million USD has already been secured by the government, the analysis is conducted based on the missing 3.4 million USD resources. Table x lists a breakdown of the initial investment costs, and Table x lists other parameters considered for calculating the project internal rate of return (IRR).

Table 4: Initial investment costs by the Phases (in USD)

Phase I	
Wind turbines, spare parts, training, studies phase 2	7.5million
Civil works	1.25million
Transmission line	5 million
Engineering, supervision, management	0.8 million
Contingency	0.45 million
Sub-total (Phase I)	**15 million**
Phase II	
Wind turbines, spare parts, training	15 million
Civil works	2.5 million
Engineering, supervision, management	0.5 million
Sub-total (Phase II)	**18million**

Table 5: Other parameters considered for the project IRR calculation

Parameter	Values
Investment costs already being secured for the Phase I	11.6 million
Initial investment costs still missing for the Phase I	3.4 million
Phase II financing	The revenue from electricity sales will be used.
The project life	minimum 20 years
Electricity generation/year	- 4,800 MWh/year for the first two years of the operation. - 17640 MWh/year from the third year.
Electricity selling price	0.122 USD/kWh (fixed by

	CONELEC under the tariff scheme)
CDM crediting period	14 years (renewable crediting period once after 7 years)
CERs	- 3,840 tCO_2/year for the first two years of the operation. - 14,112 tCO_2/year from the third year.
CER price	15 USD

The result of the investment analysis is as follows:

Table x: investment analysis result (using project IRR)

	Phase I alone	Phase I and II together
Without CER revenue	8.45%	1.65%
With CER revenue	10.96%	2.69%

In comparison to the current bond rate of the Ecuadorian government of 12%, the project yields a lower return, even considering Phase I alone.

The project participant is currently under the preparation to start negotiating with CER buyers to raise 3.4 million USD for the project implementation. Thus, it is critical that the Project is registered as CDM.

Common Practice

There is only one wind project in Ecuador, located in the Island of San Cristobal in the Galapagos. The project was implemented by the Ecuadorian government and private companies backed by E8 (then E7) and was registered as a CDM project in 2008 (ref. 1255). This clearly shows that the wind power industry is not well established in Ecuador, and it requires additional financial benefits such as through CDM.

All the aforementioned barriers demonstrate that the proposed project is additional.

B.6. Emission reductions:

B.6.1. Explanation of methodological choices:

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Emission reductions associated with electricity displacement of the mini-grid of Santa Cruz Island

The baseline emission is the annual kWh generated by the wind project times an emission factor of 0.8 kg CO_2e/kWh from the Table I.D.1.

$$ER_y = BE_y - PE_y - LE_y \quad \text{(Equation 1)}$$

ER_y Emission reductions in year y (t CO_2e/y)

BE_y Baseline Emissions in year *y* (t CO_2e/y)
PE_y Project emissions in year *y* (t CO_2/y)
LE_y Leakage emissions in year *y* (t CO_2/y)

Baseline emissions

Baseline emission will be the annual electricity generated by the wind power plant. The grid is also extended to the Island of Baltra, where the electricity is generated by a diesel gen-set installed in each installation. Since it was not possible to quantify the baseline electricity consumption on the Baltra island, the electricity dispatched to the Baltra grid will be discounted from the total power production by the wind power plant ($EG_{y, sc}$).

$$BE_y = EG_y \times EF_{y, grid} \times 10^{\wedge -3} \quad \text{(Equation 2)}$$

Where

EG_y Annual kWh generated by the Project in year *y* (kWh/y)
$EF_{y, grid}$ The grid CO2 emission factor in year *y* (kg CO_2/kWh)

$$EG_y = EG_{y, sc} - EG_{y, Baltra} \quad \text{(Equation 3)}$$

$EG_{y, sc}$ Annual kWh dispatched to the Island of Santa Cruz in year *y* (kWh/y)
$EG_{y, Baltra}$ Annual kWh dispatched to the Island of Baltra in year *y* (kWh/y)

Project emissions

As per AMS-I.D., $PE_y = 0$.

Leakage

Since the new energy generating equipment is purchased for the Project and it is not transferred from another activity, $LE_y = 0$.

B.6.2. Data and parameters that are available at validation:

(Copy this table for each data and parameter)

Data / Parameter:	$EF_{y, grid}$
Data unit:	kg CO_2/ kWh
Description:	Grid emission factor
Source of data used:	AMS-I.D., Table I.D.1
Value applied:	0.8

Justification of the choice of data or description of measurement methods and procedures actually applied :	The Project involves replacement of electricity in the mini-grid, where only one power station with diesel generators feed in the electricity. The emission factor is conditioned for cases where a mini-grid with 24 hour service for over 200kW of capacity.
Any comment:	

B.6.3 Ex-ante calculation of emission reductions:

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Baseline emission (BE_y)

<First 2 years>

$EG_y = EG_{y,sc} - EG_{y,Baltra}$
= 4,800,000 kWh/year – 0 kWh/year
= 4,800,000 kWh/year

$BE_y = EG_y \times EF_{y,grid} \times 10^{-3}$
= 4,800,000 kWh/year x 0.8 kgCO_2/kWh x 10^{-3}
=3,840 t CO_2/year

<From the third year>

$EG_y = EG_{y,sc} - EG_{y,Baltra}$
= 17,640,000 kWh/year – 0 kWh/year
= 17,640,000 kWh/year

$BE_y = EG_y \times EF_{y,grid} \times 10^{-3}$
= 17,640,000 kWh/year x 0.8 kgCO_2/kWh x 10^{-3}
=14,112 t CO_2/year

Emission reduction (ER_y)

$ER_y = BE_y - PE_y - LE_y$

ER_y Emission reductions in year *y* (t CO_2e/y)
BE_y Baseline Emissions in year *y* (t CO_2e/y)
PE_y Project emissions in year *y* (t CO_2/y)

B.6.4 Summary of the ex-ante estimation of emission reductions:

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Table 7: Ex-ante estimation of emission reduction

Year	Estimation of project activity emissions (tCO_2)	Estimation of baseline emissions (tCO_2)	Estimation of leakage (tCO_2)	Estimation of overall emission reductions (tCO_2)
2011	4,800	0	0	4,800
2012	4,800	0	0	4,800
2013	17,640	0	0	17,640
2014	17,640	0	0	17,640
2015	17,640	0	0	17,640
2016	17,640	0	0	17,640
2017	17,640	0	0	17,640
Total	97,800	0	0	97,800

B.7 Application of a monitoring methodology and description of the monitoring plan:

B.7.1 Data and parameters monitored:

(Copy this table for each data and parameter)

Data / Parameter:	**$EG_{y,sc}$**
Data unit:	kWh/year
Description:	Electricity generated by the wind generators
Source of data to be used:	ELECGALAPAGOS
Value of data	2011: 4,800,000 2012: 4,800,000 2013: 17,640,000 2014: 17,640,000 2015: 17,640,000 2016: 17,640,000 2017: 17,640,000
Description of measurement methods and procedures to be applied:	Monitored continuously using electricity meters installed in individual transformer cabinet. Data will be logged by an electronic system on hourly basis and archived electronically and kept for at least 2 years.
QA/QC procedures to be applied:	The meter will be calibrated according to national or manufacturer's standards.
Any comment:	N/A

Data / Parameter:	$EG_{y, Baltra}$
Data unit:	kWh
Description:	Electricity generated by the wind generator that are supplied to Island of Baltra
Source of data to be used:	ELECGALAPAGOS
Value of data	0
Description of measurement methods and procedures to be applied:	Monitored continuously using electricity meters installed in individual transformer cabinet. Data will be logged by an electronic system on hourly basis and archived electronically and kept for at least 2 years.
QA/QC procedures to be applied:	The meter will be calibrated according to national or manufacturer's standards.
Any comment:	N/A

B.7.2 Description of the monitoring plan:

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All monitoring equipment for the wind turbines will be installed by a manufacturer and are regularly calibrated according to national or manufacturer's standards by ELECGALAPAGOS.

The generation and transmission data to the Island of Baltra and the Island of Santa Cruz will be electronically transferred through a SCADA system, which automatically logs the data electronically. The technician responsible for the wind turbine operation will check this data and ensure that there is no anomaly in the operation.

The manager will check the generation data on a regular basis.

B.8 Date of completion of the application of the baseline and monitoring methodology and the name of the responsible person(s)/entity(ies)

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The baseline and monitoring study was completed in DD/MM/2010 by MUS.

Clean Energy Finance Committee
Mitsubishi UFJ Securities Co., Ltd. (MUS)
2nd Floor, KR Toyosu Building,
5-4-9, Koto-ku, Tokyo, 135-0061, Japan
watanabe-hajime@sc.mufg.jp

MUS is not a project participant.

SECTION C. Duration of the project activity / crediting period

C.1 Duration of the project activity:

C.1.1. Starting date of the project activity:

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01/03/2010

The date when the wind equipment purchase contract is signed.

C.1.2. Expected operational lifetime of the project activity:

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At least 20 years

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

Renewable crediting period is chosen for the project activity.

C.2.1. Renewable crediting period

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

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01/01/2011 or the date of registration whichever is later.

C.2.1.2. Length of the first crediting period:

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7 years and 0 month

C.2.2. Fixed crediting period:

C.2.2.1. Starting date:

>>
N/A

C.2.2.2. Length:

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N/A

SECTION D. Environmental impacts

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

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An Environmental Impact Assessment was conducted for the Wind project and transmission line from January to October 2008. However, prior to the execution of the EIA, several preliminary studies and public hearing events took place (see Table 8 for details). EIA was approved in March 2009 by three authorities—the Ministry of the Environment, Galapagos National Park, and CONELEC, and the environmental licences were approved in July 2009.

Table 8: EIA Implementation History

Activity	Dates and Conductor
Previous activities for the Definitive EIA	
Assessment to determine the environmental impact of a wind farm on birds, bats, iguanas and flora in three places Santa Rosa, Camote and Baltra.	May 2006 – August 2007.
Preliminary Environmental Impact Assessment for the wind farm construction on flora in three places Santa Rosa, Camote and Baltra.	August 2006 – January 2007
Public Presentation (1) to present results of the Preliminary Environmental Impact Assessment concluding Baltra as the only available option to build the wind farm	22nd of January 2007
Public Presentation (2) to present the community of Santa Cruz the project schedule	8th of November 2007
Execution of Definitive EIA	
Press, radio and TV broadcast to invite the Community for Public Participation for presenting the terms of reference	5, 10 to 16th of January 2008
Public participation call for receiving community comments on the content of terms of references for the EIA from Baltra Wind Farm and Transmission Line	10 to 16th of January 2008
Public presentation (3) of terms of reference for the EIA from Baltra Wind Farm and Transmission Line from Baltra to Puerto Ayora	17th of January 2008
Approval of terms of reference from the Ministry of Environment	7th of April 2008
Execution of EIA	January 2008 – July 2008
Press, radio and TV broadcast to invite the Community for the Public participation for presenting the results of EIA of Baltra wind farm and Transmission Line	22nd to 30th of July 2008

Public participation for receiving community comments on the results for the EIA from Baltra Wind Farm and Transmission Line	22nd to 30th of July 2008
Public presentation (4) of EIA results from Baltra Wind Farm and Transmission Line from Baltra to Puerto Ayora	31st of July 2008
EIA Presentation and Approval Process	
EIA documents presented to the Ministry of Environment, Galapagos National Park and CONELEC (Consejo Nacional de Electricidad – Regulatory Power Agency)	16th of October 2008
CONELEC approval of the EIA for the wind farm and transmission line	3rd of December 2008
Galapagos National Park approval of the EIA for the wind farm and transmission line	5th of January 2009
Ministry of the Environment approval of the EIA for the wind farm and transmission line	7th of March 2009
Ministry of the Environment approval of the ERGAL project environmental licenses for constructing wind farm and transmission line	24th of July 2009

D.2. If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party:

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The EIA has identified a number of significant impacts caused by the Project and required the environmental management plan (EMP) to be approved for the authorization of the environmental license for construction. Table x is a summary of the predicted environmental impacts and their counter measures included in the EMP.

Table 9: Predicted environmental impact and countermeasures

Predicted environmental impact	Environmental Management Plan (EMP)
Soil removal and alteration of nests and temporary displacement of birds and reptiles	Prior to an excavation for creating and establishing the wind generator foundations, access roads and other infrastructure, the nests and presence of Conolophus subcristatus (Land Iguanas) must be verified. For wind farm construction, fences along with access roads need to be installed to protect the iguanas, a vulnerable species.
Change in the landscape view with wind turbines	Reduce the number of installed turbines by selecting wind power turbines with a nominal power higher than 500 kW. This was included in tender documents.
Alteration of flying routes of birds and bats	The EIA study revealed that birds and bats found at the project site do not fly higher than 10 meters. Therefore, the wind power turbines must have the minimum height of 10 meters from the lower extreme of the

	blade to the ground surface to minimize the risk of collision with birds and bats. In addition, EMP requires the wind towers to be installed without guy-wires in order to prevent potential bird collision and mortality. The height restriction was included in the tender documents and wind turbine manufacturers using guy-wired towers were excluded from participation in the tender.
Generation of solid and liquid waste	Any solid wastes generated during the construction phase need to be brought back to the mainland. For operation, gearbox wind turbines were considered as a source of generating liquid waste (lubricant oil). The project developer selected the equipment supplier without gearbox turbines in order to avoid any additional waste during the operation.
Temporary impacts to tourism due to construction activities	Educational campaigns. ERGAL has hired a local NGO to conduct the wind energy project and energy efficiency education campaign.
Possible migration of non-native species	A phyto-sanitary control will be conducted on equipment at the port on entry, upon arrival at the Galapagos Islands.

SECTION E. Stakeholders' comments

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

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Four Stakeholders' meetings were officially organized during the EIA as summarized in Table 8. Though the project site is located on the Island of Baltra, the direct beneficiary of the renewable energy generated by the Project are the residents on the Island of Santa Cruz. Therefore, all the community members and business facilities/installations on both islands were considered to be the stakeholders of the Project. In addition, ERGAL has closely consulted with all the regulatory authorities[4] related to the projects, and they were also invited to the public stakeholders' meetings. The public participation meeting was publicized by press, radio and local TV broadcast 1 week before the event and accepted comments to be submitted during the same period. Prior to the stakeholders' meeting, a brief audiovisual presentation containing a description of the Project was given to the audience to obtain better comments from the participants. Table 10 is a summary of the participants sent for the public audience of the EIA.

Table 10: Summary of the Participants to the Public Audience

Participants	Invitation sent (per institutions)	Number of Participants
Public institutions	24	26
Private companies	5	13
International organizations/NGOs	22	6
Academic institutions	16	6
Media	8	4
Community members	--	10

[4] These regulatory bodies include Ministry of the Electricity and the Renewable Energy, Ministry of the Energy and Mines, Ministry of the Environment, the National Electricity Council (CONELEC), Galapagos National Park, National Galapagos Institute, Fondo de Solidaridad, Galapagos Provincial Council, and Santa Cruz Municipality.

E.2. Summary of the comments received:

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The Project has been well received by the regulatory authorities and the community members. In particular, the Santa Cruz Municipality finds the Project a very important step to the island's sustainable development.

Nevertheless, many community members were unaware of what the Project might entail, and there were many questions raised at the beginning. This includes the fear of a possible increase in the electricity price, though the Project does not have any direct influence on the price, which is heavily subsidized by the government. However, these questions were clarified to community members through all the public hearing events. Some of the prominent concerns raised during the stakeholders' meetings are as follows:

- Electricity price will increase because of the Project.
- There will be more electric blackouts than now.
- There would be surplus electricity, so the local electricity consumers will think they can consume more, hampering efforts to promote sustainability.
- The transmission line will harm our health and affect the cattle psychologically.

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

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Table 11 summarizes the responses given to the concerns raised during the stakeholders' meeting.

Table 11: concerns raised during the stakeholders' meetings and their answers

Concerns raised by the stakeholders	Answers by the project developer
Electricity price will increase because of the Project.	The price that consumer pays is established by the power utility regulator (CONELEC). The price is decided by the government; therefore, the Project will not contribute to an increase in electricity price in the future.
There will be more electric blackouts than now.	Project design has considered measures to prevent this situation from occurring.
There would be enough amount of electricity, so the local electricity consumers can consume more than now.	No, energy is a limited resource, and rational use of energy has to be promoted. The project developer has designated a local NGO to raise the environmental consciousness and promote good energy saving practices.
The transmission line will harm our health and make the cattle crazy.	No, the voltage level is in the medium voltage scale. The transmission line will be mainly installed in the Galapagos National park. Though the line passes through some farms, the voltage level is sufficiently low that it is unlikely to cause any harm or diseases to human beings and cattle.

The Ministry of the Environment, CONELEC, and the Galapagos National Park reviewed the stakeholders comments, and they found the project developer's responses satisfactory and approved of the EIA and environmental license.

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

Organization:	Energías Renovables para Galápagos (ERGAL) (designated organization by Fideicomiso Mercantil Energía Renovable para Galápagos)
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Annex 2

INFORMATION REGARDING PUBLIC FUNDING

No Official Development Assistance (ODA) from parties included in Annex I of the convention is involved in the project activity.

Annex 3

BASELINE INFORMATION

As per section B.4.

Annex 4

MONITORING INFORMATION

As per section B.7.2.

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