MONITORING REPORT FORM (CDM-MR)
Version 01 - in effect as of: 28/09/2010

CONTENTS

MONITORING REPORT
Version 01 on 24/03/2011

Jepirachi Wind Power Project
CDM registration reference number: 0194
Monitoring period 04 from 01/01/2009 to 30/01/2011 (first and last days included)

SECTION A. General description of the project activity

A.1. Brief description of the project activity: >>

The project consists of the development of a wind based generation facility with a nominal power capacity rated at 19.5 MW, located in Wayuu Indigenous Territory in the Northeastern region of the Atlantic Colombian coast, within the Municipality of Uribia in the Department of Guajira. Electricity delivered to the grid by the project would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources.

All equipment utilized in the Project is proven technology that has been successfully applied in similar projects in other regions of the world. The project installed a total of 15 wind generators with a rated capacity of 1.3 MW each, manufactured by Nordex (N60/1300). The Project site is connected to the national grid via an 8 km standard transmission line.

All 15 units of the project were commissioned between 30/01/2004 and 30/03/2004. Since then, the wind generators delivered continuously renewable energy to the Colombian National Interconnected System (SIN) under a preferential dispatching scheme.

The total emission reductions achieved in this 4th monitoring period from **01/01/2009 to 30/01/2011** are **30,376 tCO_2**.

A.2. Project Participants

Name of Party involved	Project participants	Kindly indicate if the Party involved wishes to be considered as Project participant (yes/no)
The Republic of Colombia (host)	Empresas Publicas de Medellin (EPM)	No
The Republic of Finland	International Bank for Reconstruction and Development (IBRD) as the trustee of the Prototype Carbon Fund (PCF)	Yes
The Netherlands	International Bank for Reconstruction and Development (IBRD) as the trustee of the Prototype Carbon Fund (PCF)	Yes

A.3. Location of the project activity:

The project is located in the area between Cabo de la Vela and Puerto Bolivar, within the municipality of Uribia near Kasiwolin, Arutkajuy and Medialuna Comunities, in the Department of Guajira in the northeast region of Colombia.

The geographical coordinates of the project are approximately Latitude + 12.25 and Longitude: - 72.07.

A.4. Technical description of the project

The project contributes to the transfer of technology, as it is the first wind power generation facility to operate in Colombia on a commercial basis. All equipment utilized in the project is proven technology that has been successfully applied in similar projects in other regions of the world. Following a bidding process conducted during the summer of 2003, the nominal power capacity of 19.5 MW is supplied by a total of 15 wind generators with a rated capacity of 1.3 MW each, manufactured by Nordex (N60/1300). **¡Error! No se encuentra el origen de la referencia.** provides all technical information of the wind turbines installed in the Jepirachi project. The project site is connected to the national grid via an 8 km standard transmission line.

Table 1: Technical characteristics of the wind turbines installed in the project.

Rotor 1300 kW	
Type	3-bladed, horizontal axis, upwind
Rotor Diameter	60 m
Swept Area	2828 m3
RPM	19/12.7 RPM
Cut in-cut-out-wind	3-5/25 m/s
Nominal Output at velocity	15 m/s
Design conditions in terms of velocity	70 m/s (IEC)
Lifetime of turbine	20 years
Blades	
Manufacturer	LM, aerpac or similar
Blade Length	29 m
Material	Carbon/Glass fibre reinforced plastic/epoxy resin
Lightning Protection	Included, receptor in blade tips
Generator	
Nominal Power	1300/250 kW
Type	Asynchronous, liquid cooled
Synchronous speed	1515 / 1010 r.p.m.
Efficiency at 75% load	96.5%
Control	
Tipo	Micro-processor
Connection	Via soft power controller
Remote communication	Included
Towers	
Type	Tubular (cone-shaped)
Hub heights	50 m
Corrosion Protection	Sandblasted and painted with 250 mg epoxy paint

Figure 1: Connection diagram of the Jepirachi Wind Park.

shows how the project is connected to the national power grid. Further explanations on that can be found in section C.

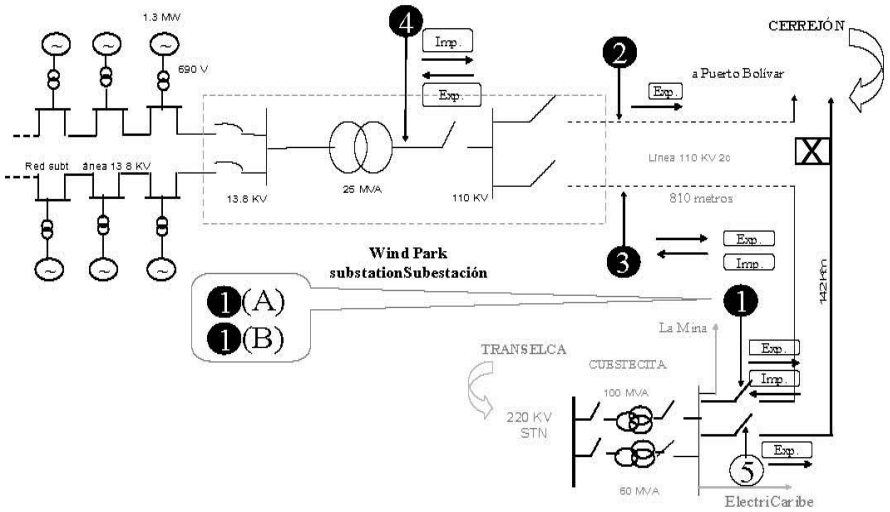

Figure 1: Connection diagram of the Jepirachi Wind Park.

A.5. Title, reference and version of the baseline and monitoring methodology applied to the project activity:

The project applies the baseline and monitoring methodology "ACM0002 - Consolidated methodology for grid-connected electricity generation from renewable sources (version 3)".
Reference:
http://cdm.unfccc.int/methodologies/DB/C505BVV9P8VSNNV3LTK1BP3OR24Y5L/view.html

The only relevant tool for the monitoring is the latest version of the "Tool to calculate the emission factor for an electricity system (version 2)".

A.6. Registration date of the project activity:

The CDM project activity was registered on 01/04/2006.

A.7. Crediting period of the project activity and related information (start date and choice of crediting period):

The project has chosen a crediting period of 7 years with a renewal option up to 2 times with first crediting period starting from 31/01/2004 up to 30/01/2011.

A.8. Name of responsible person(s)/entity(ies):

Mr. Christian Ehrat
MGM Innova
Medellin-Colombia
Telephone: (+574)326 05 84
Email: cehrat@mgminnova.com

MGM Innova is not a project participant.

SECTION B. Implementation of the project activity

B.1. Implementation status of the project activity

All 15 units of the project were commissioned between 30/01/2004 and 30/03/2004. Since then, the project has been operating as planned and described in the registered PDD. During the current crediting

period 100,250.415 kWh were delivered to the Colombian National Interconnected System (SIN). There have not been any events or situations that occurred during this monitoring period, which impact the applicability of the baseline and monitoring methodology. No changes from the project activity as described in the registered PDD were realized.

For 2009 it presented flaws in the gear box of wind turbines number 3, 4, 5 and 7, causing unavailability and lost in generation of energy. It also involved three towers with corrosion that needed to be treated properly, causing unavailability as well.

Due to the particular climatic conditions caused in 2010 by the climatic phenomenon called "La Niña", an accelerated corrosion process of the welding seams of some turbines was observed. This led to urgent maintenance efforts of wind turbines 9, 13 and 15 which had to be shutdown 5 hours a day during a two week period. However, apart from this special event, all turbines of the project operated continuously in accordance with the regular maintenance plan.

B.2. Revision of the monitoring plan

The monitoring plan has not been revised.

B.3. Request for deviation applied to this monitoring period

There is no deviation requested for the current monitoring period.

B.4. Notification or request of approval of changes

There are no changes from the project activity as described in the registered CDM-PDD and hence no notification or request of approval of changes submitted till date.

SECTION C. Description of the monitoring system

EPM has formed a multidisciplinary team, coordinated by the Power Operations Department (*Sub-Gerencia de Operación y Energía*) which is responsible for monitoring the parameters, and recording and analyzing the data obtained.

In accordance with the methodology it is required to monitor the following data:

- Net electricity supplied to the grid by the project activity (EG_h);
- CO2 emission factor of the national connected grid (EF_y):
    - Data for calculating the *Dispatch Data Analysis Operat*$_i$*ng Margin* as given in the *"Tool to calculate the emission factor* for an electricity system (version 2)"
    - Data for calculating the *Build Margin* as given in the "Tool to calculate the emission factor for an electricity system (version 2)"

Net electricity supplied to the grid by the project activity (EG_h)

Monitoring the electricity generation data is a relatively simple process, as the Colombian interconnected system relies on a highly regulated metering setup, which is required to make payments for electricity possible. This means that for the CDM project the main role for monitoring data is keeping copies of the hourly generation records that the central dispatch center maintains on file.

As per the metering, each of the generating units at Jepirachi is equipped with multi-function electronic metering devices, which register all information that needs to be monitored, such as exported energy, imported energy, power factor, electric tension, electric flow, etc. The monitoring is based on

continuous metering of electricity generation on site using digital measurement equipment (AII ION 8600) at the substation (interconnection facility to the grid). Such meters are used for commercial, and maintenance purposes, in addition to the CDM reporting requirements. The data is read remotely every 24 hours using tele-measurement technology via the MV-90i software and uploaded to the *Commercial Generation Department*.

For QA/QC there is a day by day registration of wind speed, power generation, maintenance and special events (binnacle) in an Excel sheet. The data are cross-checked by the SCADA system ("Supervisory Control and Data Acquisition") comparing the generation measured in terminals vs. generation from *XM*[1], a non-governmental agency acting as the market administrator, being in charge of the registration of contracts, the settlement and billing of all the transactions that take place in this market. *XM* is also in charge of the National Dispatch Center (*Centro Nacional de Despacho - CND*).

The Metering Team (*Equipo de Medidas – EM*) belongs to the Transmission and Distribution Business Unit (*Gerencia de Transmisión y Distribución de Energía*) and is in charge of the measurements in all plants. It is independent of the Power Generation Business Unit, and is the only accredited laboratory for power meter calibrations on site. *EM* is responsible for reporting the generation to *XM*.

The Power Planning Department keeps a periodical maintenance and calibration program according the codes approved by law, and following recommendations by the equipment providers. Information recorded by the metering equipment is sent every 24 hours to the Commercial Exchange System (*ASIC*), operated by the National Dispatch Center. All energy transactions are registered every hour, in the first minute of each hour. EPM transmits every day, the recorded values of the day before. According to that information, the National Dispatch Center processes the bills and payments for all transactions performed in the wholesale market. All this information is available to the market agents and to the system control authorities.

All data for the verification is available at EPM. In addition, records of energy supplied to the grid are publicly available on the website of *XM*.

CO2 emission factor of the national connected grid (EF_y)

All data required to calculate the CO2 emission factor of the national connected grid (EF_y) is obtained from the *National Dispatch Center (CND)* and the *Mining and Energy Planning Unit at the Ministry of Energy (UPME)*. The recorded generation data for each power plant at hourly intervals can be downloaded with the help of *NEON* system at the *CND* webpage[2].

Roles and responsibilities for the CDM Project

In the Power Generation Business Unit at EPM (*Gerencia de Generacion Energía*) there are several areas in charge of the CDM activities, and responsible for data collection, depending on the phase of the project (Planning, Building, Operating and Marketing). Since Jepirachi Wind Park is in commercial operation since 2004, the main CDM activities are related to development actions included in the Monitoring Plan and in the Project Design Document (PDD). The roles and responsibilities for the CDM Project at the Power Generation Business Unit are the following:

- Power planning Department (*Area Planeacion Generación*): It coordinates the different areas of EPM in order to prepare the monitoring report and facilitate the verification audit.
- Research & Development Department (*Subdireccion Investigacion y Desarrollo Generacion*): It supports the application of the methodology, supervises the calculation of the emission reduction and has an integrated knowledge of the functioning of the dispatch in the Colombian electric system.

[1] www.xm.com.co

[2] Neon is a database, which contains close to 35 different variables that are measured and stored by the CND. This information can be accessed at http://sv04.xm.com.co/neonweb/

- Commercial Generation Department (*Subgerencia Comercial Generación*): It collects the raw data from the database of energy and makes the calculations about the real dispatch, and summarizes the power generation data.
- Power Operations Department (*Subgerencia Operación y Energía*): It operates the wind park. It is in charge of metering the energy, the transmission of the data, and support to the following of the environmental and social indicators for monitoring report.
- Metering Team of the Transmission and Distribution Business Unit (*Equipo de Medidas*): It receives the energy data and transmits it to *ASIC*; calibration of the meters

SECTION D. Data and parameters

D.1. Data and parameters determined at registration and not monitored during the monitoring period, including default values and factors

No parameters are determined at registration and not monitored during the monitoring period. This includes default values and factors.

D.2. Data and parameters monitored

This section avoids listing monitoring parameters from no. 3 to 10 ($GEN_{j/k/n,y}$, Plant Name, $EF_{n/m,y}$, $GEN_{j/k/ll,y}$ IMPORTS, Merit Order) mentioned in Section D.2.2.1 of the registered PDD as these parameters are used to calculate the Co2 emission factor of the national connected grid (EFy). All the information pertaining to these parameters can be found in "Emission Reductions – Jepirachi Mar2011.xls".

Data / Parameter:	**EG_h**
Data unit:	MWh
Description:	Net electricity supplied to the grid by the project activity
Measured /Calculated /Default:	Measured. Electricity generation is hourly measured by EPM using electronic electricity meters. This information is backed up by the Informatics Unit of EPM trough the Large Energy Consumers (*Grandes Clientes de Energía*) database on a daily basis through the SQL Server. The data is read remotely every 24 hours using tele-measurement technology and sent to the National Dispatch Center
Source of data:	Data supplied by the National Dispatch Center *(CND)*
Value(s) of monitored parameter:	Refer to Emission Reductions – Jepirachi March2011.xls
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	To ensure reliability, there are three main and three backup energy meters, located in panel TM 1 at the substation of energy in the area of the Wind Park. They were installed in December of 2005- February 2006, and last calibration was made on march on 2008, and September 2009, and no deviations were detected. The energy meters involved in the monitoring process are:

Model	**Serial**	**Last calibration events**	
ION 8300	PS-0511A080-01	11/16/2005	26/01/2011

ION 8300	PS-0511A081-01	11/17/2005	26/01/2011
ION 8300	PS-0511A082-01	11/16/2005	26/01/2011
ION 8300	PS-0511A084-01	11/17/2005	26/01/2011
ION 8300	PS-0511A085-01	11/18/2005	26/01/2011

All meters follow the following accuracy classes:

- IEC 60687 1A 0.2S
- IEC 60687 5A 0.2S
- ANSI C12.20 Class 20 0.2
- ANSI C12.20 Class 2/10 0.2
- Accuracy measurements in the range of 10mA to 20A

Measurements follow Colombian regulations for electricity generation. Power generation of Jepirachi is monitored on site using metering equipment that is installed at the substation at the end of the 115 kV / 0.7 km transmission line that connects the wind park with the national interconnected system (commercial frontier). In Colombia, the measurement code (*Codigo de Medida*) establishes mandatory technical standards, reading procedures, registering and recording activities of electricity transactions performed in the energy market. This code is part of the CREG's resolution number 025 of 1995, which specifies the particular technical characteristics that measurement, telecommunications and associated back-up equipment have to meet. Installation, tests, certification, operation and maintenance procedures are specified by this resolution as well.

Although ION meters do not require calibration, only verification of their accuracy, the meters are approximately calibrated once a year depending on the registration of tendencies variations (error, standard variation), affected by to the working conditions. It is achieved by Laboratory of Calibration (*Laboratorio de Calibración de equipos de medida de energía y gas*), a special department of the Energy Distribution Business Unit that sets up all the meters.

Calibration tasks follow national standards and are in accordance with the calibration instructive specified in Colombian standard NTC 4856 for electricity metering devices. EPM is the provider of this type of calibration services for the rest of the country. EPM has adopted its own procedure based on the Colombian technical norm NTC-ISO-IEC 17025 and NTC 4856, under the so-called "Instructive to perform on-site electricity meter proofs with a pattern metering device" (DIS-EM-LE-IN-009-01). This procedure is carried out to verify that the meters are working properly with the corresponding accuracy. They are also checked for alarms. The patterns used to calibrate the electricity meters in-situ could be any of the following:

- Portable Standard MTE Nº 16, 17, 18 (accuracy 0.05) for on site calibration
- Calibration Bench LANDIS TALOGYR 6061 for calibration at EPM laboratory
- Calibration Bench ZERA ED 6816 for calibration at EPM laboratory

The accreditation of the laboratory is achieved by the Secretary of Industry and Commerce of Colombia (*Superintendencia de Industria y Comercio de Colombia*). All reports of calibration and certifications, the readings and data are kept in the headquarters of EPM in Medellin.

Measuring/ Reading/ Recording frequency:	Hourly measurement and monthly recording. Records of energy supplied to the grid are publicly available on the website of XM
Calculation method (if applicable):	N/A
QA/QC procedures applied:	All metering devices used to monitor and measure data follow rules that have been summarized in resolution number 025 of 1995, (*Resolución* 025 de 1995) from CREG. This resolution specifies the technical characteristics measurement, telecommunications and back-up equipment to meet installation, testing, certification, operation and maintenance procedures. To cross check the metering, the electricity generated is also measured at the plant substation at 13.8 kV, correcting the measure taking into account the transmission losses, estimated based on the technical specifications of the transmission line.

Data / Parameter:	**EF_y**
Data unit:	tCO_2e/MWh
Description:	CO_2 emission factor of the national connected grid
Measured /Calculated /Default:	Calculated
Source of data:	All required data is supplied by the *National Dispatch Center (CND)*
Value(s) of monitored parameter:	2009: 0.2958 tCO_2e/MWh ; 2010: 0.2966 tCO_2e/MWh and Jan 2011: 0.3805 tCO_2e/MWh
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	NA
Measuring/ Reading/ Recording frequency:	Hourly data provided by the *National Dispatch Center (CND)*
Calculation method (if applicable):	EF_y is calculated using the "Tool to calculate the emission factor for an electricity system", see "Emission Reductions – Jepirachi Mar2011.xls"
QA/QC procedures applied:	NA

SECTION E. Emission reductions calculation

E.1. Baseline emissions calculation

According to the methodology used in the registered PDD (ACM0002 version 3), baseline emissions are calculated using the following formula:

$BE_y = EG_y * EF_y$

Where,

BE_y : Baseline emissions (tCO_2e)
EG_y :Annual net electricity supplied by the Project to the grid (MWh)
EF_y : CO_2 emission factor of the national connected grid (tCO_2e/MWh)

Likewise, the CO_2 emission factor of the national connected grid (EF_y) is calculated using the formula for the Combined Margin Emission Factor, consisting of the weighted average Operating Margin emission factor ($EF_{OM,y}$) and Build Margin emission factors ($EF_{BM,y}$), as follows:

$EF_y : W_{OM} * EF_{OM,y} + W_{BM} * EF_{BM,y}$

Where the weights for each emission factor are equal to 50% ($w_{OM} = w_{BM} = 0.5$).

For the calculation of both the OM emission factor and the BM emission factors, dispatch data is obtained from the Administrator of the Commercial exchange system (*Administrador del Sistema de Intercambios Commerciales* -ASIC), that manages the wholesale energy market and coordinates the dispatch within the National interconnected system (*Sistema Nacional Interconectado* – SIN*)*. Plant emission factors used for the calculation of operating and build margin emission factors were obtained directly from Mining and Energy Planning Unit at the Ministry of Energy (*Unidad Planeacion Minero Energetica* UPME) which is the entity responsible for planning and development of energetic and mining resources of Colombia.

Imports from connected electricity system located in another country the emission factor is 0 tons CO2 per MWh. As required by ACM0002 version 3, electricity exports were not subtracted from electricity generation data used for calculating and monitoring the combined margin (CM) emission factor.

***CALCULATION OF THE OPERATING MARGIN EMISSSION FACTOR* ($EF_{OM,y}$)**

According to the data available for the Colombian electricity sector, the methodological choice selected in the registered PDD to calculate the OM is the Dispatch Data Analysis, Option C of the methodology ACM0002 version 3.

The operating margin is calculated on an hourly basis for each day of the year, for the set of power plants in the top 10% of grid system dispatch order during the hour h.

$$EF_{OM\_DispatchData,y}(tonCO_2 / MWh) = \frac{E_{OM,y}(tonCO_2)}{EG_y(MWh)}$$

Where EGy is the generation of the project in year y, and $E_{OM,y}$ are the emissions associated with the operating margin in the baseline calculated as:

$$E_{OM,y}(tonCO_2) = \sum_h EG_h(MWh) \cdot EF_{DD,h}(tonCO_2 / MWh) \qquad (2)$$

Where EG_h is the generation of the project in each hour h and $EF_{DD,h}$ is the hourly generation-weighted average emissions per unit of energy of the set of power plants (n) in the top 10% of grid system dispatch order during hour h.

EPM does not manage fuel consumption of the plants or their heat rate, so $EF_{DD,h}$ is calculated with the emission factors of the generation plants of the interconnected system (EF_j) provided by UPME, following the formula:

$$EF_{DD,h} = \frac{\sum_{j,n} EF_j \cdot GEN_{j,n,h}}{\sum_{j,n} GEN_{j,n,h}}$$

An interactive model was developed to determine the set of power plants falling within the top 10% of the system dispatch (under the merit order at each hour h for the group of power units n in the dispatch margin including the power generation units in the top 10% of total electricity dispatched in the hour h). Such interactive model uses ideal dispatch order data and criteria performed by the system's operator to develop a iterative process to estimate 8760 calculations corresponding to every hour of one year, (taking the generation offering, demand, grid availability , etc). This is a very heavy spreadsheet and it is presented to the DOE in a magnetic media (CD or DVD discs)[3].

***CALCULATION OF THE BUILD MARGIN EMISSSION FACTOR* ($EF_{BM,y}$)**

In accordance to ACM0002 version 3, the Build Margin emission factor (EF_{BM},y) is determined considering the power plants capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently. The system's actual generation is available as entry data. These data are submitted by the CND. This value is used to calculate the 20% generation, which would be taken into account for the calculation. UPME submits data including the project's entry date. These projects are chronologically organized starting from the most recent plant in operation to the former one.

The first plant is then assigned its actual generation as submitted by the CND, by using the actual operation data of the plant. The same proceedings are followed with the rest of the plants until completing the system's 20% actual generation. Plant generations included in the 20% of the system's actual generation are multiplied by their respective emission factor which is given by UPME. If the factor is zero, it means it is a hydraulic plant. Emissions related to each plant within the 20% margin are obtained with this multiplication.

Emissions related to plants in the 20% threshold of the system's actual generation, are summed up. Finally, the build margin emission factor results from dividing the sum in the 20% threshold of the system's actual generation, using the following formula:

$$EF_{BM,y} = \frac{\sum_{m} EF_m \times GEN_{m,y}}{\sum_{m} GEN_{m,y}}$$

Where:

EF_m	CO_2 emission factor of power unit *m* (tCO_2/MWh)
$GEN_{m,y}$	Net quantity of electricity generated and delivered to the grid by power unit *m* in year *y* (MWh)
m	Power units included in the build margin
y	Most recent historical year for which power generation data is available

Table 2: Calculation of the Combined Margin Emission Factor[4]

	Unit	01/01/2009-31/12/2009	01/01/2010-31/12/2010	01/01/2011-30/01/2011
$EF_{OM,y}$	ton CO2e/MWh	0.2481	0.2618	0.4657

[3] EPM prepared a detailed document presenting the calculation model "guideline for the calculation of the Combined Margin Factor" available to the DOE for the verification process.

[4] The data and calculations of the individual emission factors and the final combined margin are provided in an Excel spreadsheet: "Emission Reductions – Jepirachi Mar2011.xls"

$EF_{BM,y}$	ton CO2e/MWh	0.3558	0.3315	0.2953
EF_y	ton CO2e/MWh	**0.3020**	**0.2966**	**0.3805**

Table 3: Calculation of Baseline Emissions

	Unit	**01/01/2009-31/12/2009**	**01/01/2010-31/12/2010**	**01/01/2011-30/01/2011**
Net Electricity supplied to the grid by the project activity (EGy)	MWh.	57,708	38,575	3,968
CO2 emission facto of the national connected grid (EFy)	tCO2e/MWh	0.3020	0.2966	0.3805
Baseline emissions (BEy)	tCO2e	**17,425**	**11,442**	**1,509**

E.2. Project emissions calculation

The proposed CDM project activity is a wind power system that does not generate project GHG emissions according to the methodology. A value of zero emissions is assigned to the project emissions, $PE_y = 0$**.**

E.3. Leakage calculation

No leakage emissions are considered: $LE_y = 0$.

E.4. Emission reductions calculation / table

Emission reductions are calculated as follows:

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

Table 3: Calculation of Baseline Emissions

	Unit	**01/01/2009-31/12/2009**	**01/01/2010-31/12/2010**	**01/01/2011-30/01/2011**	**TOTAL**
Baseline emissions (BEy)	tCO2e	17,425	11,442	1,509	30,376
Project emissions (PEy)	tCO2e	0	0	0	0
Emissions reductions (ERy)	tCO2e	**17,425**	**11,442**	**1,509**	**30,376**

The total emission reductions achieved in this 4th monitoring period from 01/01/2009 to 30/01/2011 are **30,021 tCO_2e**.

E.5. Comparison of actual emission reductions with estimates in the CDM-PDD

The following table compares the estimated emission reductions in the PDD for the relevant time period with the monitored values. The value of the PDD for the period 01/01/2011-30/01/2011 has been prorated.

Table 4: Calculation of Baseline Emissions

Item	Values applied in ex-ante calculation of the registered CDM-PDD	Actual values reached during the monitoring period
01/01/2009-31/12/2009 Emission reductions (tCO_2e)	18,044	17,425
01/01/2010-31/12/2010 Emission reductions (tCO_2e)	18,044	11,442
01/01/2010-30/01/2011 Emission reductions (tCO_2e)	1,483	1,509
TOTAL Emission reductions (tCO_2e)	**37,571**	**30,021**

E.6. Remarks on difference from estimated value in the PDD

No **increase** was achieved during the monitoring period. If we disaggregate the valued by calendar years, in the latest month of the crediting period (01/01/2011-30/01/2011), there is an increase of 1.75%, which is very small and can be associated to seasonality of the generation pattern. In fact, the generation in that month was lower than the estimated ex-ante; however, the emission factor was slightly higher than the one estimated ex-ante.

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History of the document

Version	Date	Nature of revision
01	EB 54, Annex 34 28 May 2010	Initial adoption.
Decision Class: Regulatory **Document Type**: Guideline, Form **Business Function**: Issuance		