Monitoring report form
(Version 03.2)

Monitoring report

Title of the project activity	Oaxaca III Wind Energy Project
Reference number of the project activity	5676
Version number of the monitoring report	01
Completion date of the monitoring report	21/02/2014
Registration date of the project activity	09/03/2012
Monitoring period number and duration of this monitoring period	First monitoring period (09/03/2012 – 31/01/2014)
Project participant(s)	CE Oaxaca Tres S. de R.L. de C.V.
Host Party(ies)	Mexico
Sectoral scope(s) and applied methodology(ies)	Sectoral Scope 1- Energy industries (renewable-/non-renewable sources). ACM002 version 12.1.0 – Consolidated methodology for grid-connected electricity generation from renewable sources.
Estimated amount of GHG emission reductions or net anthropogenic GHG removals by sinks for this monitoring period in the registered PDD	440,644
Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period	380,767
Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved during the period up to 31 December 2012(if applicable)	164,022
Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved during the period from 1 January 2013 onwards (if applicable).	216,745

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

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This monitoring report has been prepared for "Oaxaca III Wind Energy Project". The objective of the project activity is the construction of a wind farm; the renewable energy is provided to the Mexican grid system and therefore results in the greenhouse gas (GHG) emissions reduction because in the absence of the project activity the power would have been generated by the Mexican grid system which depends mainly upon fossil fuels usage.

The Oaxaca III Wind Energy Project has a capacity of 102 MW, comprising 68 turbines generators, each with a capacity of 1.5 MW. The project was expected to generate approximately 399,228 MWh per year. This would be sold to the CFE.

A fixed crediting period of 10 years has been selected for the project, which lasts from March 9 2012 to March 8 2022.

The project has been registered with UNFCCC as a CDM project activity under article 12 of the Kyoto protocol. Submission of monitoring report and subsequent verification has been required mandatory by UNFCCC for issuance of Certified Emission Reductions (CERs) credits. The monitoring period covered under the report is extending from *March 9 2012 to January 31 2014*, including both days.

At the end of the first verification period **655,930 MWh** of electricity were produced and sent to the grid. Therefore, the total amount of reduced emissions is **380,767 tCO2.**

A.2. Location of project activity

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The project is located in Juchitán de Zaragoza Municipality, windy region, in the Isthmus of Tehuatepec, state of Oaxaca, Mexico.

The project activity is established between the following coordinates 94° 50' 17.80''W and 16° 34' 23.66'' N and 94° 49' 4.90'' W and 16° 31' 58.97'' N (decimal coordinates: 16.57323858 latitude and -94.83827748 longitude; and 16.53304681 latitude and -94.81802829 longitude).

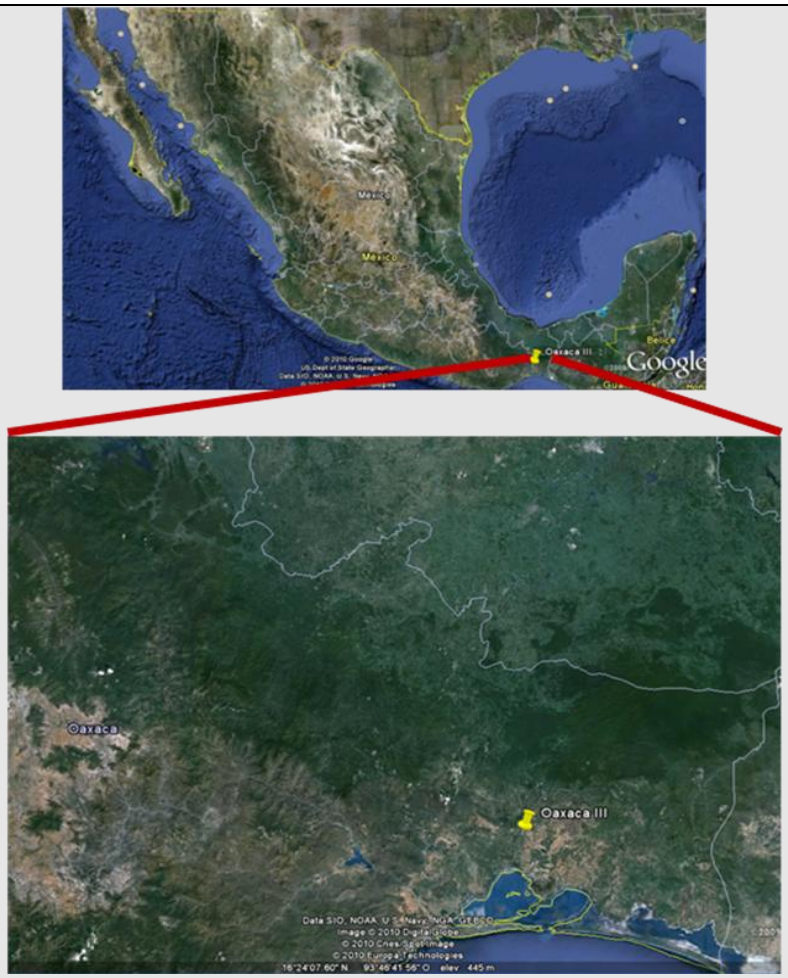

Figure 1. Localization of the project activity.

A.3. Parties and project participant(s)

Party involved ((host) indicates a host Party)	Private and/or public entity(ies) project participants (as applicable)	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
Mexico (host)	CE Oaxaca Tres S. de R.L. de C.V.	No

A.4. Reference of applied methodology

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For this project, the baseline and monitoring methodology applied is the following: Consolidated methodology for grid-connected electricity generation from renewable sources (ACM0002 ver. 12.1.0).

A.5. Crediting period of project activity

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A fixed crediting period of 10 years has been selected for the project. The project activity crediting period covers from March 09 2012 to March 08 2022, including both days.

SECTION B. Implementation of project activity

B.1. Description of implemented registered project activity

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The project start date is the date when CE Oaxaca Tres W. de R.L. de C.V. won the CFE tender by the award of contract. This was on March, 8th 2010.

The project capacity has a capacity of 102 MW with a lifetime of 20 years.

Total Power	102 MW
Rated Power per turbine	1.5 MW
Cut in-cut-out wind	4 / 25 m/s
No. of turbines	68
Equivalent annual operating hours	3,914
Annual Production	399,228 MWh
Capacity factor	44.68%
Transmission line length	23.2 km
Transmission line Voltage	230 kV

Table 1. *Power plant characteristics*

To date it has not happened any situation or event that affects or impacts the applicability of the methodology.

B.2. Post registration changes

B.2.1. Temporary deviations from registered monitoring plan or applied methodology

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N/A

B.2.2. Corrections

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N/A

B.2.3. Permanent changes from registered monitoring plan or applied methodology

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N/A

B.2.4. Changes to project design of registered project activity

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N/A

B.2.5. Changes to start date of crediting period

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N/A

B.2.6. Types of changes specific to afforestation or reforestation project activity

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N/A

SECTION C. Description of monitoring system

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The monitoring consists mainly in using a power meter equipment to record the energy generated by the wind farm. All relevant data is collected continuously and stored during the whole crediting period.

The monitoring of the power generation from the project is done through monthly invoices which are sent at the beginning of each month by this entity. This data registers the energy generated by the project activity that is measured from the power meter located in the wind farm.

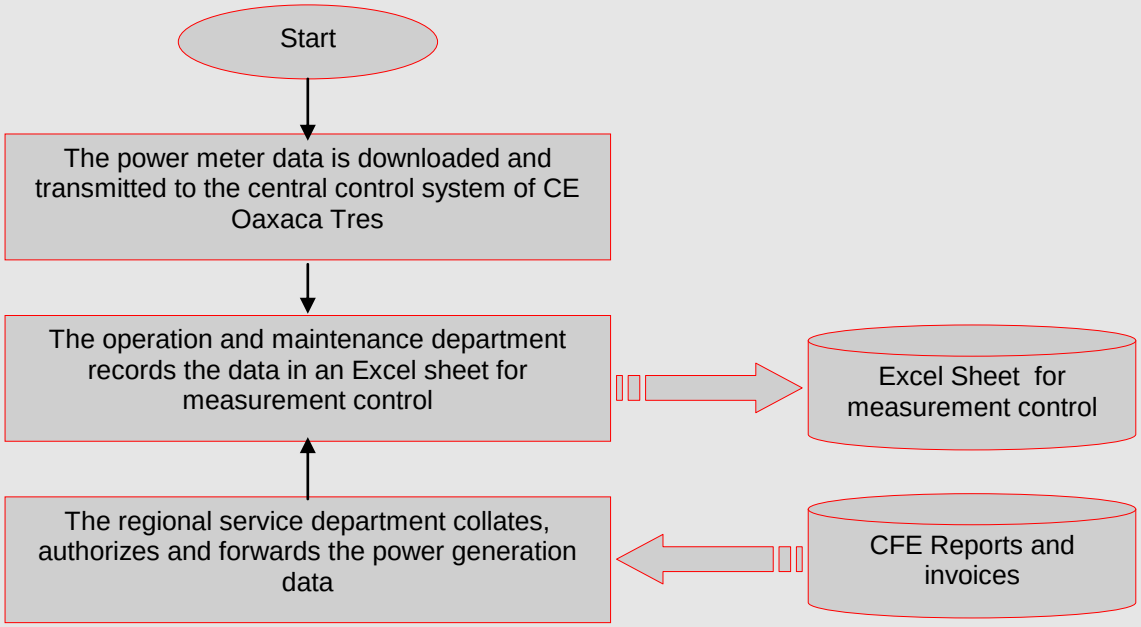


Figure 2. *Diagram of Generated Electricity Monitoring System*

The information related to the power meters equipment calibration is included in the following table:

Calibration Certificate (issued by LAMSE in the years 2011 and 2012 and LAPEM in 2013)

Equipment code	Equipment	Calibration Entity[1]	Calibration Certificates	Calibration Frequency	Calibration Dates
MT-1011A461-01	Main power meter	LAMSE	2011-651	Yearly	2011/11/10

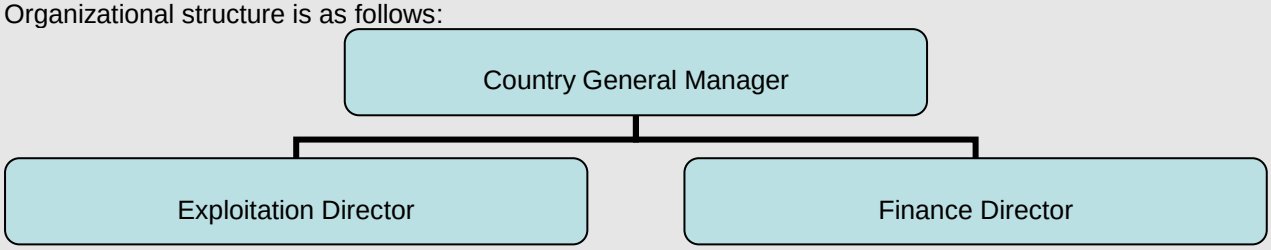
[1] Laboratorio Secundario de Metrología is a lab hired by Comisión Federal de Electricidad to calibrate the power meters. Addititonally LAPEM Laboratorio de Pruebas de Equipos y Materiales is a second lab hired by CFE since 2013.

	Ixtepec Substation		2012-642	Yearly	2012/09/18
		LAPEM	20131847	Yearly	2013/09/09
MT-1011A562-01	Backup power meter Ixtepec Substation	LAMSE	2011-652	Yearly	2011/11/10
			2012-644	Yearly	2012/09/18
		LAPEM	20131848	Yearly	2013/09/09

The information is transmitted every 5 minutes to CFE central units.

a) Roles and Responsibilities:

Organizational structure is as follows:



Responsible	Responsibility and competences
Country General Manager	Responsible for overseeing the CDM process
Exploitation Director	Responsible for monitoring, recording, reporting and archiving measured data. Responsible for checking data with the receipt of sales. Responsible for corrective and preventive actions
Finance Director	Responsible for performing the emission reduction calculations based on methodology and preparing the Monitoring Report as appropriate. Responsible for internal audit

Measuring and cross-check procedure.

Measuring. The person(s) responsible obtains the electricity generation information from the meters installed in the Ixtepec substation on a monthly basis, and reports them in the spreadsheet designed for measurement control and stores the data electronically.

Calculation of energy generation to be monitored. Oaxaca III Wind Farm has two CFE certified meters (1 main, 1 backup) in Ixtepec Substation; the meters in Ixtepec Substation are property of CFE.

Cross-check of net electricity supplied to the grid with receipt of sales: Net electricity supplied to the grid measured at the substation is cross-checked with receipts of sales.

If there is a mismatch, the person(s) responsible will solve it with CFE, explaining the discrepancy detected the origin of deviations and the corrective actions taken and file the evidence.

Quality control (QC) procedures and quality assurance procedures (QA).

1. Monitoring equipment
   a) Monitoring equipment is set up as per Mexican law and/or PPA.
   b) Monitoring equipment is authorized through a certificated formal process.
   c) After set up monitoring equipment is calibrated by CFE periodically as determined by the Mexican Law and/or PPA, and checked as necessary by CFE for accuracy.

2. Corrective and preventive actions are followed and properly documented.

Monthly hourly readings for main and check meters are stored in Excel sheets. Corrective and preventive actions have been made as per provision in CDM manual.
Internal audit will be done periodically as decided by management.

SECTION D. Data and parameters

D.1. Data and parameters fixed ex ante or at renewal of crediting period

Data / Parameter:	**$EF_{grid,CM,y}$**
Unit:	tCO_2/GWh
Description:	Baseline Emission factor of the Mexican Grid (calculated ex-ante)
Source of data:	Registered PDD
Value(s) applied):	0.5805 tCO_2/MWh
Purpose of data:	Calculation of the baseline emission calculations
Additional comment:	NA

D.2. Data and parameters monitored

Data / Parameter:	**$EG_{facility,y}$**
Unit:	MWh/yr
Description:	Quantity of net electricity generation supplied by the project plant to the grid in year y
Measured/ Calculated / Default:	Measured
Source of data:	Energy Meters Installed in Ixtepec Substation
Value(s) of monitored parameter:	655,930 MWh
Monitoring equipment:	Main power meter and Backup power meter in Ixtepec Potencial Substation Type: Bidirectional Accuracy class: 0.2% Basic Serial number: MT-1011A461-01/ MT-1011A562-01 Calibration frequency: Annually Calibration dates: 10 November 2011, 18 September 2012 and 09 September 2013 Validity: 08 September 2014

Measuring/ Reading/ Recording frequency:	Measurement equipment: Power meters Measuring: Every 5 minutes Recording: Monthly
Calculation method (if applicable):	N/A
QA/QC procedures:	This data is directly used for calculation of emissions reduction. The metering equipment is properly calibrated and checked periodically for accuracy, to ensure that any error resulting from such equipment does not exceed +0.2% of full-scale rating. To guarantee QA/QC it is double checked by receipt of electricity sales.
Purpose of data:	Calculation of Project baseline calculations
Additional comment:	

D.3. Implementation of sampling plan

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N/A

SECTION E. Calculation of emission reductions or GHG removals by sinks

E.1. Calculation of baseline emissions or baseline net GHG removals by sinks

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Baseline emissions are CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due the project activity. In order to obtain these emissions it is necessary to calculate and emission factor *ex-ante*, which is the result from an Operative Margin and a Build Margin emission factor. As it is explained in the PDD, the results for these margins are obtained using the following formulas.

$$EF_{OM,y} = \frac{\sum_{i,j} F_{i,j,y} \times COEF_{i,j}}{\sum_{j} GEN_{j,y}}$$

Where:

$EF_{OM,y}$ = Operative margin CO_2 emissions factor in year *y* (tCO_2/MWh)

$F_{i,i,y}$ = Consumption of fuel i (in TJ) by fuel sources j in year y.

$COEF_{i.i.v}$ = CO2 emission coefficient of fuel i in tCO2/TJ.

$GEN_{i,v}$ = Electricity in MWh delivered to the grid by the j source.

j = Refers to the power sources delivering electricity to the grid, not including low-operating cost and must run power plants, and including imports to the grid.

$$EF_{BM,y} = \frac{\sum_{i,m} F_{i,m,y} \times COEF_{i,m}}{\sum_{m} GEN_{m,y}}$$

Where:

$EF_{BM,y}$ = Build margin CO_2 emissions factor in year *y* (tCO_2/MWh)

$F_{i,m,v}$ = Consumption of fuel i (in TJ) by fuel sources m in year y.

$COEF_{i,m,y}$ = CO2 emission coefficient of fuel i in tCO2/TJ.

$GEN_{i,y}$ = Electricity in MWh delivered to the grid by the j source.

m = Refers to the power units included in the build margin.

Once determined these coefficients, the emission factor can be calculated using the formula:

$$EF_{grid,CM,y} = w_{OM} \times EF_{OM,y} + w_{BM} \times EF_{BM,y}$$

The values used for w_{OM} and w_{BM} are indicated by the methodology for wind farm projects.

The emission factor for the grid is finally calculated and there is no need to update it during the project crediting period. The grid emission factor value obtained was 0.5805 tCO2/MWh.

To conclude this section, using the value mentioned before it is possible to calculate the baseline emissions in one year.

$$BE_y = EG_{facility,y} \times EF_{grid,CM,y}$$

Where:

BE_y = Baseline emissions in year *y* (tCO_2/yr)

$EG_{facility,y}$ = Net electricity generated and delivered to the grid as a result of the implementation of the CDM project activity in year *y* (MWh).

$EF_{grid,CM,y}$ = Emission factor for the grid (tCO_2 / MWh)

Emission Reductions Oaxaca III Wind Energy Project			
PERIOD	$EG_{facility,y}$	Receipt of Sales	Minimum Value
MARCH 2012	24,945.44	24,990.02	24,945.44
APRIL 2012	20,750.80	20,883.77	20,750.80
MAY 2012	19,737.54	19,861.13	19,737.54
JUNE 2012	5,439.94	5,745.21	5,439.94
JULY 2012	41,916.07	41,955.64	41,916.07
AUGUST 2012	13,803.58	14,044.16	13,803.58
SEPTEMBER 2012	24,537.79	24,710.39	24,537.79
OCTOBER 2012	40,027.15	40,058.72	40,027.15
NOVEMBER 2012	56,001.23	56,001.23	56,001.23
DECEMBER 2012	35,395.14	35,506.49	35,395.14
JANUARY 2013	47,149.66	47,200.48	47,149.66
FEBRUARY 2013	26,793.54	26,888.42	26,793.54
MARCH 2013	39,406.09	39,479.91	39,406.09
APRIL 2013	17,907.52	18,022.43	17,907.52
MAY 2013.	18,976.12	19,142.05	18,976.12
JUNE 2013	12,723.48	12,925.26	12,723.48
JULY 2013	26,998.91	27,112.89	26,998.91
AUGUST 2013	31,547.62	31,638.62	31,547.62
SEPTEMBER 2013	1,666.09	1,995.94	1,666.09
OCTOBER 2013	24,496.54	24,565.79	24,496.54
NOVEMBER 2013	39,183.17	39,225.75	39,183.17
DECEMBER 2013	39,023.82	39,070.18	39,023.82
JANUARY 2014	47,503.40	47,503.40	47,503.40
TOTAL			655,930.00

$EG_{facility,y}$	655,930	MWh
$EF_{grid,CM,y}$	0.5805	tCO2/MWh
Baseline emissions	380,767	tCO2

BE_y = (655,930 MWh)*(.5805 tCO_2/MWh) = 380,767 tCO_2

E.2. Calculation of project emissions or actual net GHG removals by sinks

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Oaxaca III Wind Energy Project is a renewable source of electricity generation and doesn't involve the use of fossil fuel for the energy production. Consequently, there are not emissions related to the activity of the project.

$$PE_y = 0\ tCO_2e$$

E.3. Calculation of leakage

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For this kind of projects, the main emissions potentially giving rise to leakage are emissions due to activities such power plant construction and upstream emissions from fossil fuel (e.g. extraction, processing, and

transportation). As a result these emissions sources are neglected and a zero emission leakage is considered for the project.

$$LE_y = 0\, tCO_2e$$

E.4. Summary of calculation of emission reductions or net anthropogenic GHG removals by sinks

Using the values obtained before, the total amount of reduced emissions is calculated as follows:

$$ER_y = BE_y$$

Where:

ER_y = Reduced emissions in year *y* (tCO_2/yr)

BEy = Baseline emissions in year *y* (tCO_2/yr)

Item	Baseline emissions or baseline net GHG removals by sinks (t CO_2e)	Project emissions or actual net GHG removals by sinks (t CO_2e)	Leakage (t CO_2e)	Emission reductions or net anthropogenic GHG removals by sinks (t CO_2e)
Total	380,767	0	0	380,767

E.5. Comparison of actual emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD

Item	Values estimated in ex-ante calculation of registered PDD	Actual values achieved during this monitoring period
Emission reductions or GHG removals by sinks (t CO_2e)	440,644	380,767

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

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The actual emission reductions achieved during the current monitoring period is below the total estimated in the registered PDD. The main reasons from the variations are directly to the wind conditions during the monitoring period that reduces the electricity generation. The emission reductions of this monitoring period are 13,59% lower than the emission reductions that appear in the registered PDD.

E.7. Actual emission reductions or net anthropogenic GHG removals by sinks during the first commitment period and the period from 1 January 2013 onwards

Item	Actual values achieved up to 31 December 2012	Actual values achieved from 1 January 2013 onwards

Emission reductions or GHG removals by sinks (t CO_2e)	164,022	216,745

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Document information

Version	*Date*	*Description*
03.2	5 November 2013	Editorial revision to correct table in page 1.
03.1	2 January 2013	Editorial revision to correct table in section E.5.
03.0	3 December 2012	Revision required to introduce a provision on reporting actual emission reductions or net anthropogenic GHG removals by sinks for the period up to 31 December 2012 and the period from 1 January 2013 onwards (EB70, Annex 11).
02.0	13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20).
01	28 May 2010	EB 54, Annex 34. Initial adoption.

Decision Class: Regulatory
Document Type: Form
Business Function: issuance
Keywords: monitoring report, performance monitoring