



Monitoring report form
(Version 05.1)

Complete this form in accordance with the Attachment "Instructions for filling out the monitoring report form" at the end of this form.

MONITORING REPORT

Title of the project activity	Wind Power Project by Gomathy Power Company (EKIESL.CDM.September-11-02)	
UNFCCC reference number of the project activity	7440	
Version number of the monitoring report	01	
Completion date of the monitoring report	18/03/2016	
Monitoring period number and duration of this monitoring period	Monitoring Period – 01 Duration – 30/12/2012 to 09/03/2016	
Project participant(s)	EKI Energy Services Limited	
Host Party	India	
Sectoral scope(s)	1 : Energy industries (renewable - / non-renewable sources)	
Selected methodology(ies)	AMS-I.D. ver. 17 - Grid connected renewable electricity generation	
Selected standardized baseline(s)	Not Applicable	
Estimated amount of GHG emission reductions or net GHG removals by sinks for this monitoring period in the registered PDD	52,013	
Total amount of GHG emission reductions or net GHG removals by sinks achieved in this monitoring period	GHG emission reductions or net GHG removals by sinks reported up to 31 December 2012	GHG emission reductions or net GHG removals by sinks reported from 1 January 2013 onwards
	27	34,740

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

M/s Gomathy Powers India Private Limited (Change in company name from Gomathy Power Company to Gomathy Powers India Private Limited is effected from 20/06/2013) , herein after referred as GPIPL, engaged in promotion of non-conventional energy sources, has envisaged the installation of 7.5 MW wind turbine to generate electricity. The five wind turbine of 1.5 MW capacity each, is being implemented & operated in the state of Tamil Nadu at Theni district.

In initial stage of operation, Electricity from three WTG's (T17, T23 and T26) is proposed for third party sale to H.T.SC No.4 of Tirunelveli EDC, favouring M/s Sri Gomathy Mills Pvt. Ltd. under third party sale agreement and rest of two WTGs (T27 and T28) for sale to grid. Later on, two WTGs (T 17 and T28) are sold to Sri Vasudeva textiles Pvt Limited on 17/06/2015 and new owner using the generated electricity for captive purpose. Also WTG of T28 which was selling electricity to grid initially enters in wheeling agreement after purchasing it by new owner and uses the generated electricity for captive purpose. Thus at present, all WTGs involved in the project activity are using the generated electricity for Third party sale/captive purpose. Thus in future, all WTGs have an option of captive purpose, third party sale or sale to grid for the generated electricity. All the windmills have been commissioned, and the generated electricity from WTGs is connected to state electric utility namely Tamil Nadu Electricity Board (TNEB) and transmitted to state grid for further captive purpose use. Though the ownership of T17 and T 28 is transferred to Sri Vasudeva textiles Pvt Limited, the ownership CERs for the net electricity supplied by these WTGs lies with Gomathy Powers India Private Limited.

Prior to the installation of wind mills the same amount of electricity was being consumed from the Southern grid. Realizing the impacts of electricity produced from fossil fuels, GPIPL has decided to install wind farms to generate "green and clean" electricity.

S.no.	HTSC No.	Date of Commissioning	Usage
WTG 1	WES - RE 1 - T 17	30/09/2010	Sale to HTSC No. 4 of Tirunelveli EDC
WTG 2	WES - RE 1 - T 23	30/09/2010	
WTG 3	WES - RE 1 - T 26	31/01/2011	
WTG 4	WES - RE 1 - T 27	31/01/2011	Sale to H.T.SC No.4 of Tirunelveli EDC
WTG 5	WES - RE 1 - T 28	31/01/2011	Sale to H.T.SC No.4 of Tirunelveli EDC

Wind turbine transforms the kinetic energy of wind into mechanical energy which is further converted into electrical energy. There are no associated greenhouse gas emissions in the electricity generation process since it utilizes a clean energy source. The project activity installs Model V 77 each of Vensys make WTG of Regen Powertech Pvt. Ltd., which is designed for generating the optimal power output at sites with a modest wind speed regime like Tamil Nadu.

Total GHG emission reductions achieved in this monitoring period are 34,767 tCO₂.

A.2. Location of project activity

Country: India

HT SC NO.	Site/Village	District	State	Latitude (°N)	Longitude (°E)
WES - RE 1 - T 17	Marikundu	Theni	Tamil Nadu	9° 57' 42.9"	77° 32' 29.5"
WES - RE 1 - T 23	Thappukundu	Theni	Tamil Nadu	9° 55' 58.1"	77° 27' 05.5"

WES - RE 1 - T 26	Poomalai Kundu	Theni	Tamil Nadu	9° 54' 56.0"	77° 27' 10.7"
WES - RE 1 - T 27	Poomalai Kundu	Theni	Tamil Nadu	9° 55' 03.6"	77° 27' 32.2"
WES - RE 1 - T 28	Koduvilarpatti	Theni	Tamil Nadu	9° 56' 59.3"	77° 29' 04.8"

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 whether the Party involved wishes to be considered as project participant (yes/no)
India (host)	EKI Energy Services Limited	No

A.4. Reference of applied methodology and standardized baseline

Title: Grid Connected Renewable Electricity Generation, Version 17, EB 61, sectoral scope 01¹

Reference: Appendix B of the simplified modalities & procedures for small scale CDM project activities.

The methodology also refers to latest approved versions of “**Tool to calculate the emission factor for an electricity system, version 02.2.1 Annex 19, EB63**”.

A.5. Crediting period of project activity

Type of crediting period	Renewable
Crediting period	30 Dec 12 - 29 Dec 19
Length of the Crediting Period	07 Years 00 months
Monitoring period from	30/12/2012 to 09/03/2016

A.6. Contact information of responsible persons/entities

Manish Dabkara
 EKI Energy Services Limited , India
 W – www.enkingint.org
 E – manish@enkingint.org
 M - +91 99 07 534900
 T +91 731 42 89 086

Person/Entity above is also a project participant as mentioned in Appendix 1.

SECTION B. Implementation of project activity**B.1. Description of implemented registered project activity**

Project activity involves installation of five Vensys make WTG V77-1500 kW of RenGen Powertech Pvt. Ltd. whose technical details are furnished in the table below. The 1.5 MW V77 Model is based on robust design with pitch regulated blade operation, a 3-stage gearbox with 1650 kW rating and flexible coupling to the asynchronous induction generator. The Flexi-slip System provides efficient control of the load and power control. The V77-1500 kW is designed to withstand extreme

¹ <http://cdm.unfccc.int/methodologies/SSCmethodologies/approved.html>

conditions and operate effectively with low maintenance cost. Wind, being a renewable source of energy can produce renewable electricity and replaces the equivalent amount of electrical power at regional grid which otherwise would have been generated from fossil fuel based power stations, as conventional in India.

Please refer section A.1 for commissioning details of each WTG

Technical details of 1500 KW Vensys make WTG:

MODEL		V77-1500kW
OPERATING DATA		
Rated power		1500 kW
Cut-in wind speed		3 m/s
Rated wind speed		13 m/s
Cut-off wind speed		22 m/s
Survival wind speed		52.5 m/s
ROTOR		
Type		3 Blades, Upwind / Horizontal axis
Diameter		77 m (76.84 m)
Rotational speed at rated power		15.6 to 18.4 rpm
Rotor blade material		Glass Fibre Reinforced Plastic
Swept area		4634 m ²
Power regulation		Independent electromechanically pitch system for each Blade
GENERATOR		
Type		Synchronous, Variable Speed
Rated power		1500 kW
Rated voltage		690 V
Insulation		Class F
Protection Class		IP 23
Cooling system		Passive Air cooled
TOWER		
Type		Tubular Steel with Embedded steel Can in Foundation – Cylindrical + Conical
Hub height (including foundation)		85 m
BRAKING SYSTEM		
Primary Brake System		Aerodynamic brake, Individual full 90 deg. Blade Pitch & Control for each Blade
Maintenance		Hydraulic brake Caliper at Generator Rotor
YAW SYSTEM		
Bearing		Ball Slew Bearing with external gearing
Yaw Brake		Hydraulic Calipers
POWER CONVERTER AND CONTROLLER		
Type		AC-DC-AC Full Power Converter
Design		Modular
Cooling		Forced Air Cooled
System Power Factor		Full Reactive Power Control 0.95 cap....0.95 ind

Rated Output Voltage	620 V
Voltage Variation	+/- 10%
Frequency Variation	-5% / +3%
Cut-in-system	Active IGBT
Low voltage ride through (LVRT)	3 Seconds
Safety System	PLC Based Control System
SCADA	Remote Monitoring & Control

There are no any situation or events which impact applicability of methodology.

B.2. Post-registration changes

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

Not Applicable

B.2.2. Corrections

Not Applicable

B.2.3. Changes to start date of crediting period

Not Applicable

B.2.4. Inclusion of a monitoring plan to the registered PDD that was not included at registration

Not Applicable

B.2.5. Permanent changes from registered monitoring plan, applied methodology or applied standardized baseline

The meter accuracy class and calibration frequency is not under control of PP, thus as per para 5 a), b) and f) of Appendix 1 of Project Standard version 09, the following changes made in revised PDD

The accuracy class of meters has been revised as 0.5/0.2 and the calibration frequency has been revised from once in two years to once in Five years as per CEA notification http://www.cea.nic.in/reports/regulation/meter_reg.pdf

The correction has been made due to change in company name and change in project design.

B.2.6. Changes to project design of registered project activity

Change in company name from Gomathy Power Company to Gomathy Powers India Private Limited is effected from 20/06/2013.

Two WTGs (T 17 and T28) are sold to Sri Vasudeva textiles Pvt Limited and new owner using the generated electricity for captive purpose. Changes in PDD are made accordingly.

The applicability criteria , project boundary sections has been revised due to change in scenario of use of generated electricity.

Due to change in scenario of third party/captive purpose, the IRR calculations has been revised and checked the impact of change in project design on additionality. It is observed that there is no any adverse impact on additionality, thus as per Appendix 1 of Project Standard Version 09, no prior approval is required for changes to project design.

B.2.7. Types of changes specific to afforestation or reforestation project activity

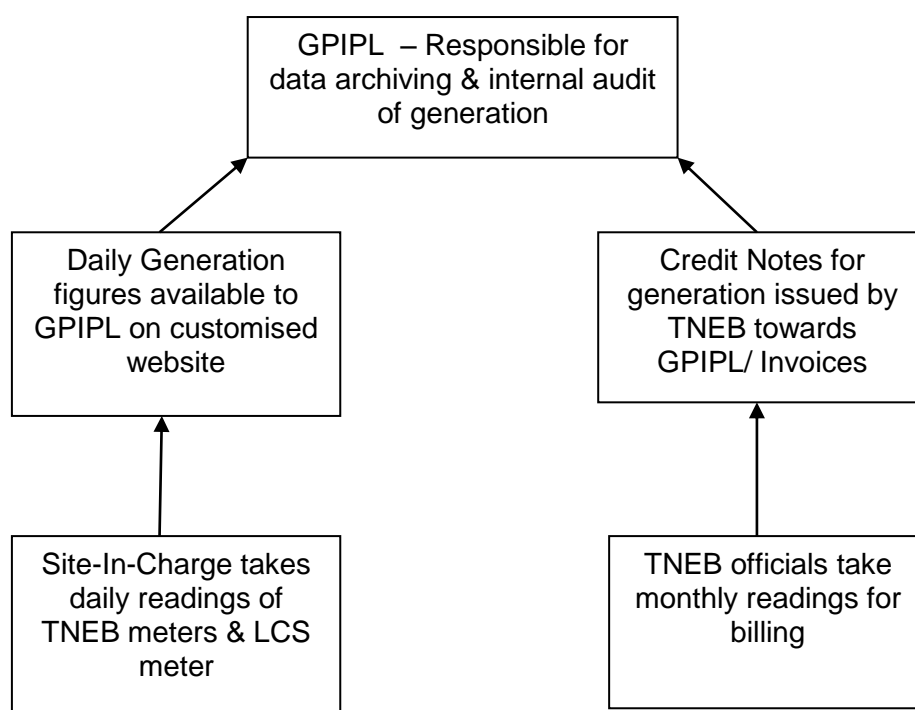
Not Applicable

SECTION C. Description of monitoring system

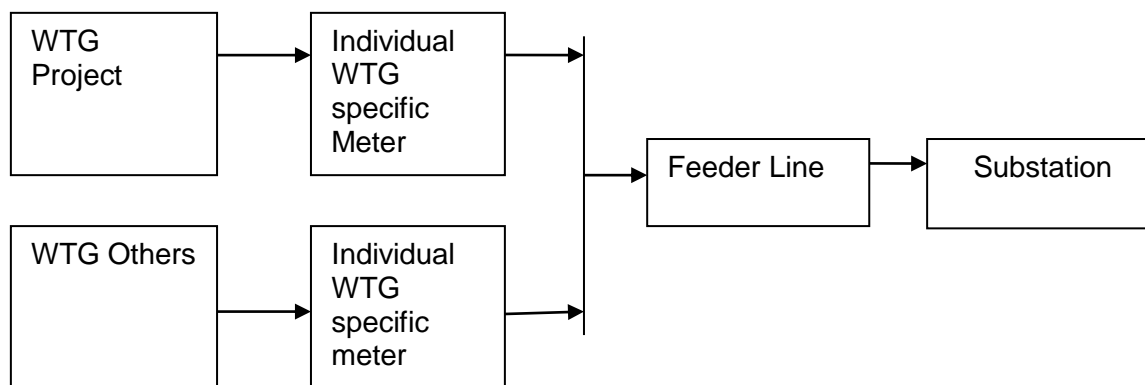
The project activity is in accordance with approved small scale methodology AMS I.D, and therefore, can use the monitoring methodology for type I.D of 'Appendix B of the simplified M&P for small-scale CDM project activities-Version 17, - Grid connected renewable electricity generation.

The monitoring methodology specified in the methodology requires that the project-monitoring plan to consist of monitoring of quantity of net electricity supplied to the grid in the year y. In order to monitor the mitigation of GHG due to the project activity, the total energy exported needs to be measured. The net energy supplied to grid by the project activity multiplied by emission factor for regional grid, would form the baseline for the project activity.

Since the baseline emission factor is based on an ex-ante determination, monitoring of this parameter is not required. The sole parameter for monitoring is the net electricity exported to the grid. The Project is operated and managed by ReGen Powertech Pvt. Ltd (RPPL). RPPL will have a designated Site-In- Charge (O&M) on site, who will be responsible for monitoring the electricity exported from the project activity. The overall flow of information has been depicted using the following hierarchical structure:



As per the project boundary diagram provided in Section B.3 & metering shown in below figure of this document, the monitoring is done at the WTG electrical yard substation using a TNEB owned electronic tri-vector meters (Main & Check Meters).



The net electricity exported to grid is calculated as a difference in the electricity exported to the grid and imported from the grid. The electricity export and import values are calculated as the product of difference of current and previous TNEB meter readings multiplied with the multiplying factor of the meter. Additionally, all the WTGs at the site are connected to a central monitoring system located at that site only. This system captures daily generation figures which are later made available to GPIPL on the customized website of ReGen Powertech Pvt. Ltd.

Internal audits & Performance review

The records are regularly audited and checked by the senior officials from project proponent on an annual basis. The officials will monitor the actual emission reduction. The personnel responsible for taking readings at site are adequately trained.

Emergency Preparedness

In the context of the project activity, the main & check meters will be kept in sealed by TNEB and all maintenance will be taken up by TNEB only. In case of failure of the main meter, generation value would be arrived at as per standard clause (8) and (9) of Article 4 of the Energy Purchase agreement as provided below:

"(8) Check meter readings shall be considered when Main Meters are found to be defective or stopped. Provided that, if difference between the readings of main and check meters vis-à-vis main meter reading exceeds twice the Percentage error applicable to the relevant class, both meters shall be tested and the one found defective shall be immediately replaced and reading of other will be considered.

(9) If during test or calibration, both the main meter and check meter are found to have errors beyond permissible limits, the bill shall be revised for the previous 3 (Three) months or the exact period if known and agreed upon by the parties, by applying correction as determined by the meter testing Wing of the STU/Distribution Licensee to the consumption registered by the meter with lesser error.

The project promoters have contracted the technology supplier for providing O&M services for the power project. The service provider would be responsible for maintenance of the necessary spare parts and consumables for the maintenance of the WTGs such as anemometers, wind vanes and sensors, oil filters, batteries, auxiliary motors and pumps, WTG controllers, slip rings, limit switches and sensors, detergents & solvents etc. The service provider would also be responsible for supply of necessary main components of the WTG such as main gearboxes, blades, generators, towers, hubs, main shafts & bearings, ground and top controller and hydraulic systems. The service provider would also ensure that occupational health and safety procedures are adhered to during the operation & maintenance activities. Additionally, spare meters would also be kept available at the site for replacement in case of failure of any of the monitoring equipments.

SECTION D. Data and parameters

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

Data/parameter:	EF _{grid,OM,y}
Unit	tCO ₂ e/MWh
Description	Operating Margin Grid Emission factor
Source of data	Calculated from CEA database, Version 06, March 2011
Value(s) applied)	0.9671
Choice of data or measurement methods and procedures	The value applied is taken from the CEA reviews of three years.
Purpose of data	To determine baseline emissions.
Additional comments	This value is fixed <i>ex-ante</i>

Data/parameter:	EF _{grid,BM,y}
Unit	tCO ₂ e/MWh
Description	Build Margin Grid Emission factor
Source of data	Calculated from CEA database, Version 06, March 2011
Value(s) applied)	0.7634
Choice of data or measurement methods and procedures	The value applied is taken from the CEA reviews of three years.
Purpose of data	To determine baseline emissions.
Additional comments	This value is fixed ex-ante

Data/parameter:	EF _{grid,CM,y}
Unit	tCO ₂ e/MWh
Description	Combined Margin Grid Emission factor
Source of data	Calculated from CEA database, Version 06, March 2011
Value(s) applied)	0.9162
Choice of data or measurement methods and procedures	The value applied is taken from the CEA reviews of three years.
Purpose of data	To determine baseline emissions.
Additional comments	This value is fixed ex-ante

D.2. Data and parameters monitored

Data/parameter:	EG _{BL,y,Grid}
Unit	MWh
Description	Quantity of net electricity supplied to the grid in Year y
Measured/calculated/default	Measured & Calculated
Source of data	TNEB Statement
Value(s) of monitored parameter	5,078
Monitoring equipment	Electrical Energy Meters which are electronic tri-vector meters of accuracy class 0.5/0.2 (Main & Check meters)
Measuring/reading/recording frequency:	Continuous Monitoring, Continuous Measurement and monthly recording.

Calculation method (if applicable):	The net electricity exported to grid is calculated as a difference in the electricity exported to the grid and imported from the grid.
QA/QC procedures:	The amount of electricity exported to grid is cross-checked with the invoices for sale of power. Meter calibration shall be conducted once in five years
Purpose of data:	To determine baseline emissions
Additional comments:	The data will be kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later. In the case of the crediting period start & end dates of the project activity falls in between the billing cycles, then for emission reduction calculations, the daily generation reports measured at TNEB provided by the O&M service provider, shall be considered.

Data/parameter:	EG _{BL,y,TPS}
Unit	MWh
Description	Quantity of net electricity supplied under Third Party Sale Agreement/Captive purpose in Year y
Measured/calculated/default	Measured & Calculated
Source of data	Invoice
Value(s) of monitored parameter	37,947
Monitoring equipment	Electrical Energy Meters which are electronic tri-vector meters of accuracy class 0.5/0.2 (Main & Check meters)
Measuring/reading/recording frequency:	Continuous Monitoring, Continuous Measurement and monthly recording.
Calculation method (if applicable):	The net electricity exported to grid is calculated after deducting 5% losses from Net Electricity Exported to Grid which actually is difference in the electricity exported to the grid and imported from the grid.
QA/QC procedures:	The amount of electricity exported to M/s Sri Gomathy Mills Pvt. Ltd. will be cross-checked with the invoices for sale of power. Meter calibration shall be conducted once in five years.
Purpose of data:	To determine baseline emissions
Additional comments:	The data will be kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later. In the case of the crediting period start & end dates of the project activity falls in between the billing cycles, then for emission reduction calculations, the daily generation reports measured at TNEB provided by the O&M service provider, shall be considered.

D.3. Implementation of sampling plan

Not applicable.

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

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

The product of Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y in MWh with CO₂ Emission Factor of the grid in year y in tCO₂/MWh will give the estimated value of Baseline Emissions tCO₂ (BE_y).

$$BE_y = EG_{BL,y} \times EF_{CO_2,grid,y}$$

Where:

BE_y = Baseline Emissions in year y (tCO₂)

$EG_{BL,y}$ = Sum of the Quantity of net electricity supplied to the grid ($EG_{BL,y,Grid}$) and third party ($EG_{BL,y,TPS}$) as a result of the implementation of the CDM project activity in year y (MWh)

$EF_{CO_2, grid, y}$ = CO₂ emission factor of the grid in year y (tCO₂/MWh)

Therefore,

$$\begin{aligned} BE_y &= EG_{BL,y} \times EF_{CO_2, grid, y} \\ &= 37,947 \times 0.9162 \\ &= 34,767 \text{ tCO}_{2e} \end{aligned}$$

Further,

$$ER_y = BE_y - PE_y - LE_y$$

Where

ER_y = Emission reductions in year y (tCO₂/y)

BE_y = Baseline Emission in year y (tCO₂/y)

PE_y = Project Emission in year y (tCO₂/y)

LE_y = Leakage Emission in year y (tCO₂/y)

$ER_y = BE_y - 0 - 0$ (as, $PE_y = 0$ and $LE_y = 0$)

$ER_y = BE_y$

Thus,

$$ER_y = 34,767 \text{ tCO}_{2e}$$

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

The project emission is zero as per the registered PDD.

E.3. Calculation of leakage

The leakage emission is zero as per the registered PDD.

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

Item	Baseline emissions or baseline net GHG removals by sinks (t CO ₂ e)	Project emissions or actual net GHG removals by sinks (t CO ₂ e)	Leakage (t CO ₂ e)	GHG emission reductions or net GHG removals by sinks (t CO ₂ e) achieved in the monitoring period		
				Up to 31/12/2012	From 01/01/2013	Total amount
Total	34,767	0	0	27	34,740	34,767

E.5. Comparison of actual emission reductions or net 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 ₂ e)	52,013	34,767

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

Actual GHG emission is less than estimated in the registered PDD by -33.16%. This is due to low plant load factor which is dependent on nature based wind velocity.

Appendix 1. Contact information of project participants and responsible persons/entities

Project participant and/or responsible person/ entity	<input checked="" type="checkbox"/> Project participant <input checked="" type="checkbox"/> Person/entity responsible for completing the CDM-MR-FORM
Organization name	EKI Energy Services Limited
Street/P.O. Box	Plot 48, Scheme 79, Part- 2, Vijay Nagar
Building	Enking Embassy
City	Indore
State/region	Madhya Pradesh
Postcode	452010
Country	India
Telephone	+91 731 4289086
Fax	+91 731 4289086
E-mail	manish@enkingint.org
Website	www.enkingint.org
Contact person	Manish Dabkara
Title	CEO
Salutation	Mr.
Last name	Dabkara
Middle name	
First name	Manish
Department	CDM Services
Mobile	+91 9907534900
Direct fax	+91 731 4289086
Direct tel.	+91 731 4289086
Personal e-mail	manish@enkingint.org

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Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
05.1	4 May 2015	Editorial revision to correct version numbering.
05.0	1 April 2015	Revisions to: <ul style="list-style-type: none"> • Include provisions related to delayed submission of a monitoring plan; • Provisions related to the Host Party; • Remove reference to programme of activities; • Overall editorial improvement.
04.0	25 June 2014	Revisions to: <ul style="list-style-type: none"> • Include the Attachment: Instructions for filling out the monitoring report form (these instructions supersede the "Guideline: Completing the monitoring report form" (Version 04.0)); • Include provisions related to standardized baselines; • Add contact information on a responsible person(s)/ entity(ies) for completing the CDM-MR-FORM in A.6 and Appendix 1; • Change the reference number from <i>F-CDM-MR</i> to <i>CDM-MR-FORM</i>; • Editorial improvement.
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 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		