



Monitoring report form (Version 03.2)

Monitoring report

Title of the project activity	Mampuri Wind Power Project
Reference number of the project activity	9074
Version number of the monitoring report	01
Completion date of the monitoring report	28/05/2014
Registration date of the project activity	21/12/2012
Monitoring period number and duration of this monitoring period	01 01/01/2013 – 31/12//2013
Project participant(s)	Senok Wind Power (Pvt) Ltd
Host Party(ies)	Sri Lanka
Sectoral scope(s) and applied methodology(ies)	Sectoral Scope 01 : Energy Industries Applied methodology: AMS I.D. Version 17, “Grid Connected Renewable Electricity Generation”
Estimated amount of GHG emission reductions or net anthropogenic GHG removals by sinks for this monitoring period in the registered PDD	18,768 tCO ₂ e
Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period	20,334 tCO ₂ e
Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved during the period up to 31 December 2012 (if applicable)	Not applicable
Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved during the period from 1 January 2013 onwards (if applicable).	20,334 tCO ₂ e

SECTION A. Description of project activity**A.1. Purpose and general description of project activity**

>> The purpose of the project activity is to use the wind energy potential in the North West coastal belt of Sri Lanka to produce a total of 10 MW using eight wind turbines, each rated at 1.25 MW. The WTGs are Suzlon make S64-1.25 MW machines. The project is located in Mampuri, Puttalam and was developed by Senok Wind Power (Pvt) Ltd. The power plant generated a net energy output of 28,270,032 kWh during the monitoring period, and hence the total CERs for the year was 20,334 tCO₂/yr.

Electricity produced is sold to Ceylon Electricity Board (CEB), the national electricity utility, through a dedicated transmission line and its operations and sale of electricity are governed by the Permit issued by SLSEA, and the standardised Small Power Purchase Agreement (SPPA) signed with CEB.

This project is the first wind power project in Sri Lanka and it was commissioned in 2010.

The metering of the generation will take place at the panel room of the project, where all eight WTGs will be connected. The metering of the project is done by the CEB, and at the commissioning of the project, the officials from the CEB will connect the meters for the metering to be done as described in Section C below.

A.2. Location of project activity

>> Host party : Sri Lanka

Province: North Western

District: Puttalam

Local Authority: Kalpitiya Pradeshiya Sabha

Village: Mampuri

Physical location:

Access to Site: The site is accessed by turning from A3 Colombo-Puttalam road at Palavi, to B 349 Palavi – Kalpitiya road. When travelling from Palavi towards Kalpitiya along this road, turn left at the Mampuri junction, which is approximately 12 km from Palavi. Move through the Mampuri village to reach the beach front, along which the site is located.

The coordinates of the eight wind turbine generator locations are the following:

Wind Turbine Generator (WTG)	Latitude	Longitude
WTG1	N 8° 0' 36.7194"	E 79° 43' 23.8794"
WTG2	N 8° 0' 26.28"	E 79° 43' 27.84"
WTG3	N 8° 0' 8.6394"	E 79° 43' 33.5994"
WTG4	N 7° 59' 33.36"	E 79° 43' 23.2794"
WTG5	N 7° 59' 22.92"	E 79° 43' 43.32"
WTG6	N 7° 59' 12.4794"	E 79° 43' 45.12"
WTG7	N 7° 58' 59.52"	E 79° 43' 48.7194"
WTG8	N 7° 58' 47.2794"	E 79° 43' 51.9594"

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)
Sri Lanka (host)	Private entity: Senok Wind Power (Private) Limited	No

A.4. Reference of applied methodology

>> (a) Applied methodology:

AMS-I.D version 17 - Grid connected renewable electricity generation

(<https://cdm.unfccc.int/methodologies/DB/RSCTZ8SKT4F7N1CFDXCSA7BDQ7FU1X>)

(b) Tools and any other methodology:

Tool to calculate the emission factor for an electricity system (Version 02.2.1) EB 63 Report Annex 19

Tool for the demonstration and assessment of additionality (Version 07.0.0) EB 70 Report Annex 08

Guidelines on additionality of first-of-its-kind project activities (Version 2.0) EB 69, Annex 07

A.5. Crediting period of project activity

>> Type: Fixed crediting period

Start date and end date of the crediting period: 01/01/2013 – 31/12/2022

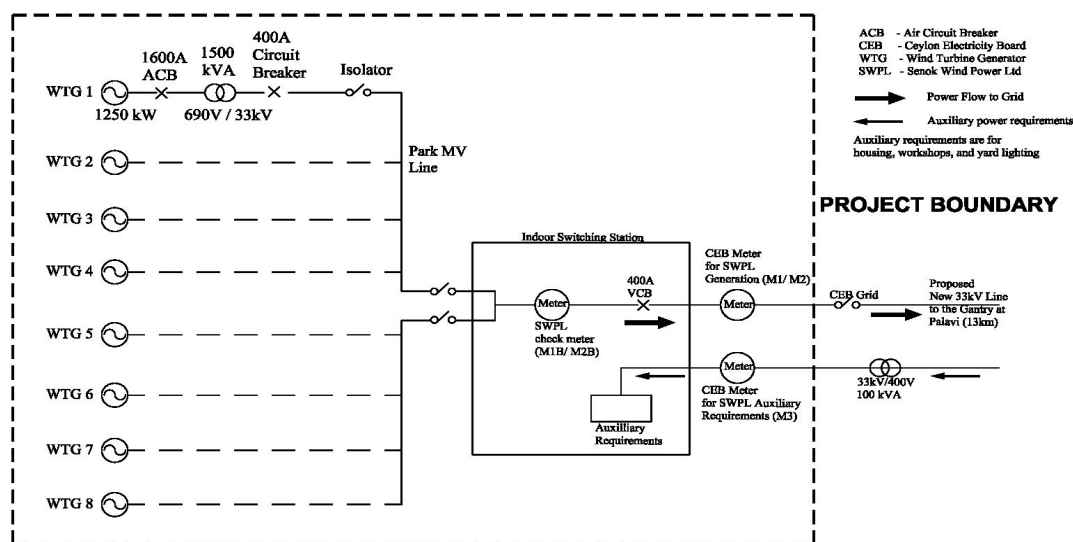
Current monitoring period: 01/01/2013 – 31/12/2013

Length of the current monitoring period: 1 year

SECTION B. Implementation of project activity

B.1. Description of implemented registered project activity

>> The project has been implemented as described below, within the demarcated project boundaries



B.2. Post registration changes**B.2.1. Temporary deviations from registered monitoring plan or applied methodology**

>> There have been no temporary deviations from registered monitoring plan or applied methodology

B.2.2. Corrections

>> There have been no corrections to the registered monitoring plan or applied methodology

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

>> There have been no permanent changes to the registered monitoring plan or applied methodology

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

>> There have been no changes to the project design of the registered project activity

B.2.5. Changes to start date of crediting period

>> There have been no changes to start date of crediting period

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

>> Not Applicable

SECTION C. Description of monitoring system

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An electricity meter is fixed at the metering point located at the interconnection point to the CEB grid. This is a requirement specified in the Small Power Purchase Agreement (SPPA) already executed between SWPL and CEB. The meter measures electricity dispatched to the grid at the project boundary. This meter is of the type and accuracy approved by CEB, and the SPPA states that it will be read by CEB once a month. This is an established practice for CEB to read the meters of all the small power producers in the country once a month. This meter reading is in two parts:

M1: Electricity exports to the project electricity system from the small scale CDM project activity

M2: Electricity imports from the project electricity system for requirements of the project activity, when the wind power plant is not in operation

Reading M1 is also be used by SWPL to prepare the monthly invoice to the purchaser, CEB for the sale of electricity.

Reading M2 is also be used by CEB to issue an invoice for the electricity purchased by the project activity, when the wind power plant is not in operation

M1 and M2 are incorporated in the same meter housing. There is a second meter located elsewhere, as described below.

M3: This meter fixed by CEB will record the electricity purchased by this small scale project activity from the local distribution line. This electricity supply is a backup to serve the project, when there is a breakdown or servicing of the equipment at the point of supply at which M1 and M2 are located.

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

Data / Parameter:	Total installed capacity
Unit:	MW
Description:	The project will have a total installed capacity of 10 MW
Source of data:	Commissioning certificate + test report issued by the CEB confirms the same
Value(s) applied:	10MW
Purpose of data:	To verify installed and operational project capacity
Additional comment:	No comments

Data / Parameter:	Grid Emission Factor
Unit:	tCO ₂ /MWh
Description:	Combined margin emission factor of national electricity grid
Source of data:	This data has been published by the Sri Lanka Sustainable Energy Authority
Value(s) applied:	0.7193
Purpose of data:	Calculation of baseline emissions
Additional comment:	The calculation of the grid emission factor is based on official data available at the time of this monitoring report

D.2. Data and parameters monitored

Data / Parameter:	EG_y
Unit:	KWh
Description:	Quantity of net electricity supplied to the grid in a year
Measured/ Calculated / Default:	Calculated
Source of data:	Gross energy sales to Ceylon Electricity Board and Energy purchased from Ceylon Electricity Board
Value(s) of monitored parameter:	28,270,032 kWh
Monitoring equipment:	Meters (M1, M2, M3) at the project site used for: M1: Gross Energy Sales to Ceylon Electricity Board M2: Energy supply to the project by Ceylon Electricity Board when plant is not operational for project activity M3: Energy Import from local distribution for project activity
Measuring/ Reading/ Recording frequency:	Monthly
Calculation method (if applicable):	Net electricity supplied = Gross Energy sales – Energy supply from CEB – Energy import for project

QA/QC procedures:	QA/QC procedures for 1. Gross Energy Sales to Ceylon Electricity Board and 2. Energy purchased from Ceylon Electricity Board, shall apply to this parameter as well. These will be cross- checked against invoices.
Purpose of data:	Calculation of baseline emissions
Additional comment:	This parameter will be calculated based on the two 1. Gross Energy Sales to Ceylon Electricity Board and 2. Energy purchased from Ceylon Electricity Board. Hence as done for these two parameters, the same will apply for this parameter as well.

Data / Parameter:	EG_{imp,y}
Unit:	KWh
Description:	Energy purchased from Ceylon Electricity Board
Measured/ Calculated / Default:	Measured
Source of data:	Monthly electricity bills based on energy meter installed at the point of purchase of electricity from a local distribution line and the Energy Import from the local distribution
Value(s) of monitored parameter:	68,796 kWh
Monitoring equipment:	<p>(1) The energy meter at the Point of supply has been installed and maintained by Ceylon Electricity Board in accordance with the Small Power Purchase Agreement. The import readings of the main meter (M2) will be read by CEB every month, in the presence of a SWPL representative.</p> <p>(2) The energy meter at the point of purchase has been installed by the Ceylon Electricity Board. This meter (M3) will be read by CEB every month. The meter will continuously monitor and a monthly recording.</p>
Measuring/ Reading/ Recording frequency:	Monthly
Calculation method (if applicable):	Not applicable
QA/QC procedures:	<p>The meter readings are checked against the monthly invoice issued to CEB. The accuracy of the meters is declared to be 1.0%.</p> <p>If at any time there is a concern about the accuracy, SWPL or CEB can request a test.</p>
Purpose of data:	Calculation of baseline emissions
Additional comment:	No comments

Data / Parameter:	EG_{exp,y}
Unit:	KWh

Description:	Gross Energy Sales to Ceylon Electricity Board
Measured/ Calculated / Default:	Measured
Source of data:	Export register of the energy meter installed at the Point of Supply (POS) to the national grid
Value(s) of monitored parameter:	28,338,828 kWh
Monitoring equipment:	The energy meter (M1) has been installed and maintained by Ceylon Electricity Board in accordance with the Small Power Purchase Agreement. The export reading of the main meter (M1) is read by CEB every month, in the presence of the SWPL representative.
Measuring/ Reading/ Recording frequency:	Monthly
Calculation method (if applicable):	Not applicable
QA/QC procedures:	The meter readings are checked against the monthly invoice issued to CEB. The accuracy of the meter installed is 1.0%. The meter accuracy will be tested if at any time there is a concern about the accuracy, SWPL or CEB can request a test.
Purpose of data:	Calculation of baseline emissions
Additional comment:	No comments

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

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Calculation of Operating Margin (OM)

1. Percentage share of electricity generation of low cost/must run power plants is less than 50% of total electricity system. Therefore simple operating margin method is used

2. There are three options based on the data availability. Option A should be used if data is available. Option

$$EF_{\text{grd,OMsimple},y} = \frac{\sum_{i,m} FC_{i,m,y} \cdot NCV_{i,y} \cdot EF_{\text{CO2},i,y}}{\sum_m EG_{m,y}}$$

Year	2010	2011	2012
Emissions from Power Plants (t-CO ₂)	3,333,783.67	3,992,728.26	4,677,909.35
Net Electricity Generation (GWh)	4,798.06	5,542.52	6,722.15
Annual average	0.6948	0.7204	0.6959
Three-year weighted average	0.6920	0.7046	0.7035

Calculation of Build Margin (BM)

The set of power capacity additions in the electricity system that comprise 20% of the system generation (in GWh) and that have been built most recently.

	Unit	2010	2011	2012
Power Plant Emissions of power plants considered for the BM	tonnes of CO ₂	1,229,927.98	1,757,862.64	2,573,387.75
Power Plant Generation of power plants considered for the BM	GWh	2,114.85	2,291.89	3,357.53
Build margin emission factor	t-CO₂/MWh	0.5816	0.7670	0.7665

Calculation of Combined Margin (CM)

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

Combined Margin	Unit	2012
For solar, wind Projects	t-CO₂/MWh	0.7193

Weighting factor	W_{OM}	W_{BM}
For solar, wind Projects	0.75	0.25

Therefore, baseline emission reductions

= Combined margin emission factor x annual net energy delivered to the project electricity system

= 0.7193 (t-CO₂/MWh) x 28.27 (GWh/year) x 1000 (MWh/GWh)

= 20,334 t-CO₂/year

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

>> Project emissions for the proposed project activity are zero

E.3. Calculation of leakage

>> Leakage is to be considered if the energy generating equipment is transferred from another activity, leakage is to be considered. Since there is no such transfer in the project activity, leakage will therefore be zero

E.4. Summary of calculation of emission reductions or net anthropogenic 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)	Emission reductions or net anthropogenic GHG removals by sinks (t CO ₂ e)
Total	20,334	0	0	20,334

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 CO₂e)	18,768	20,334

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

>> Since the commissioning of this wind power project, there was a 300 MW coal power project incorporated into the national grid. This has caused the emissions to significantly increase, as this is now a base load plant in Sri Lanka.

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 CO₂e)	0	20,334

Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
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		