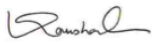




Verification and certification report form for CDM project activities

(Version 01.0)

VERIFICATION AND CERTIFICATION REPORT

Title of the project activity	Mampuri Wind Power Project
Reference number of the project activity	9074
Version number of the verification and certification report	02
Completion date of the verification and certification report	28/09/2016
Monitoring period number and duration of this monitoring period	2 nd Monitoring period From 01/01/2014 to 31/12/2015
Version number of monitoring report to which this report applies	02
Crediting period of the project activity corresponding to this monitoring period	01/01/2013 to 31/12/2022 (Fixed)
Project participant(s)	Senok Wind Power (Private) Limited Asian Development Bank, as trustee of the Future Carbon Fund ; Swedish Energy Agency
Host Party	India
Sectoral scope(s), selected methodology(ies), and where applicable, selected standardized baseline(s)	Scope 01: Energy Industries (renewable/non-renewable sources) AMS-I.D. ver. 17 - Grid connected renewable electricity generation
Estimated GHG emission reductions or net anthropogenic GHG removals for this monitoring period in the registered PDD	37,536 tCO ₂ e
Certified GHG emission reductions or net anthropogenic GHG removals for this monitoring period	32,592 tCO ₂ e
Name of DOE	KBS Certification Services Pvt. Ltd
Name, position and signature of the approver of the verification and certification report	 Kaushal Goyal

	Managing Director
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SECTION A. Executive summary

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KBS Certification Services Pvt. Ltd. has performed the second periodic verification of the CDM project 'Mampuri Wind Power Project' and UNFCCC Ref. Number 9074. The verification includes confirming the implementation of the monitoring plan of the registered PDD and the application of the monitoring methodology as per AMS I.D. "Grid Connected Renewable Electricity Generation" Version 17.A site visit was conducted to check the implementation of registered monitoring plan and verify the data submitted in the monitoring report.

Purpose:

The purpose of this verification exercise is, by review of objective evidence, to establish that:

- The project activity has been implemented and operated as per the revised approved PDD and that all physical features (technology, project equipment, and monitoring and metering equipment) of the project are in place;
- Monitoring report and other supporting documents are complete;
- The actual monitoring systems & procedures and monitoring report conforms with the requirements of the approved monitoring plan and the approved monitoring methodology;
- The data is recorded and stored as per the monitoring methodology and approved monitoring plan.

Scope:

The scope of the verification is the independent and objective review and ex post determination of the monitored reductions in GHG emission by the project activity. The verification is based on review of monitoring report, supporting information and

- (a) The registered PDD, including the monitoring plan and the corresponding validation opinion(s);
- (b) Previous verification reports, deviation requests, requests for revision of monitoring plan;
- (c) Monitoring report for the monitoring period under verification including CER calculations sheets and all supporting documents;
- (d) The applied monitoring methodology;
- (e) The applied standardized baseline (if applicable);
- (f) Relevant decisions, clarifications and guidance from the CMP and the CDM Executive Board;
- (g) All information and references relevant to the project activity's resulting in emission reductions

The project is assessed against the requirements of the Kyoto Protocol, the CDM Modalities and Procedures and related rules and guidance.

KBS has based on the recommendations in the latest version of CDM Validation and Verification Standard, employed a rule-based approach in the verification, focusing on the identification of significant reporting risks and the reliability of project monitoring.

Description of project:

The project activity is the installation of 8 numbers of 1.25 MW wind turbine generators with the total capacity of the 10 MW. The electricity generated from the project is supplied to the National grid through a Small Power Purchase Agreement (SPPA) signed with Ceylon Electricity Board (CEB). Since the electricity replaces electricity generated from grid based power plant which consist considerable amount of fossil fuel based power plant, the project reduces CO₂ emission associated with the grid based power plants.

Methodology:

KBS follows a rule based verification approach, wherein, as a first step, the contract review is undertaken as per latest version of CDM Accreditation Standard. Subsequently, after the contract is signed, the monitoring report of the project activity is made publicly available at UNFCCC website as per CDM procedures. A desk review of the project documentation is undertaken, which is followed by an onsite visit by the members of verification team in accordance with the latest version of CDM AS. The verification protocol is filled by the verification team that is based on standard auditing practices and version 9 of CDM VVS, to capture the assessment of applicable CDM requirements viz., version 9 of CDM Project Standard, revised approved PDD, applied methodology/ies, applied standardized baseline and/or tools and recent decisions. The verification protocol provides transparent means to record the observations and compliances by the

verification team members and the nonconformities, if any. The verification protocol is an internal document, and is available on request. Following are the major milestones for the verification under consideration.

Verification contract	28/05/2014
Publication of MR	07/04/2016
On site verification	05/07/2016
Draft Verification Report	19/09/2016
Final Verification Report	28/09/2016

Conclusion:

The post registration changes identified during the verification is correctly addressed and revised PDD is submitted. From the verification assessment, it is confirmed that the project activity has been implemented and operated as per the revised PDD and that all physical features (technology, project equipment, and monitoring and metering equipment) of the project are in place. All the monitoring systems & procedures and monitoring report confirms the requirements of the approved monitoring plan and the approved monitoring methodology. Based on the information seen and evaluated we confirm that the implementation of the project has resulted in 32,592 tCO₂e emission reductions during period 01/01/2014 – 31/12/2015.

SECTION B. Verification team, technical reviewer and approver

B.1. Verification team member

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk review	On-site inspection	Interview(s)	Verification findings
1.	Team Leader/ Verifier/ Technical Expert	IR	Narendra Kumar	R	Central Office	x	x	x	x
2.	Verifier	IR	Sharma	Chetan Swaroop	Central Office	x			x
3	Local Expert	EI	Poddiwala	Pathmanatha	Central Office	x	x	x	

B.2. Technical reviewer and approver of the verification and certification report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer/ Manager Technical & Certification	IR	Kandari	Sanjay	Central Office
2	Authorizer	IR	Goyal	Kaushal	Central Office

SECTION C. Application of materiality**C.1. Consideration of materiality in planning the verification**

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	Error in Data Transfer from invoices (which includes energy meter reading) to ER Spread sheet. The measurements are conducted with the aid of calibrated equipment's and errors could result from human errors during the information transfer from the source to emission reduction sheet.	High	Possible human error during transfer of data to ER spreadsheets and MR	Verification Team checked all the invoices and compared with ER spread sheet to check for any material error during data transfer.

C.2. Consideration of materiality in conducting the verification

The prescribed thresholds for materiality, as per §361 of VVS V9.

Prescribed range of ERs/annum	500,000+	300,000+ to 500,000	300,000	SSC PAs	MSC PAs
Prescribed Threshold	0.5%	1.0%	2.0%	5.0%	10.0%

The identified/selected materiality threshold for the project activity under current monitoring period is 5% as project activity is small scale project activity.

	MR Version (Draft)	MR Version (Final)
Emission reductions/annum	32,592t CO ₂ e	32,592t CO ₂ e
Identified Threshold	5.0%	5%

The impact of errors observed during verification for each monitoring parameter on the emission reduction calculation is provided below:

Parameter	Verification approach	Error identified	Corrected	Extrapolated error for population size (Qty and %)	Within Threshold
EG _y	Complete data check	No error identified	NA	NA	Yes
EG _{imp,y}	Complete data check	No error identified	NA	NA	Yes
EG _{exp,y}	Complete data check	No error identified	NA	NA	Yes

SECTION D. Means of verification**D.1. Desk review**

A desk review is undertaken, involving but not limited to,

- A review of the data and information presented to verify their completeness;
- A review of the monitoring plan and monitoring methodology, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures;
- An evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions.

The list of documents reviewed is included in the section 'Appendix 3' of this report.

D.2. On-site inspection

Duration of on-site inspection: 05/07/2016				
No.	Activity performed on-site	Site location	Date	Team member
1.	Implementation and Operation of the CDM project activity based on registered Monitoring Plan and physical features of the project activity as per registered PDD	Mampuri village, Puttalam District, North Western Province, Sri Lanka	05/07/2016	Narendra Kumar R Pathmanatha Poddiwala
2.	Information flows for generating, aggregating and reporting the monitoring parameters			
3.	Competency of the operating personnel, monitoring personnel and calibrating agencies			
4.	Data collection procedures			
5.	Calibration performance and monitoring practices followed for monitoring equipment's used in the project activity			
6.	Quality Control and Quality Assurance procedures against the approved monitoring plan			
7.	Calculation and assumptions made in determining the GHG data and emission reductions			
8.	Compliance with CDM criterion and relevant guidance with respect to monitoring plan			
9.	Level of accuracy (Materiality) of the monitoring activity			

D.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Moraes	Rozanne	General Manager, SWPL	05/07/2016	<ul style="list-style-type: none"> - General aspects of the project - Changes since validation / previous verification - Remaining issues from validation/ previous verification - Quality management system - Involved personnel and responsibilities - Training and practice of the operational personnel - Implementation of the monitoring plan - Monitoring data management - Data analysis - Issues in the MR - ER calculation 	Narendra Kumar R PathmanathaPoddiwala
2	Alwis	Rajika	Manager, SWPL	05/07/2016		
3	K	Chandra Kanth	Plant supervisor	05/07/2016		

D.4. Sampling approach

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No parameter is monitored through sampling approach.

D.5. Clarification requests, corrective action requests and forward action requests raised

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
Compliance of the monitoring report with the monitoring report form	-	-	-
Compliance of the project implementation with the registered PDD	1	-	-
Post-registration changes	1	-	-
Compliance of the monitoring plan with the monitoring methodology including applicable tool and standardized baseline	-	-	-
Compliance of monitoring activities with the registered monitoring plan	1	1	-
Compliance with the calibration frequency requirements for measuring instruments	-	1	-
Assessment of data and calculation of emission reductions or net removals	-	1	-
Project proponents	-	1	-
Total	3	4	-

SECTION E. Verification findings**E.1. Compliance of the monitoring report with the monitoring report form**

Means of verification	Verification team checked the monitoring report with latest version of MR available in the UNFCCC website (ie, version 5.1)/9/ and "Instructions for filling out the monitoring report form" mentioned as attachment to Monitoring report form (version 05.1).
Findings	No finding
Conclusion	Verification team confirms that final monitoring report is completed using the latest valid version of the applicable monitoring report form/9/.

E.2. Remaining forward action requests from validation and/or previous verification

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Verification team checked validation report/4/ and previous verification report (From 1st periodic verification)/5/. The FAR raised during validation was closed in the first verification. No FAR is raised during the first verification.

E.3. Compliance of the project implementation with the registered project design document

Means of verification	<p>The project activity comprises 8 WTGs of 1.25 MW each of Suzlon S-64 make aggregating to a capacity of 10 MW. All the WTGs of the project activity got commissioned on 06/05/2010 and the dates of commissioning were verified from the commissioning certificate provided by CEB/13/. The WTGs have been in operation during the current monitoring period in compliance with the description provided in the registered PDD/3/.</p> <p>The entire project WTGs contain a unique location identification number as mentioned in Section A.2 of the MR/1/, verified from the respective Project handing over checklist. The location numbers are associated with the geo-coordinates of the individual WTG. The information related to commissioning of WTGs were checked against the respective commissioning certificates/13/ issued by Ceylon Electricity Board (CEB) and found in order. The WTG rated capacity, location/identification number, make, meter serial number and make etc. were verified from the name plates and technical specification/14/ and found to be consistent. The electricity generated from the project is fed into the regional grid/15/. The electricity produced is measured by the main meter owned by CEB located in the metering yard at the project site.</p> <p>However, there is a change in monitoring setup during the monitoring period which is not in line with the registered monitoring plan. Hence, PP has submitted revised PDD (version 12 dated 03/09/2016) for approval of post registration change. Please refer PRC validation report for detailed assessment of the change.</p>
Findings	CL-01 is raised and closed successfully
Conclusion	<p>The implementation and operation of the project activity has been assessed against the registered & revised PDD.</p> <ul style="list-style-type: none"> a) The project activity consist of 8 Wind Turbine Generators of 1.25 MW commissioned on 06/05/2010 in Mampuri verified from the commissioning certificate/13/ and during the on-site assessment. b) The implementation is in line with the registered PDD c) There is no deviation or changes from the description in the registered PDD in the current monitoring period. d) There is change in project monitoring plan from the registered PDD. Hence, PRC for change in project monitoring plan is sought. e) The verification team reviewed the revised PDD (version 12 dated 03/09/2016), including the monitoring plan and the corresponding PRC validation report, the applied monitoring methodology, relevant decisions from the CMP and the CDM EB and found that the MR for this monitoring period is line with all the above mentioned documents

E.4. Post-registration changes**E.4.1. Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline**

No temporary deviation from registered monitoring plan or monitoring methodology is sought.

E.4.2. Corrections

No correction in the PDD is sought since registration of the project activity.

E.4.3. Changes to the start date of the crediting period

No change in start date of crediting period is sought.

E.4.4. Inclusion of a monitoring plan to a registered project activity

Not applicable as the PP provided the monitoring plan in registered PDD itself.

E.4.5. Permanent changes from registered monitoring plan, monitoring methodology or standardized baseline

The following change from the registered monitoring plan is observed during verification:

As per registered PDD, the import of electricity is measured from M2 and M3. However, during the monitoring period the M3 is removed and the total import electricity is measured only from M2.

CL-02 is raised in this regard. Hence PP has submitted the revised PDD (version 12 dated 03/09/2016) reflecting the above changes. From site visit and from verification of PPA, it is found that the energy meters are not in the control of PP but in the control of CEB. So, the change in the metering set up is not in the purview of PP and it is done by CEB. Hence, the change is in line with para 5 (c) of Appendix of Project Standard, version 9. As per para 5 (c) of Appendix of Project Standard, no prior approval is required for the reported changes and hence the request for approval of PRC is submitted along with the request for issuance of this monitoring period. The verification team checked the same and validation assessment of the changes are provided in separate PRC validation report. Verification team found that the changes & reporting are in line with the requirement of section 13.8.3.4 of Project standard, version 9. Hence, verification team accepts the changes reported in the revised PDD. CL-02 is closed successfully.

E.4.6. Changes to the project design of a registered project activity

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No change in project design of the registered project activity is sought.

E.4.7. Types of changes specific to afforestation and reforestation project activities

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Not applicable

E.5. Compliance of monitoring plan with the monitoring methodology including applicable tool and standardized baseline

Means of verification	The monitoring parameters included in the monitoring report/1/ allow determination of proper emission reduction in the context of the project activity. This was verified through the monitoring plan in monitoring and the same was found to be in accordance with the referred applied methodology AMS 1D, Version 17/6/.
Findings	No finding
Conclusion	The monitoring plan mentioned in the MR is in line with the applied methodology AMS I.D, Version 17/6/. The monitoring mechanism is in line with the methodology

and is effective and reliable.

E.6. Compliance of monitoring activities with the registered monitoring plan

E.6.1. Data and parameters fixed ex ante or at renewal of crediting period

Means of verification	The verification team has checked the ex-ante parameters and data stated in Section D.1 of MR and compared with section B.6.2 of the revised approved PDD whether all parameters fixed ex-ante for the crediting period have been applied correctly.		
	Ex-ante Parameter	Value	Consistent with the PDD/3/& the source mentioned in it
	EF _{grid,CM,y}	0.6791 tCO ₂ /MWh	Yes
	EF _{grid,OM,y}	0.6921tCO ₂ /MWh	Yes
Findings	CAR-01 is raised and closed successfully		
Conclusion	The values of ex ante fixed parameters have been verified from the registered PDD/3/. Same has been crosschecked with the source mentioned in the PDD and found to be consistent. The verification team confirms that the values used/applied are correct and justified. Also, the ex-ante values have been correctly applied in the calculation of emission reductions.		

E.6.2. Data and parameters monitored

Means of verification	<p>The verification team has determined whether the registered monitoring plan has been properly implemented and followed by the PP that the monitoring has been carried out in accordance with the registered monitoring plan; and determined whether all parameters including project emission parameters, baseline emission parameters and leakage parameters used for emission reduction calculation stated in the registered monitoring plan are monitored or used appropriately as per the registered PDD.</p> <p>During the verification all monitoring parameters listed in Section D.2 of MR/1/ were compared with section B.7.1 of the registered PDD have been verified with regard to the:</p> <ul style="list-style-type: none"> (i) appropriateness of the applied measurement / determination method, (ii) the correctness of the values applied for ER calculation, (iii) the accuracy, and applied QA/QC measures. <p>The monitored values are assessed as follows:</p> <p>EG_y- Quantity of net electricity supplied to the grid in a year is calculated as difference between EG_{exp,y}(Gross Energy Sales to Ceylon Electricity Board) the EG_{imp,y}(Energy purchased from CEB). The monitoring procedure of EG_{exp,y} and EG_{imp,y} are given below. The calculation is verified from the emission reduction calculation sheet and found that the total value considered (ie, 47,993,127 kWh) is correct.</p> <p>EG_{imp,y}- Energy purchased from CEB is calculated from the below values:</p> <ul style="list-style-type: none"> (1) Import register of the energy meter installed at the Point of Supply (POS) (M2) to the national grid and (2) Energy meter installed at the point of purchase of electricity from a local distribution line (M3). <p>The both above readings are provided in the monthly electricity bills provide by the CEB to the PP. Verification team checked the electricity bills for all the months covering the monitoring period and confirmed that the values provided in the ER calculation sheet is correct. However, it is noticed during the December 2014, the M3 is removed and the energy purchased from CEB is based on only M2. This is confirmed by verifying the latest bills from January 2016 where the meter reading of M3 is considered as zero. This change is also reported as post registration</p>
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	<p>changes. Please PRC validation report for detailed assessment. It is also noticed that the M3 is not calibrated on annual basis. It is found that there is no calibration validity for M3 for the period from 01/01/2014 to 04/08/2014. As verified from the calibration report of 05/08/2014, the error in the M3 meter is within the permissible limit of 1%. Hence, PP added the maximum possible error of 1% to the reading of the months from January 2014 to August 2014 which is found to be in line with the requirement of project standard. Hence, the verification team accept the value considered for the ER calculation (ie, 131,173 kWh).</p> <p>EG_{exp,y}- Gross Energy Sales to Ceylon Electricity Board is measured from the Energy meter M1 (which also house energy meter M2) installed at the point of supply (POS). The electricity generated is measured continuously and recorded monthly in the Export register and the electricity sale invoices. The invoices contains the gross energy generation details which is signed by both PP and area electrical engineer of CEB. Verification team checked export register and all the monthly invoices and found that the value provided in the ER calculation sheet is correct. Verification team also checked all the calibration report and found that the energy meter M1 is calibrated annually. Hence, the verification team accepts the total value considered for the ER calculation (ie, 48,124,300 kWh).</p>
Findings	CL-03 is raised and closed successfully
Conclusion	<p>Corresponding to the §389 of VVS V9/11/, the team confirm that the monitoring has been carried out in accordance with the approved PDD/3/.</p> <p>The monitoring system is in compliance with the information flow for the parameters as mentioned in monitoring plan in revised PDD submitted for PRC validation/3/. The monitored data for the parameters has been verified by checking the procedure for information flow and found to be complete and consistent.</p>

E.6.3. Implementation of sampling plan

Means of verification	No parameter is determined by sampling procedure. Hence Not applicable
Findings	NA
Conclusion	NA

E.7. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	<p>The verification team determined whether the calibration of the measuring equipment that has an impact on the claimed emission reductions is conducted by the PP at a frequency specified in the registered monitoring plan. The calibration records were verified to check the frequency of calibration of the measuring instruments.</p> <p>The calibration details of the monitoring equipment are verified as below:</p>			
	Measuring Equipment & Sr. Number	Calibration dates/18/	Calibration validity/3/	Validity of calibration during the monitoring period.
	Energy meter M1 208307615	02/10/2013	01/10/2014	Yes
		19/09/2014	18/09/2015	
		04/09/2015	03/09/2016	
	Energy meter M2 208307615	02/10/2013	01/10/2014	Yes
		19/09/2014	18/09/2015	
		04/09/2015	03/09/2016	
	Energy Meter M3 209152126	05/08/2014	04/08/2015*	No. The calibration reports previous to 05/08/2014 are not available. However the calibration result of 05/08/2014 shows the meter error is within permissible limit. Hence, PP added the maximum possible error of 1% to the meter reading of M3 for the months until

				August 2014. This is verified and found to be acceptable.
	<p>*The energy meter M3 is removed on 31st December 2014. Hence further calibration is not necessary.</p> <p>Verification team checked all the calibration reports/20/ and found that the results of the all the calibrations are within satisfactory level. Also, it is found that the next calibrations are done before the expiry date of the previous calibrations except the M3 reading. And for the M3 readings, the error is correctly applied as it is not calibrated within one year frequency.</p>			
Findings	CAR-02 is raised and closed successfully			
Conclusion	<p>Corresponding to the § 394 of VVS V9/12/, verification team has confirms that periodic calibration was carried out for all the required monitoring equipment's that have an impact on the claimed emission reductions. The frequency of calibration is annual except for energy meters (which will be calibrated once in 1 year as per calibration validity mentioned in the calibration certificate/18/) and applied methodology/6/. The calibration delay was found in the M3 where the maximum possible error correctly applied which is in line with the Appendix of the VVS, version 9.</p>			

E.8. Assessment of data and calculation of emission reductions or net removals

E.8.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

Means of verification	<p>The verification team has checked whether calculations of baseline GHG emissions calculation have been carried out in accordance with the formulae and methods described in the registered monitoring plan.</p> <p>In detail the following has been verified:</p> <p><u>Transparency:</u> It has been checked whether the calculation of baseline emissions is fully traceable and, where used, the Excel calculation provides all calculation formulae.</p> <p><u>Parameter consistency:</u> It has been checked whether all internal and external parameters and data used for the calculation are applied consistently in the monitoring report and the calculation spreadsheet.</p> <p><u>Correctness:</u> It has been checked whether the applied formulae and methods for calculating baseline emissions are in accordance with the monitoring plan and the approved methodology.</p> <p><u>Completeness:</u> It has been checked whether all calculations are complete and without omissions</p> <p>The baseline emissions is calculated using the below formula:</p> $BE_y = EG_y * EF_{grid,CM,y}$ <p>where</p> <p>BE_y = Baseline Emissions in tCO₂e</p> <p>EG_y = Quantity of net electricity supplied to the grid</p> <p>$EF_{grid,CM,y}$ = Combined Margin Emission factor</p> <p>PP has submitted the calculation in the excel sheet/2/. The baseline calculation in the excel sheet is checked whether the calculation is in accordance with the formula given in the approved PDD/3/ and the selected methodologies/6/.</p>
Findings	
Conclusion	<p>The verification team confirms the following:</p> <ul style="list-style-type: none"> • The calculations of baseline GHG emissions have been carried out in accordance with the equations and methods described in the registered monitoring plan and applied methodology. • The emission factor applied is an ex-ante value valid for the fixed crediting period. • Any assumptions used in emission or removal calculations have been justified.

	<ul style="list-style-type: none"> • Appropriate emission factor and other reference values have been correctly applied. It can be confirmed that the baseline calculation is overall correct. • The ER calculation sheet provided is clear, transparent and the calculations provided in the sheet are reproducible. • Hence, the baseline emission reported in the monitoring report for the monitoring period (ie, BE_y = 32,592 tCO₂e) is verified to be correct
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E.8.2. Calculation of project GHG emissions or actual net GHG removals by sinks

Means of verification	As mentioned in the PDD, the project emission is zero as the wind power project does not involve in emission of any GHG gases.
Findings	No findings
Conclusion	The project emission is zero ie, PE _y = 0

E.8.3. Calculation of leakage GHG emissions

Means of verification	During the verification it has been checked whether leakage emissions have to be considered and in cases where leakage emissions have to be calculated, the respective calculation of leakage GHG emissions has been checked. As per PDD, no leakage emission is considered in the project.
Findings	No findings
Conclusion	Leakage emission is zero ie, L _y = 0

E.8.4. Summary of calculation of GHG emission reductions or net anthropogenic GHG removals by sinks

Means of verification	Section E.4 of MR demonstrate the summary of GHG emission reductions for the monitoring period and calculated according to the applied methodologies as follows: $ER_y = BE_y - PE_y - L_y$ $= 32,592 - 0 - 0 = 32,592 \text{ tCO}_2\text{e}$ The ER calculation sheet and monitoring report is verified to check the calculation.
Findings	CAR-03 is raised and closed successfully
Conclusion	The verification team confirms the following: <ul style="list-style-type: none"> • The emission reduction value reported (ie, 32,592 tCO₂e) is verified to be correct. • The summary table in the MR has been filled correctly and the values are in line with the related emissions reduction spreadsheet. • Since the monitoring period starts after 31/12/2012, the complete emission reductions are correctly reported under the respective column in the MR.

E.8.5. Comparison of actual GHG emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD

Means of verification	The verification team has checked whether the MR includes a comparison of actual values of the monitoring period with the estimations in the registered PDD/3/. Section E.5 of the MR includes a comparison of the calculated actual emission reductions with the ex-ante calculated values in the revised approved PDD	
	Emission reduction estimated as per the registered PDD/3/	Actual emission reduction achieved as per Monitoring report/1/
	37,536 t CO ₂ e	32,592t CO ₂ e
	Hence, the actual emission reduction achieved during the monitoring period is less than the estimation in the PDD.	
Findings	No finding	
Conclusion	The estimated emission reduction as per registered PDD and the actual emission reduction achieved for the monitoring period are correctly reported in the section E.5 of MR. The actual achieved emission reduction is less than the PDD estimation. Hence no justification is required.	

E.8.6. Remarks on difference from estimated value in registered PDD

Means of verification	The verification team has determined the CER achieved during this monitoring period with the estimated value and reason for increase if any.
Findings	No finding
Conclusion	The actual achieved emission reduction is less than the PDD estimation. Hence no justification is required.

E.8.7. Actual GHG emission reductions or net anthropogenic GHG removals by sinks during the first commitment period and the period from 1 January 2013 onwards

Means of verification	The verification team has determined the CER achieved during first commitment period and second commitment period
Findings	No finding
Conclusion	Since the complete monitoring period falls after the first commitment period, the complete emission reductions (32,592t CO ₂ e) are correctly reported under the respective column in the MR.

SECTION F. Internal quality control

The draft verification report prepared by team leader is reviewed by an independent technical reviewer (having competence of relevant technical area himself/herself or through an independent technical area expert) to confirm the internal procedures established by KBS are duly followed and the verification report/opinion is reached in an objective manner and complies with the applicable CDM requirements.

The independent technical reviewer may approve or reject the draft verification report. The findings may be identified even at this stage, which needs to be satisfactorily resolved, before the request for issuance is submitted to UNFCCC. The final decision is taken by the Manager Technical and Certification. The technical reviewer and Manager (Technical & Certification) can be same person.

The final decision is authorized by Managing Director, KBS once the report is approved by the Manager (Technical & Certification).

SECTION G. Verification opinion

The verification team confirms that the evidence is of sufficient quantity, appropriate quality and reliable. The reported values, notation, units and sources in the monitoring report for all the monitoring parameters have been cross checked with the emission reduction sheet and monitoring report. During the course of verification and on site visit, the data submitted by PP was cross verified with the values mentioned in the emission reduction sheet/2/ and monitoring report/1/. The procedure for data monitoring, recording, transfer and compilation was also verified and found in compliance with the monitoring plan as mentioned in the revised PDD submitted for PRC validation/3/.

Evidences (Documents/interview/site visit) referred for verification of individual monitoring parameter and fixed parameters are defined in section E.6 above. It is confirmed by the assessment team that the reported emission reductions have been conservatively calculated. A list of referred documents for verification is also included in Appendix 3 of this report.

Based on the information seen and evaluated we confirm that the implementation of the project has resulted in 32,592tCO₂e emission reductions during period 01/01/2014 – 31/12/2015.

SECTION H. Certification statement

KBS Certification Services Pvt. Ltd. has been contracted by 'Senok Wind Power (Private) Limited' to undertake independent verification and certification for the greenhouse gas (GHG) emission reductions reported from the CDM Project activity "Mampuri Wind Power Project" and UNFCCC Reference Number 9074 for the monitoring period 01/01/2015 – 31/12/2015 (including both dates) in the Monitoring Report Version 01 (first version) dated 07/04/2016.

The verification is based on the approved revised PDD and the monitoring report for this project. Our verification approach was based on the requirements as defined under the Kyoto Protocol, Marrakech accord, as well as those defined by the CDM Executive Board.

The management of the 'Senok Wind Power (Private) Limited' is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project Final Monitoring Report Version 02 dated 03/09/2016. The calculation and determination of GHG emission reductions from the project is the responsibility of the management of the 'Senok Wind Power (Private) Limited'. The development and maintenance of records and reporting procedures are in accordance with the Monitoring Report Version 02 dated 03/09/2016.

It is our responsibility to express an independent GHG verification opinion on the GHG emissions and on the calculation of GHG emission reductions from the project for the monitoring period 01/01/2014 – 31/12/2015(including both dates) based on the reported emission reductions in the Final Monitoring Report Version 02 dated 03/09/2016for the same period.

Based on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these, KBS planned and performed our work to obtain the information and explanations that we considered necessary to provide sufficient evidence for us to give reasonable assurance that this reported amount of GHG emission reductions for the period is fairly stated.

KBS confirms the following;

Reporting period: 01/01/2014 – 31/12/2015 (including both dates)

Verified and certified emission in the above reporting period:

	Amount	Unit
Baseline emissions (BE)	32,592	tCO ₂ e
Project emissions (PE)	0	tCO ₂ e
Leakage emissions (LE)	0	tCO ₂ e
Certified emission reductions (CERs)	32,592	tCO ₂ e

Appendix 1. Abbreviations

Abbreviations	Full texts
BE	Baseline Emissions
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM EB	CDM Executive Board
CEB	Ceylon Electricity Board
CERs	Certified Emission Reductions
CH ₄	Methane
CL	Clarification Request
CO ₂ e	Carbon dioxide equivalent
COP	Conference of Parties
CMP	Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol
DNA	Designated National Authority
DOE	Designated Operational Entity
EF	Emission Factor
ERPA	Emission Reduction Purchase Agreement
ERs	Emission Reductions
FAR	Forward Action Request
GHGs	Greenhouse Gas(es)
GWP	Global Warming Potential
ISO	International Organization of Standardization
IPCC	Intergovernmental Panel on Climate Change
KBS	KBS Certification Services Pvt. Ltd.
KP	Kyoto Protocol
LE	Leakage Emissions
MR	Monitoring Report
MP	Monitoring Plan
NGO	Non Governmental Organisation
OP	Operating Procedure
PE	Project Emissions
PDD	Project Design Document
PS	Project Standard
PCP	Project Cycle Procedure
SPPA	Small Power Purchase Agreement
SWPL	Senok Wind Power (Private) Limited
QA/QC	Quality Assurance/Quality Control
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation & Verification Standard
WTG	Wind Turbine Generator

Appendix 2. Competence of team members and technical reviewers

Personnel Name:		Narendra Kumar	
Qualified to work as:			
Team Leader	<input checked="" type="checkbox"/>	Technical Expert	<input checked="" type="checkbox"/>
Validator/Verifier	<input checked="" type="checkbox"/>	Financial Expert	<input checked="" type="checkbox"/>
Technical Reviewer	<input checked="" type="checkbox"/>	Local Expert	<input checked="" type="checkbox"/>

Area(s) of Technical Expertise	
Sectoral Scope	Technical Area
Energy Industries (renewable/non-renewable sources)	TA 1.1: Thermal energy generation from fossil fuels and biomass including thermalelectricity from solar
Energy industries (renewable/non-renewable sources)	TA 1.2: Energy generation from renewable energy sources
Energy Demand	TA 3.1: Energy Demand
Approved by (Manager C& T)	Akhilesh Joshi
Approval date:	16/01/2016

Personnel Name:		PathmanathaPoddiwala	
Qualified to work as:			
Team Leader	<input type="checkbox"/>	Technical Expert	<input type="checkbox"/>
Validator/Verifier	<input type="checkbox"/>	Financial Expert	<input type="checkbox"/>
Technical Reviewer	<input type="checkbox"/>	Local Expert (Srilanka)	<input checked="" type="checkbox"/>
Area(s) of Technical Expertise			
Sectoral Scope	Technical Area		
N/A	N/A		
Approved by (Manager C & T)	Mayank Kumar Jain		
Approval date:	26/06/2012		

Personnel Name:		Chetan Swaroop Sharma	
Qualified to work as:			
Team Leader	<input checked="" type="checkbox"/>	Technical Expert	<input checked="" type="checkbox"/>
Validator/Verifier	<input checked="" type="checkbox"/>	Financial Expert	<input checked="" type="checkbox"/>
Technical Reviewer	<input checked="" type="checkbox"/>	Local Expert (India)	<input checked="" type="checkbox"/>
Area(s) of Technical Expertise			
Sectoral Scope		Technical Area	
Energy industries (renewable/non-renewable sources)	TA 1.2: Energy generation from renewable energy sources		
	TA 1.1: Thermal energy generation from fossil fuels and biomass including thermal electricity from solar		
Approved by (Manager C & T)		Gagandeep Kakkar	
Approval date:		09/10/2015	

Personnel Name:		Sanjay Kandari	
Qualified to work as:			
Team Leader	<input checked="" type="checkbox"/>	Technical Expert	<input checked="" type="checkbox"/>
Validator/Verifier	<input checked="" type="checkbox"/>	Financial Expert	<input checked="" type="checkbox"/>
Technical Reviewer	<input checked="" type="checkbox"/>	Local Expert (India)	<input checked="" type="checkbox"/>
Area(s) of Technical Expertise			
Sectoral Scope		Technical Area	
Energy Industries (renewable/non-renewable sources)		TA 1.1: Thermal energy generation from fossil fuels and biomass including thermal electricity from solar	
Energy industries (renewable/non-renewable sources)		TA 1.2: Energy generation from renewable energy sources	
Energy demand		TA 3.1. Energy Demand	
Waste Handling and Disposal		TA 13.1 Waste Handling and Disposal	

	TA 13.2 Manure
Approved by (Manager C & T)	Akhilesh Joshi
Approval date:	11/12/2015

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	SWPL	Monitoring Report,	Version 01, dated 07/04/2016	SWPL
	SWPL	Monitoring Report	Version 02, dated 03/09/2016	SWPL
2	SWPL	ER Calculation Sheet	Version 01, dated 07/04/2016	SWPL
	SWPL	ER Calculation Sheet	Version 02, dated 03/09/2016	SWPL
3	SWPL	Registered PDD	Version 11, 08/12/2012	Publicly available
	SWPL	Revised PDD (Submitted for PRC validation)	Version 12, dated 03/09/2016	Publicly available
4	SGS	Validation Report	Dated 18/12/2012	Publicly available
5	KBS	Verification report of 1 st Monitoring period	Dated 03/11/2014	Publicly available
6	UNFCCC	AMS-I.D - Grid connected renewable electricity generation	Version 17	Publicly available
7	IPCC	1. 1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book 2. 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book	Web link	Publicly available
8	UNFCCC	Kyoto Protocol (1997)	Web link	Publicly available
9	UNFCCC	Monitoring Report Form (CDM-MRFORM), Version 05.1	Version 05.1	Publicly available
10	UNFCCC	CDM Project Standard	Version 9.0	Publicly available
11	UNFCCC	CDM Validation and Verification Standard	Version 09	Publicly available
12	UNFCCC	Glossary "CDM terms"	Version 08	Publicly available
13	CEB	Commissioning Certificate	Commissioning date 06/05/2010	SWPL
14	Suzlon	Technical Specification of WTG	-	SWPL
15	CEB & SWPL	Small Power Purchase Agreement (SPPA) signed between SWPL and CEB		SWPL
16	SWPL & CEB	Invoices for the electricity sale to CEB	-	SWPL
	SWPL	Export register	-	SWPL
17	CEB	Monthly electricity bill	-	SWPL
	SWPL	Electricity import register	-	SWPL

18	CEB	Calibration Certificates of energy meters	-	SWPL
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Appendix 4. Clarification requests, corrective action requests and forward action requests

Table 1. Remaining FAR from validation and/or previous verification

FAR ID	xx	Section no.	E.2	Date: DD/MM/YYYY
Description of FAR				
N/A				
Project participant response				Date: DD/MM/YYYY
Documentation provided by project participant				
DOE assessment				Date: DD/MM/YYYY

Table 2. CL from this verification

CL ID	01	Section no.	E.3	Date: 11/07/2016
Description of CL				
MR-Section A1: The commissioning date of the WTGs is mentioned as 14/05/2010. However as per the commissioning report provided by CEB, the commissioning date of WTGs is 06/05/2010. Clarify				
Project participant response				Date: 31/08/2016
The Commissioning date mentioned is as per the handover date from the WTG manufacturer to the Company. However it has been amended to reflect the date of Commissioning as confirmed by the CEB.				
Documentation provided by project participant				
Revised MR				
DOE assessment				Date: 14/09/2016
The commissioning date is corrected to 06/05/2010 which is the date when the project activity stated emission reduction. This is as per the commissioning certificate provided by the CEB. Hence OK. Finding is closed				

CL ID	02	Section no.	E.4.5	Date: 11/07/2016
Description of CL				
MR-Section D.2: Registered PDD and Monitoring report provides description about meter 3 (M3) that is used for auxiliary consumption. However during site visit it is observed that there is no M3 available in site. Clarify. The actual monitoring is not in line with the monitoring plan provided in the PDD.				
Project participant response				Date: 31/08/2016
The MR and PDD has been amended to reflect the same. As per modifications done by CEB, there is no auxiliary supply via a M3 meter.				
Documentation provided by project participant				
Revised PDD Revised MR				
DOE assessment				Date: 14/09/2016

Since the MR3 is removed during the monitoring period, the description in the PDD is now changed. PP submitted the revised PDD with the changes made as per the actual site monitoring condition. Verification team checked the revised PDD and found that the changes made in the revised PDD are done in accordance with the requirements of the project standard section 13.8.3.4.

The monitoring description in revised monitoring report also reflects the actual site condition and in line with the description of the revised PDD.

Finding is closed.

CL ID	03	Section no.	E.6.2	Date: 11/07/2016
Description of CL				
<u>MR-Section D.2:</u> It is mentioned that the backup meter (M2B) is installed to measure the electricity imported from grid ($EG_{imp,y}$). Clarify whether the backup meter installed at the main panel will record import readings also.				
Project participant response				Date: 31/08/2016
The MR and PDD has been amended to reflect the same.				
The electricity imported from the grid is not recorded at the main panel, hence the PDD has been amended accordingly.				
Documentation provided by project participant				
Revised PDD Revised MR				
DOE assessment				Date: 14/09/2016
PP submitted revised PDD as PRC, which correctly mentions that the backup meter ie, main panel will record only export and not import. This is in line with requirement of project standard, section 13.8.3.4. The same is corrected in the monitoring report.				

Table 3. CAR from this verification

CAR ID	01	Section no.	E.6.1	Date: 11/07/2016
Description of CAR				
<u>MR-Section D.1</u> Choice of data for the ex-ante parameters is not provided.				
Project participant response				Date: 31/08/2016
The choice of data for the ex-ante parameter is now provided				
Documentation provided by project participant				
Revised MR				
DOE assessment				Date: 14/09/2016
PP has now provided the choice of the data for the ex-ante parameter in section D.1 which is verified to be in line with PDD.				
Finding is closed				

CAR ID	02	Section no.	E.7	Date: 11/07/2016
Description of CAR				
<u>MR-Section D.2:</u> 1. It is mentioned that the energy meter M1 & M2 are calibrated on 05/08/2014. From verification of the calibration reports it is found that the date of calibration and error mentioned in the MR is not correct. 2. Calibration certificates for the energy meter M3 are not submitted for the calibration done on 25/07/2011, 04/09/2012 and 02/10/2013.				
Project participant response				Date: 31/08/2016
1. Calibration dates of M1 & M2 are corrected. 2. Calibration report for M3 are not available and the MR and Emissions calculation sheet has been amended to reflect the same.				
Documentation provided by project participant				
Revised MR				
DOE assessment				Date: 14/09/2016

1. The calibration details of M1 & M2 are corrected and the calibration date and the error mentioned in the MR are consistent with the respective calibration report.
2. Since, the calibration report of M3 is not available, the maximum possible error of 1% added up to the M3 readings for the calibration non-validity period. Verification team found that to be correct and conservative.
Finding is closed.

CAR ID	03	Section no.	E.8.4	Date: 11/07/2016
Description of CAR				
MR-Section E.4: The values provided for the baseline emission, project emission and emission reduction are not correct.				
Project participant response				Date: 31/08/2016
The MR has been updated accordingly.				
Documentation provided by project participant				
Revised MR.				
DOE assessment				Date: 14/09/2016
The values of baseline emission, project emission and emission reduction are corrected in the MR which is consistent with the ER calculation sheet.				
Finding is closed.				

CAR ID	04	Section no.	-	Date: 11/07/2016
Description of CAR				
MR-Appendix 1: Contact details of all the project participants are not provided				
Project participant response				Date: 31/08/2016
MR has been updated accordingly				
Documentation provided by project participant				
Revised MR				
DOE assessment				Date: 14/09/2016
The contact details of all project proponents are now provided in the Appendix 1 of MR.				
Finding is closed.				

Table 4. FAR from this verification

FAR ID	xx	Section No.		Date: DD/MM/YYYY
Description of FAR				
NA				
Project participant response				Date: DD/MM/YYYY
Documentation provided by project participant				
DOE assessment				Date: DD/MM/YYYY

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Document information

Version	Date	Description
01.0	23March 2015	Initial publication.

<i>Version</i>	<i>Date</i>	<i>Description</i>
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: project activities, verifying and certifying		