




**Verification and certification report form for  
CDM project activities  
(Version 02.1)**

**BASIC INFORMATION**

<b>Title and UNFCCC reference number of the project activity</b>	<b>Title:</b> Jbel Sendouq-Khalladi ("Khalladi") wind farm project in Morocco <b>UNFCCC reference number:</b> 9047
<b>Version number of the verification and certification report</b>	02
<b>Completion date of the verification and certification report</b>	04/05/2019
<b>Monitoring period number and duration of this monitoring period</b>	01 <sup>st</sup> periodic verification, Monitoring Period: 01/05/2014 to 30/06/2018 (including both dates)
<b>Version number of the monitoring report to which this report applies</b>	Version 2.0, dated 01/05/2019
<b>Crediting period of the project activity corresponding to this monitoring period</b>	Renewable crediting period; 01/05/2014 to 30/04/2021 (first and last day included)
<b>Project participants</b>	ACWA POWER KHALLADI S.A.
<b>Host Party</b>	Morocco
<b>Applied methodologies and standardized baselines</b>	Methodology: ACM0002 ver. 12.3.0 – "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" Standardized baseline: N/A
<b>Mandatory sectoral scopes linked to the applied methodologies</b>	Sectoral Scope1: Energy industries (Renewable - / non-renewable sources)
<b>Conditional sectoral scope(s) linked to the applied methodologies</b>	NA
<b>Estimated amount of GHG emission reductions or GHG removals for this monitoring duration in the registered PDD</b>	79,276 tCO <sub>2</sub> e <sup>1</sup>
<b>Certified amount of GHG emission reductions or GHG removals for this monitoring period</b>	45,712 tCO <sub>2</sub> e
<b>Name and UNFCCC reference number of</b>	Name: KBS Certification Services Pvt. Ltd.

<sup>1</sup> As the 1st WTG (WTG label No. V12) started electricity supplying to grid from 12/12/2017, the ex-ante GHG emission reductions have been calculated for the period from 12/12/2017 to 30/06/2018 (including both the days).

the DOE	UNFCCC reference number: E-0051
Name, position and signature of the approver of the verification and certification report	 Kaushal Goyal Managing Director

**SECTION A. Executive summary**

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The objective of the project, the Jbel Sendouq-Khalladi ("Khalladi") Wind Farm Project in Morocco, is to generate electricity using state-of-the-art wind power generation technology and to supply electricity to the national grid under a Power Purchase Agreement (PPA) signed with ONEE /07/.

The proposed project is located in the Tangier-Tetouan Region, Fahs Anjra Province, Morocco. 40 wind turbines with a nominal unit capacity of 3 MW installed, providing a total capacity of 120 MW. The commissioning of all the WTGs of the project activity corresponding to the project full capacity i.e. 120 MW has been completed on 29/06/2018 with the commissioning of the last turbine (WTG label No. V26) as checked from commissioning certificate /05/. The project is owned by ACWA POWER KHALLADI S.A.

For the current monitoring period, the generated electricity is sold to ONEE as evidenced from electricity bills/protocol/09/ and the electricity sale invoice /10/.

KBS has been commissioned by "ACWA POWER KHALLADI S.A" to perform an independent verification of its registered CDM project, "Jbel Sendouq-Khalladi ("Khalladi") wind farm project in Morocco", UNFCCC ref. no. 9047 for the reported GHG emission reductions for the given 1<sup>st</sup> monitoring period 01/05/2014 to 30/06/2018 (both dates included). The CDM projects must undergo independent third party verification and certification of emission reductions as the basis for issuance of Certified Emission Reductions (CERs).

The objectives of this verification exercise are, by review of objective evidence, to establish that:

- The project activity has been implemented and operated as per the registered 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 registered monitoring plan and the approved monitoring methodology;
- The data is recorded and stored as per the monitoring methodology and registered 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 (if applicable);
- c) Monitoring report for the monitoring period under verification including CER calculations sheets and all supporting documents;
- d) The applied monitoring methodology;
- e) Relevant decisions, clarifications and guidance from the CMP and the CDM Executive Board;
- f) All information and references relevant to the project activity's resulting in emission reductions
- g) 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 for project activity, employed a rule-based approach in the verification, focusing on the identification of significant reporting risks and the reliability of project monitoring.

### **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 02 of CDM VVS for project activities, to capture the assessment of applicable CDM requirements viz., version 02 of CDM Project Standard for project activities, registered PDD, applied methodology, 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	29/03/2019
Publication of MR	03/04/2019
On site verification	26/04/2019
Draft Verification Report	03/05/2019
Final Verification Report	04/05/2019

KBS Certification Services Pvt. Ltd. confirms that the monitoring system is in place and the emission reductions are calculated without material misstatements.

Based on the information seen and evaluated we confirm that the implementation of the project has resulted in 45,712 tCO<sub>2</sub>e (round down) emission reductions during period 01/05/2014 to 30/06/2018 (Including both the days).

## **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/document review	On-site inspection	Interviews	Verification findings
1.	Team Leader, Technical Expert (TA 1.2)	IR	Sharma	Chetan Swaroop	Central Office	✓	✓	✓	✓
2.	Local Expert	EI	Sefian	Hind	Central Office	✓	✓	✓	

### **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	IR	Badaya	Rohit	Central office

	(TA 1.2)				
2.	Manager (Technical & Certification)	IR	Badaya	Rohit	Central office
3.	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.	The data monitoring is done through electronic meters and errors can be perceived during the information transfer from the source to the emission reduction sheet.	High	<p>There is only one monitoring parameter i.e. <math>EG_{\text{facility},y}</math> (Quantity of net electricity generation supplied by the Project activity to the grid).</p> <p>The monitoring parameter (<math>EG_{\text{facility},y}</math>) is calculated by subtracting the "Imported electricity from grid" from "Exported electricity to grid". The electricity exported to grid and Imported from grid are monitored through the bi-directional electronic meters.</p> <p>This monitoring parameter (<math>EG_{\text{facility},y}</math>) is used for the calculation of baseline emissions.</p>	The complete dataset (Monthly electricity exported and imported to/from grid /09/) for the project activity was checked and it can be confirmed that the values are consistent with their sources.

### C.2. Consideration of materiality in conducting the verification

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The prescribed thresholds for materiality, as per §330 of "CDM validation and verification standard for project activities" Version 02.0/22/.

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 2% as project activity is a large scale project activity.

	MR Version (Draft) /01/	MR Version (Final) /02/
Emission reductions/annum	35,354 tCO <sub>2</sub>	45,712 tCO <sub>2</sub>
Identified Threshold	2%	2%

During the verification, the emission reduction has been increased because of the raised CAR-03. Refer Appendix 4 of this report for more details.

Verification team has checked 100% values of monthly data for the monitoring period /09/. All ex-ante parameters were directly cross-checked from the registered PDD /21/. There was no gap identified in the values of ex-ante parameters.

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

Parameter	Population size	Sample size	Type of error identified	Impact on ERs	
				Extrapolated for population size (Qty and %)	Within Threshold
EG <sub>facility,y</sub>	07 (for monthly electricity exported to grid)  And  07 (for monthly electricity imported from grid)	07 (for monthly electricity exported to grid)  And  07 (for monthly electricity imported from grid)	No error identified	Not applicable. The whole data was checked.	Yes

The complete dataset for the project activity was checked and it can be confirmed that the values are consistent with their sources. The assessment team confirms that the reported emission reductions are free from material errors, omissions or misstatements.

## SECTION D. Means of verification

### D.1. Desk/document review

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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: 26/04/2019				
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	<b>Project site</b> (The proposed project is located in the Tangier-Tetouan Region, Fahs Anjra Province, Morocco)	26/04/2019	Mr. Chetan Swaroop Sharma (Team Leader, Technical Expert (TA 1.2))  Ms. Hind Sefian (Local Expert)
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.	Boughlala	Amal	ACWA POWER KHALLADI S.A.	26/04/2019	General aspects of the project, Changes since validation, Quality management system, Monitoring data management, Data analysis, Implementation of the monitoring plan, GHG emission reduction calculation, Involved personnel and responsibilities, Training and practice of the operational personnel, Monitoring data management, Maintenance	Mr. Chetan Swaroop Sharma (Team Leader, Technical Expert (TA 1.2))  Ms. Hind Sefian (Local Expert)
2.	Belmakki	Amine	NOMAC			

**D.4. Sampling approach**

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No Sampling Approach is used during verification.

**D.5. Clarification requests (CLs), corrective action requests (CARs) and forward action requests (FARs) raised**

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
Compliance of the monitoring report with the monitoring report form	01	01	00
Compliance of the project implementation and operation with the registered PDD	00	01	00
Post-registration changes	00	00	00
Compliance of the registered monitoring plan with the methodologies including applicable tools and standardized baselines	00	00	00
Compliance of monitoring activities with the registered monitoring plan	00	01	00
Compliance with the calibration frequency requirements for measuring instruments	00	00	00
Assessment of data and calculation of emission reductions	00	00	00

or net removals			
Assessment of reported sustainable development co-benefits	00	00	00
Global stakeholder consultation	00	00	00
Others (please specify)	00	00	00
<b>Total</b>	<b>01</b>	<b>03</b>	<b>00</b>

## SECTION E. Verification findings

### E.1. Compliance of the monitoring report with the monitoring report form

<b>Means of verification</b>	Verification team checked the monitoring report/02/ with "Instructions for filling out the monitoring report form" mentioned as attachment to Monitoring report form (version 06).
<b>Findings</b>	CL-01 and CAR-01 have been raised in this regard and successfully closed. Refer Appendix 4 of this report for more details.
<b>Conclusion</b>	In accordance with §352 of CDM validation and verification standard for project activities, Version 02.0 /22/, verification team confirms that final monitoring report /02/ is completed using the latest valid version of the applicable monitoring report form /23/.

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

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The current verification is for the 1<sup>st</sup> monitoring period of the project activity. All raised CARs and CLs were successfully closed during Validation. There is no pending FAR from Validation.

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

<b>Means of verification</b>	<p>The objective of the project, the Jbel Sendouq-Khalladi ("Khalladi") Wind Farm Project in Morocco, is to generate electricity using state-of-the-art wind power generation technology and to supply electricity to the national grid under a Power Purchase Agreement (PPA) signed with ONEE /07/.</p> <p>The proposed project is located in the Tangier-Tetouan Region, Fahs Anjra Province, Morocco. 40 wind turbines with a nominal unit capacity of 3 MW installed, providing a total capacity of 120 MW. The commissioning of all the WTGs of the project activity corresponding to the project full capacity i.e. 120 MW has been completed on 29/06/2018 with the commissioning of the last turbine (WTG label No. V26) as checked from commissioning certificate /05/. Verification team has checked the commissioning of all the WTGs of the project activity as per the documents /05/ and found consistent with the MR /02/.</p> <p>The project is owned by ACWA POWER KHALLADI S.A. and operational since 12/12/2017 (the earliest date of electricity supplying to grid from 1<sup>st</sup> WTG i.e. WTG V12) as verified from documents /05/ and /26/. For the current monitoring period, the generated electricity is sold to ONEE as evidenced from electricity bills/protocol/09/ and the electricity sale invoice /10/.</p> <p>The proposed project is located in the Tangier-Tetouan Region, Fahs Anjra Province, Morocco. The Geo-coordinates of all the 40 wind turbines (As presented in the section A.2 of the MR /02/) have been checked during the site visit and also from the web link /24/ and found OK.</p> <p>Based on visual inspection, interview and document review, the verification team confirms that all physical features of the proposed CDM project activity including technology, data collection systems and storage systems have been implemented in accordance with the registered PDD /21/ for the project activity.</p> <p>The team has conducted a site visit on 26/04/2019 to confirm the implementation and operation of the project activity and found that all the Wind turbines have been installed and operating as per the registered PDD /21/. The technical specification</p>
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	<p>of the project activity is verified from the site visit and the supporting documents /15/.</p> <p>The wind turbines used in the project activity are supplied by the Danish manufacturer VESTAS as verified from the site visit, technical specification of the turbine/15/. The main technical characteristics of the project's turbines are summarized below:</p> <ul style="list-style-type: none"> <li>– <b>40 V90-3MW turbines;</b></li> <li>– <b>Hub height of 80 m;</b></li> <li>– <b>Rotor diameter of 90 m;</b></li> <li>– <b>Blade length of 44 m. Blades are made out of a glass fibre/carbon spar with glass fibre airfoil shells; – Turbines benefit from the latest Supervisory Control and Data Acquisition (SCADA) system for modern wind power plants: VestasOnline® Business.</b></li> </ul> <p>The verification team, based on the site visit and document review, was able to conclude that the project activity has been commissioned and the implemented project activity's physical features viz MW capacity, make, model and its operation are as per the registered PDD /21/.</p> <p>An electrical substation has been built in order to elevate the medium voltage collected at the wind farm to very high voltage, before being distributed to the ONEE substation. 33 kV underground electrical lines connect the turbines to each other and send the energy produced to the electrical substation. The wind farm is connected to two 225KV step-up transformers which is then, via two 225KV circuits on the ONEE grid, connected to 1) the ONEE substation west of Tetouan City and 2) the ONEE substation at Melloussa. On each of the 225KV side of the two transformers on the Project site there are two main bidirectional electricity PP's meters (M1 and M3, class 0.2s). Two additional ONEE bidirectional meters are also placed on the two electricity lines (M2 and M4, class 0.2s). The same is verified during the site visit.</p> <p>The accuracy class of the Main and Check energy meters is 0.2s as verified during the site visit which is in compliance with the registered PDD /21/.</p> <p>There is no event or situation occurred during this monitoring period which has impacted the applicability of methodology/19/.</p> <p>The allocation of the responsibilities is followed as described in the registered PDD /21/. Routines for the archiving of data are defined and documented. Calculations, laid down in the monitoring report are in line with registered PDD /21/.</p> <p>Interviews (refer section D.3 of this report) were carried out with the plant personals during the site visit to verify the actual monitoring system practiced by PP. It was found that the plant personals are well aware of their roles &amp; responsibilities. The actual monitoring system presently practiced complies with the monitoring plan provided in the registered PDD/21/ and the monitoring methodology/19/.</p> <p>All the data have been measured as specified in the registered PDD /21/. The monitored data are archived partly in physical (hard copy) and partly in electronic form. The archived data will be kept for the whole crediting period and 2 years after the crediting period.</p> <p>Monitoring procedure of GHG data is found sufficient and in accordance with the procedures stipulated under the registered monitoring plan/21/.</p>
<b>Findings</b>	CAR-02 has been in this regard and successfully closed. Refer Appendix 4 of this report for more details.
<b>Conclusion</b>	<p>As per para 354 and 355 of CDM VVS for project activity version 02.0/22/, the verification team confirms that:</p> <ul style="list-style-type: none"> <li>a) The project activity is implemented as per the registered PDD/21/.</li> <li>b) The actual operation of the proposed CDM project activity is in line to the</li> </ul>

	<p>registered PDD/21/.</p> <p>c) It has reviewed the registered PDD /21/ including the monitoring plan, the applied monitoring methodology, relevant decisions from the CMP and the CDM EB and found that the Final MR /02/ for this monitoring period is in line with all the above mentioned documents.</p>
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#### **E.4. Post-registration changes**

##### **E.4.1. Temporary deviations from the registered monitoring plan, applied methodologies or applied standardized baselines**

>> There is no temporary deviation to be submitted with this request for issuance. Therefore, this section is not applicable.

##### **E.4.2. Corrections**

>> There is no correction to be submitted with this request for issuance. Therefore, this section is not applicable.

##### **E.4.3. Change to the start date of the crediting period of the project activity**

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There is no change to the start date of the crediting period in this monitoring period.

##### **E.4.4. Inclusion of a monitoring plan**

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There is no inclusion of a monitoring plan to the registered project activity that was not included at registration. Hence, this section is not applicable.

##### **E.4.5. Permanent changes from registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines or other applied standards or tools**

>> There is no permanent changes to be submitted with this request for issuance. Therefore, this section is not applicable.

##### **E.4.6. Changes to the project design**

>> There is no changes to the project design to be submitted with this request for issuance. Therefore, this section is not applicable.

##### **E.4.7. Changes specific to afforestation and reforestation project activities**

>> NA

#### **E.5. Compliance of the registered monitoring plan with the methodology including applicable tools and standardized baselines**

<b>Means of verification</b>	<p>The verification team was able to confirm that the monitoring plan contained in registered PDD/21/ and MR/02/ is in accordance with the approved large scale methodology applied for the project activity i.e. "ACM0002 ver. 12.3.0 - Consolidated baseline methodology for grid-connected electricity generation from renewable sources"/19/.</p> <p>All parameters stated in the monitoring plan /21/ and the applied methodology /19/ has been fulfilled in the current monitoring period. The discussion regarding each parameter has been elaborated in the further sections (E.6.1 and E.6.2) of this Verification report.</p>
<b>Findings</b>	No finding has been raised.
<b>Conclusion</b>	As per para 357 and 358 of CDM VVS for project activity version 02.0 /22/, In the opinion of the verification team the monitoring plan of the registered PDD /21/ complies with the monitoring requirement of the applied approved large scale

methodology "ACM0002 ver. 12.3.0 - Consolidated baseline methodology for grid-connected electricity generation from renewable sources" /19/ in the context of the project activity.

## 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		
	Ex-ante Parameter:	FC <sub>i,m,y</sub> (Unit: T)  (Amount of fossil fuel type i consumed by power plant / unit m feeding the grid, in year y)
	Value(s) applied):	See Annex 3 of the registered PDD /21/  Source: ONEE official data /21/
	Source and Verification of the source:	This is used for the grid emission factor calculation/Baseline emission calculation.  The values have been correctly taken as per the registered PDD /21/ and Hence accepted by the verification team.
	Ex-ante Parameter:	EG <sub>m,y</sub> (Unit: MWh)  (Net electricity generated by power plant/unit m in year y)
	Value(s) applied):	See Annex 3 of the registered PDD /21/  Source: ONEE official data /21/
	Source and Verification of the source:	This is used for the grid emission factor calculation/Baseline emission calculation.  The values have been correctly taken as per the registered PDD /21/ and Hence accepted by the verification team.
	Ex-ante Parameter:	NCV <sub>i</sub> (Unit: GJ/t)  (Net calorific value (energy content) per mass or volume unit of fuel i)
	Value(s) applied):	See Annex 3 of the registered PDD /21/  Source: Specific NCVs power plant values when available Official Statistical book Annuaire des Statistiques - 2007 2006 IPCC Guidelines for National Greenhouse Gas Inventories /21/
	Source and Verification of the source:	This is used for the grid emission factor calculation/Baseline emission calculation.  The values have been correctly taken as per the registered PDD /21/ and Hence accepted by the verification team.

	Ex-ante Parameter:	EF <sub>CO<sub>2</sub>,i</sub> (Unit: tCO <sub>2</sub> /TJ)  (Carbon emission factor per unit of energy of the fuel i)
	Value(s) applied):	See Annex 3 of the registered PDD /21/  Source: 2006 IPCC Guidelines for National Greenhouse Gas Inventories /21/
	Source and Verification of the source:	This is used for the grid emission factor calculation/Baseline emission calculation.  The values have been correctly taken as per the registered PDD /21/ and Hence accepted by the verification team.
<b>Findings</b>	No finding has been raised.	
<b>Conclusion</b>	As per para 360 to 361 of CDM VVS for project activity version 02.0 /22/, the verification team confirms that the value used for grid emission factor (Fixed ex-ante for the 1 <sup>st</sup> crediting period) for calculation of emission reduction is consistent with registered PDD/21/ and correctly applied in MR /02/ and emission reduction spread sheet /04/ and justified.	

### E.6.2. Data and parameters monitored

Means of verification	Verification team confirms through on-site verification and from the document review, the actual monitoring system complies with the monitoring plan mentioned in the registered validated PDD/21/. According to the monitoring plan in the registered PDD, there is only 1 monitoring parameter. During the verification, the monitoring parameter of the registered monitoring plan /21/ has been verified with regard to the appropriateness of the verification method; the correctness of the values applied for ER calculation, the accuracy and applied QA/QC measures. The monitoring parameter has been measured / determined without material misstatements and is in line with all applicable standards and relevant requirements.														
	The assessment for the monitoring parameter is given below:														
	Monitoring parameter:														
	Monitoring Parameter Requirement	Assessment/ Observation by the DOE													
	Data / Parameter: (as in monitoring plan of PDD):	EG <sub>facility,y</sub> (Quantity of net electricity generation supplied by the Project activity to the grid)													
Value(s) of monitored parameter:	<table><tr><th>Period</th><th>EG<sub>facility,y</sub> (MWh)</th></tr><tr><td>01/05/2014 to 31/12/2014</td><td>0</td></tr><tr><td>01/01/2015 to 31/12/2015</td><td>0</td></tr><tr><td>01/01/2016 to 31/12/2016</td><td>0</td></tr><tr><td>01/01/2017 to 31/12/2017</td><td>1,225.35<sup>2</sup></td></tr><tr><td>01/01/2018 to 30/06/2018</td><td>92,794.57</td></tr><tr><td>TOTAL</td><td>94,019.92</td></tr></table>	Period	EG <sub>facility,y</sub> (MWh)	01/05/2014 to 31/12/2014	0	01/01/2015 to 31/12/2015	0	01/01/2016 to 31/12/2016	0	01/01/2017 to 31/12/2017	1,225.35 <sup>2</sup>	01/01/2018 to 30/06/2018	92,794.57	TOTAL	94,019.92
Period	EG <sub>facility,y</sub> (MWh)														
01/05/2014 to 31/12/2014	0														
01/01/2015 to 31/12/2015	0														
01/01/2016 to 31/12/2016	0														
01/01/2017 to 31/12/2017	1,225.35 <sup>2</sup>														
01/01/2018 to 30/06/2018	92,794.57														
TOTAL	94,019.92														
Measuring frequency/Time Interval:	Data is measured continuously by bidirectional main and check energy meters installed on each line out of two lines and monthly recording by the electricity board (ONEE) in the presence of the PP.														

<sup>2</sup> As the 1<sup>st</sup> Wind turbine (WTG V12) has started supplying electricity to grid from 12/12/2017, there was no electricity generation for the year 2014, 2015 and 2016.

		The net electricity supplied to the grid is monthly calculated by subtracting the “electricity import from the grid” from “electricity export to the grid”. The monitoring procedure was discussed during the site visit and found inline with the registered CDM-PDD /21/.																																																		
	Reporting frequency:	Monthly recording by the electricity board (ONEE) in the presence of the PP.																																																		
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology ? (Yes / No)	Yes																																																		
	Type of monitoring equipment:	<p>Data is measured continuously by bidirectional main and check energy meters installed on each line out of two lines.</p> <p>All the WTGs of the project activity are connected to the sub-station through two lines. There is a pair of Main and check energy meters at each of the two lines. These meters are specific only to the project activity WTGs.</p> <p>The Calibration detail of the installed meters is given below:</p> <table border="1"> <thead> <tr> <th></th><th>Meter 1</th><th>Meter 2</th><th>Meter 3</th><th>Meter 4</th></tr> </thead> <tbody> <tr> <td><b>Type</b></td><td>Main Meter</td><td>Check Meter</td><td>Main Meter</td><td>Check Meter</td></tr> <tr> <td><b>Make</b></td><td>Schlumberger</td><td>Schlumberger</td><td>Schlumberger</td><td>Schlumberger</td></tr> <tr> <td><b>Model</b></td><td>SL7000</td><td>SL7000</td><td>SL7000</td><td>SL7000</td></tr> <tr> <td><b>Accuracy Class</b></td><td>0.2s</td><td>0.2s</td><td>0.2s</td><td>0.2s</td></tr> <tr> <td><b>Serial No.</b></td><td>02826265</td><td>02826266</td><td>02826267</td><td>02826268</td></tr> <tr> <td><b>Calibration Date</b></td><td>25/11/17</td><td>25/11/17</td><td>25/11/17</td><td>25/11/17</td></tr> <tr> <td><b>Calibration Agency</b></td><td colspan="4">National Office of Electricity and Drinking Water (ONEE)</td></tr> <tr> <td><b>Calibration Frequency</b></td><td>Annual</td><td>Annual</td><td>Annual</td><td>Annual</td></tr> <tr> <td><b>Validity</b></td><td>One year</td><td>One year</td><td>One year</td><td>One year</td></tr> </tbody> </table>		Meter 1	Meter 2	Meter 3	Meter 4	<b>Type</b>	Main Meter	Check Meter	Main Meter	Check Meter	<b>Make</b>	Schlumberger	Schlumberger	Schlumberger	Schlumberger	<b>Model</b>	SL7000	SL7000	SL7000	SL7000	<b>Accuracy Class</b>	0.2s	0.2s	0.2s	0.2s	<b>Serial No.</b>	02826265	02826266	02826267	02826268	<b>Calibration Date</b>	25/11/17	25/11/17	25/11/17	25/11/17	<b>Calibration Agency</b>	National Office of Electricity and Drinking Water (ONEE)				<b>Calibration Frequency</b>	Annual	Annual	Annual	Annual	<b>Validity</b>	One year	One year	One year	One year
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<b>Calibration Frequency</b>	Annual	Annual	Annual	Annual																																																
<b>Validity</b>	One year	One year	One year	One year																																																
	Is accuracy of the monitoring equipment as stated in the PDD?	The accuracy class of the Main and Check energy meters is 0.2s as verified during the site visit which is in compliance with the registered PDD /21/.																																																		
	Calibration frequency /interval:	<p>Annual</p> <p>Calibration frequency is in compliance with the registered PDD /21/.</p>																																																		
	Is the calibration interval in line with the monitoring plan of the PDD?	Yes																																																		
	Company performing the calibration:	The Calibration of all the meters have been done by the government authority (ONEE) as verified from the calibration certificates /06/ and hence accepted.																																																		
	Did	Yes, the calibration certificates /06/ are verified and found that the error in																																																		

	calibration confirm proper functioning of monitoring equipment? (Yes / No):	calibration test is less than accuracy class i.e. 0.2s.
	Is (are) calibration(s) valid for the whole reporting period?	Yes. Refer section E.7 of this report for calibration details.
	If applicable, has the reported data been cross-checked with other available data?	<p>The verification team has verified all the electricity bills/protocols /09/ for this monitoring period and confirms that the same values are applied in the ER calculation sheet /04/.</p> <p>Further the values have been cross-checked from the invoices /10/ and found consistent.</p>
	How were the values in the monitoring report verified?	<p>The electricity export/import data is monthly monitored (through bi-directional energy meters installed at substation) by ONEE in presence of the PP however the ending date of this monitoring period was 05/06/2018 which was not consistent with the monitoring cycle. CAR-03 has been raised in this regard and successfully closed. Refer Appendix 4 of this report for more details. Now PP has extended the monitoring period till 30/06/2018.</p> <p>The extension of the monitoring period till 30/06/2018 is acceptable as per the requirement of EB 41, Para 78 “78. <i>The Board decided to allow DOEs to request a change in the dates of a monitoring period undergoing verification, provided the change is the result of the corrective action request raised by the DOE during the verification process.</i>”. Now the revised monitoring period to be verified is 01/05/2014 – 30/06/2018 (including both the days) which is in compliance with the monthly monitoring cycle.</p> <p>The verification team has verified all the electricity bills/protocols /09/ for this monitoring period and confirms that the same values are applied in the ER calculation sheet /04/.</p>
	Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes
	In case only partial data	NA

	are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	
<b>Findings</b>	CAR-03 has been raised in this regard and successfully closed. Please refer Appendix-4 of this report for more details.	
<b>Conclusion</b>	As per para 360 to 361 of CDM VVS for project activities version 02.0 /22/, the assessment team concludes that the monitoring of the project activity is being carried out in accordance with the registered PDD monitoring plan /21/ and meets the requirements of the applied monitoring methodology /19/. The adequacy and compliance of the registered monitoring plan /21/ in the MR can be concluded to be conforming. The flow of the information from the point of generation up to reporting has been reviewed and found to be correct and appropriate meeting the requirements of the applied methodology.	

### E.6.3. Implementation of sampling plan

<b>Means of verification</b>	No sampling plan applied for the project activity. Therefore, this section is not applicable.
<b>Findings</b>	-
<b>Conclusion</b>	Not applicable.

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

<b>Means of verification</b>	<p>Verification team has checked whether the calibration of the measuring equipment that has an impact on the claimed GHG emission reductions is conducted by the PP at a frequency specified in the monitoring plan/21/.</p> <p>There is only one monitoring parameter 1. EG<sub>facility,y</sub></p> <p>The calibration details of the monitoring equipments corresponding to monitoring parameter is given in the below table.</p> <table border="1"> <thead> <tr> <th></th><th colspan="2">Line 1</th><th colspan="2">Line 2</th></tr> <tr> <th>Monitoring Equipment:</th><th>Main Meter</th><th>Check Meter</th><th>Main Meter</th><th>Check Meter</th></tr> </thead> <tbody> <tr> <th>Function:</th><td colspan="4">Measuring energy export to grid and import from grid</td></tr> <tr> <th>Monitored parameter:</th><td>EG<sub>facility,y</sub></td><td>EG<sub>facility,y</sub></td><td>EG<sub>facility,y</sub></td><td>EG<sub>facility,y</sub></td></tr> <tr> <th>Type:</th><td>Energy meter</td><td>Energy meter</td><td>Energy meter</td><td>Energy meter</td></tr> <tr> <th>Serial number:</th><td>2826265</td><td>2826266</td><td>2826267</td><td>2826268</td></tr> </tbody> </table>					Line 1		Line 2		Monitoring Equipment:	Main Meter	Check Meter	Main Meter	Check Meter	Function:	Measuring energy export to grid and import from grid				Monitored parameter:	EG <sub>facility,y</sub>	EG <sub>facility,y</sub>	EG <sub>facility,y</sub>	EG <sub>facility,y</sub>	Type:	Energy meter	Energy meter	Energy meter	Energy meter	Serial number:	2826265	2826266	2826267	2826268
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Type:	Energy meter	Energy meter	Energy meter	Energy meter																														
Serial number:	2826265	2826266	2826267	2826268																														

	<b>Accuracy:</b>	0.2s	0.2s	0.2s	0.2s
	<b>Frequency of calibration:</b>	Annual	Annual	Annual	Annual
	<b>Last calibration date:</b>	25/11/2017	25/11/2017	25/11/2017	25/11/2017
	<b>Name of the certifier</b>	Government authority (ONEE)	Government authority (ONEE)	Government authority (ONEE)	Government authority (ONEE)
<p>Calibration frequency: Once in a year as per registered PDD monitoring plan /21/.</p> <p>The Calibration performance was checked from the calibration reports /06/ and found that the meters were within the respective accuracy level as verified from the calibration results.</p> <p>As the 1st Wind turbine (WTG V12) started electricity supplying to grid on 12/12/2017 /05/, there was no electricity generation for the year 2014, 2015 and 2016. The calibration validity of the energy meters/06/ during this monitoring period were verified from the corresponding calibration certificates/06/. No delay in calibration was observed.</p> <p>The monitoring equipment's have been installed in the project activity according to registered monitoring plan /21/.</p> <p>Please refer individual monitoring parameter table (Under section E.6.2 of this report) for the calibration details.</p>					
<b>Findings</b>	No finding has been raised.				
<b>Conclusion</b>	As per para 365 to 370 of CDM VVS for project activity version 02.0 /22/, the Verification team confirms that the calibration frequency is in line with the monitoring plan mentioned in the registered PDD /21/.				

## 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

<b>Means of verification</b>	<p>The calculation, applied formulae and the method for calculation of baseline emissions are in accordance with the registered PDD /21/ and are in line with the requirements of the applied methodology (ACM0002 Version 12.3.0 /19/). The formulae and the methods referred in the MR /02/ and the emission reduction calculation spread sheet/04/ for estimation of emission reduction complies with the corresponding formulae and methods in the registered PDD /21/.</p> <p>The ex-ante and validated fixed value of grid emission factor i.e. The combined margin of the emission factor, (0.4862 tCO<sub>2</sub>e/MWh, registered PDD /21/) is taken into account for the calculation of baseline emissions.</p> <p>The verification team has checked all the monthly electricity bills/protocol/09/ applicable for the WTGs and invoices/10/ applicable for the monitoring period and found the monitoring parameter is monitored and recorded as per the monitoring plan in the registered PDD/21/. The verification team has crosschecked the CER sheet/04/ and monitoring report data with the monthly electricity bills/protocol/09/ applicable for the WTGs and invoices/10/ and found all the input values are matching.</p> <p>The electricity export/import data is monthly monitored (through bi-directional energy meters installed at substation) by ONEE in presence of the PP however the ending date of this monitoring period is 05/06/2018 which is not consistent with the monitoring cycle. CAR-03 has been raised in this regard and successfully closed. Refer Appendix 4 of this report for more details. Now PP has extended the monitoring period till 30/06/2018.</p> <p>The extension of the monitoring period till 30/06/2018 is acceptable as per the</p>
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requirement of EB 41, Para 78 “78. The Board decided to allow DOEs to request a change in the dates of a monitoring period undergoing verification, provided the change is the result of the corrective action request raised by the DOE during the verification process.”. Now the revised monitoring period to be verified is 01/05/2014 – 30/06/2018 (including both the days) which is in compliance with the monthly monitoring cycle.

The verification team has verified all the electricity bills/protocols /09/ for this monitoring period and confirms that the same values are applied in the ER calculation sheet /04/.

As per registered PDD /21/, the baseline emissions of the project is calculated from net electricity supplied to grid ( $EG_{PJ,y}$ ) and combined margin emission factor of grid ( $EF_{grid,CM,y}$ ) as follows:

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

Where

$EG_{PJ,y}$  = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh)

$EF_{grid,CM,y}$  = Combined margin CO2 emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system” (tCO2/MWh).

The electricity export and import values are verified from document /09/, and found that the value considered for the ER calculation is correct. Also the Electricity exported and imported to grid are cross verified from the monthly invoices /10/.

The calculation is provided in the emission reduction calculation sheet. The ER sheet is verified and found that the calculation of  $EG_{PJ,y}$  is correct.

Parameter	Description	Value for this Monitoring period
$EG_{PJ,y}$	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y	2017: 1,225.35 MWh  2018: 92,794.57 MWh
$EF_{grid,CM,y}$	Combined margin CO2 emission factor for grid connected power generation in year y calculated using the latest version of “Tool to calculate the emission factor for an electricity system”	0.4862 tCO <sub>2</sub> /MWh
$BE_y$	Baseline emissions in year y (tCO <sub>2e</sub> /y)	45,712 tCO <sub>2</sub>

Hence baseline emission for this monitoring period is 45,712 tCO<sub>2e</sub> (Rounded down)

#### Findings

No finding has been raised.

#### Conclusion

As per para 372 and 373 of CDM VVS for project activity version 02.0 /22/, Verification team concludes that the calculation provided in the monitoring report /02/ and emission reduction spread sheet /04/ are complete and reflect all the requirements of the registered monitoring plan/21/ and:

- All the monitored data pertaining to baseline calculation as required by the registered monitoring plan was available to PP, the same has been verified by the verification team.
- All the formula used for the baseline, was in line to the registered monitored plan /21/.
- The ex-ante emission factors correctly sourced from the registered PDD /21/ and was found to be appropriate and justified.

**E.8.2. Calculation of project GHG emissions or actual net anthropogenic GHG removals by sinks**

<b>Means of verification</b>	As per registered PDD /21/, project emission has been considered as zero.  Hence the project emission is zero ( $PE_y = 0$ ).
<b>Findings</b>	No finding has been raised.
<b>Conclusion</b>	Hence the project emission is zero ( $PE_y = 0$ ).

**E.8.3. Calculation of leakage GHG emissions**

<b>Means of verification</b>	Not applicable in accordance with registered PDD /21/.
<b>Findings</b>	N/A
<b>Conclusion</b>	N/A

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

<b>Means of verification</b>	<p>As per registered PDD/21/, the emission reductions <math>ER_y</math> by the project activity during the monitoring period is equal to the baseline emission less project emission and leakage emission.</p> $ER_y = BE_y - PE_y - L_y$ <p>Since project emission and leakage are zero</p> $ER_y = BE_y = 45,712 \text{ tCO}_2$ <p>The calculation provided in the ER sheet and MR was assessed appropriate by the verification team.</p> <p>The verification team confirms that a complete set of data for this monitoring period is available to verify the emission reduction calculation, and the same was found in accordance with the registered PDD/21/.</p> <p>No lack of evidence and missing data were detected during this monitoring period. All values as per the monitoring plan were crosschecked by the verification team against basic monitored data and the calculations were found to be correct.</p> <p>The verification team confirms that the emission reductions are real and measurable.</p> <p>No reporting risks have been identified for the data reported.</p> <p>All the monitored data are archived in electronic and paper form. The data will be kept for the whole crediting period and 2 years after the last crediting period thereby meeting the requirement of the PDD. The verification team has checked and confirms that all the meters are calibrated. Thus conclude no material risks in the claimed emission reduction for the applied period</p>
<b>Findings</b>	No finding has been raised.
<b>Conclusion</b>	<p>As per para 372 and 373 of CDM VVS for project activity version 02.0 /22/, Verification team concludes that the calculation provided in the monitoring report /02/, and emission reduction spread sheet/04/ are complete and reflect all the requirements of the monitoring plan/21/ and:</p> <ol style="list-style-type: none"> <li>All the monitored data as required by the registered monitoring plan /21/ was available to PP, the same has been verified by the verification team.</li> <li>Formula used for the baseline was in line to the registered monitored plan/21/.</li> <li>The ex-ante emission factors correctly sourced from the registered PDD /21/ and was found to be appropriate and justified.</li> </ol>

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

<b>Means of verification</b>	The MR includes a comparison of the calculated actual emission reductions with
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	the ex-ante calculated values in the registered PDD /21/.	
	<b>Estimated Reduction as per Registered/Approved PDD:</b>	79,276 tCO <sub>2</sub> e /18/
	<b>Actual Reduction for the Monitoring Period</b>	45,712 tCO <sub>2</sub> e/02/
	In summary, verification team confirms that the actual emission reduction is lower than the estimate of the registered PDD /21/ for the current monitoring period.	
<b>Findings</b>	No finding has been raised.	
<b>Conclusion</b>	In summary, verification team confirms that the actual emission reduction is lower than the estimate of the registered PDD /21/ for the current monitoring period. Verification team confirms that the comparison for the estimated and actual emission reduction for this monitoring period is correctly calculated and reported.	

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

<b>Means of verification</b>	The actual emission reductions are lower than the estimated emission reductions based on the registered PDD /21/.
<b>Findings</b>	No finding has been raised.
<b>Conclusion</b>	<p>The ERs achieved during the monitoring period are lower than the ERs estimated in the registered PDD /21/. Since the 1<sup>st</sup> WTG started electricity generation from 12/12/2017 and later on remaining turbines were installed one by one and the last turbine was commissioned on 29/06/2018. Hence the ex-ante emission reduction was calculated for the period from 12/12/2017 to 30/06/2018.</p> <p>Even though the full capacity of the project activity has been installed within this monitoring period but full capacity of the project i.e. 120 MW was not operating for the whole monitoring period and the WTGs were commissioned one by one during this monitoring period. Hence the Electricity Generation was lower than the estimated.</p>

#### 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

<b>Means of verification</b>	The complete monitoring period falls after 01 January 2013 and therefore the total ERs during the monitoring period i.e. 01/05/2014 to 30/06/2018 pertains to the 2 <sup>nd</sup> commitment period. Total 45,712 tCO <sub>2</sub> e CERs verified during this monitoring period i.e. 01/05/2014 to 30/06/2018 (including both the days).
<b>Findings</b>	Nil
<b>Conclusion</b>	Total 45,712 tCO <sub>2</sub> e CERs verified pertains to the period from 1 January 2013 onwards.

#### E.9. Assessment of reported sustainable development co-benefits

<b>Means of verification</b>	Not applicable for the project activity
<b>Findings</b>	Not applicable for the project activity
<b>Conclusion</b>	Not applicable for the project activity

#### E.10. Global stakeholder consultation

<b>Means of verification</b>	The Monitoring report for this monitoring period was made available on ( <a href="https://cdm.unfccc.int/Projects/DB/ERM-CVS1356088459.66/view">https://cdm.unfccc.int/Projects/DB/ERM-CVS1356088459.66/view</a> ) for comments in accordance with the CDM PCP for project activities, version 02.
<b>Findings</b>	Nil
<b>Conclusion</b>	No comments received.

### 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 T&C can be same person.

The final decision is authorized by Managing Director, KBS once the report is approved by the Manager T&C.

## 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 and monitoring report. The procedure for data monitoring, recording, transfer and compilation was also verified and found in compliance with the monitoring plan as mentioned in the registered PDD /21/.

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 45,712 tCO<sub>2e</sub> emission reductions during period from 01/05/2014 to 30/06/2018 (Including both the days).

## SECTION H. Certification statement

>>

KBS Certification Services Pvt. Ltd. has been contracted by “ACWA POWER KHALLADI S.A.” to undertake independent verification and certification for the greenhouse gas (GHG) emission reductions reported from the “Jbel Sendouq-Khalladi (“Khalladi”) wind farm project in Morocco”, UNFCCC Ref. No. 9047 for the monitoring period 01/05/2014 to 30/06/2018 in the Monitoring Report Version 1.0 (first version) dated 02/04/2019 /01/.

The verification is based on the registered PDD /21/ 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 “ACWA POWER KHALLADI S.A.” 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 2.0 dated 01/05/2019/02/. The calculation and determination of GHG emission reductions from the project is the responsibility of the management of the ACWA POWER KHALLADI S.A. The development and maintenance of records and reporting procedures are in accordance with the Monitoring Report Version 2.0 dated 01/05/2019/02/.

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 period 01/05/2014 to 30/06/2018 based on the reported emission reductions in the Final Monitoring Report Version 2.0 dated 01/05/2019 /02/ for 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:** From 01/05/2014 to 30/06/2018 (Including both the days)

**Verified and certified emission in the above reporting period:**

	Amount	Unit
Baseline emissions (BE)	45,712	tCO <sub>2e</sub>
Project emissions (PE)	0	tCO <sub>2e</sub>
Leakage emissions (LE)	0	tCO <sub>2e</sub>
Total CERs (01/05/2014 to 30/06/2018)	45,712	tCO <sub>2e</sub>

## Appendix 1. Abbreviations

Abbreviations	Full texts
BE	Baseline Emission
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM EB	CDM Executive Board
CDM PCP	Clean Development Mechanism Project Cycle Procedure for Project Activities
CDM PS	Clean Development Mechanism Project Standard for Project Activities
CDM VVS	CDM Validation and Verification Standard for Project Activities
CER	Certified Emission Reduction(s)
CL	Clarification request
CO <sub>2</sub>	Carbon dioxide
CO <sub>2</sub> e	Carbon dioxide equivalent
CP	Commitment Period
DOE	Designated Operational Entity
EB	Executive Board
EF	Emission factor
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
MP	Monitoring Plan
MR	Monitoring Report
MW	Mega Watt
MWh	Mega Watt hour
ONEE	National Office of Electricity and Drinking Water
PDD	Project Design Document
PP	Project Participant
PPA	Power Purchase Agreement
UNFCCC	United Nations Framework Convention on Climate Change
WTG	Wind Turbo Generator

## Appendix 2. Competence of team members and technical reviewers

<b>Personnel Name:</b>		<b>Chetan Swaroop Sharma</b>	
<b>Qualified to work as:</b>			
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"/>
<b>Area(s) of Technical Expertise</b>			
<b>Sectoral Scope</b>	<b>Technical Area</b>		
Energy industries (renewable/non-renewable sources)	TA 1.1: Thermal energy generation from fossil fuels and biomass including thermal electricity from solar		
	TA 1.2: Energy generation from renewable energy sources		
Energy Demand	TA 3.1. Energy demand		
Waste handling and disposal	TA 13.1. Solid waste and wastewater		
	TA 13.2. Manure		

Approved by (Manager C & T)	Sanjay Kandari
Approval date:	01/05/2017

<b>Personnel Name:</b>		<b>Hind Sefian</b>	
<b>Qualified to work as:</b>			
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 (Morocco)	<input checked="" type="checkbox"/>
<b>Area(s) of Technical Expertise</b>			
<b>Sectoral Scope</b>		<b>Technical Area</b>	
Not applicable		Not applicable	
Approved by (Manager C & T)		Sanjay Kandari	
Approval date:		18/04/2019	

<b>Personnel Name:</b>		<b>Rohit Badaya</b>	
<b>Qualified to work as:</b>			
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"/>
<b>Area(s) of Technical Expertise</b>			
<b>Sectoral Scope</b>		<b>Technical Area</b>	
Energy industries (renewable/non-renewable sources)	TA 1.1: Thermal energy generation from fossil fuels and biomass including thermal electricity from solar		
	TA 1.2: Energy generation from renewable energy sources		
Energy demand	TA 3.1. Energy Demand		
Waste Handling and Disposal	TA 13.1 Solid waste and wastewater TA 13.2 Manure		
Approved By	Manager Competency & Training		
Approval date:	16/10/2017		

### Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
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1.	ACWA POWER KHALLAD I S.A.	Webhosted monitoring report	Version 1.0, dated 02/04/2019 (published)	ACWA POWER KHALLADI S.A.
2.	ACWA POWER KHALLAD I S.A.	Final Monitoring report	Version 2.0, dated 01/05/2019 (final)	ACWA POWER KHALLADI S.A.
3.	ACWA POWER KHALLAD I S.A.	Draft ER calculation sheet	Corresponding to hosted MR version 1.0	ACWA POWER KHALLADI S.A.
4.	ACWA POWER KHALLAD I S.A.	Final ER calculation sheet	Corresponding to final MR version 2.0	ACWA POWER KHALLADI S.A.
5.	ACWA POWER KHALLAD I S.A., VESTAS MAROC SARL	Commissioning certificates of the project Wind turbines	-	ACWA POWER KHALLADI S.A.
6.	National Office of Electricity and Drinking Water (ONEE)	Calibrations of the energy meters covering the monitoring period	-	ACWA POWER KHALLADI S.A.
7.	ONEE	PPA Power Purchase agreement	26/02/2016	ACWA POWER KHALLADI S.A.
8.	The Minister of Energy, Mines, Water and the Environm ent	Provisional authorization for the project activity	08/07/2013	ACWA POWER KHALLADI S.A.
9.	ONEE	Electricity protocols (basis of electricity generated) covering the monitoring period.	-	ACWA POWER KHALLADI S.A.
10.	ACWA POWER KHALLAD I S.A.	Monthly electricity invoices corresponding to the monitoring period	-	ACWA POWER KHALLADI S.A.
11.	ACWA POWER KHALLAD I S.A.	Organization structure	-	ACWA POWER KHALLADI S.A.
12.	ACWA POWER KHALLAD I S.A., VESTAS MAROC SARL	Service & Availability Agreement with VESTAS MAROC SARL	01/09/2015	ACWA POWER KHALLADI S.A.

13.	ACWA POWER KHALLAD I S.A., NOMAC Sahara S.A.R.L. A .U.	Operation and Maintenance Agreement with NOMAC Sahara S.A.R.L. A .U.	18 <sup>th</sup> February 2016	ACWA POWER KHALLADI S.A.
14.	ACWA POWER KHALLAD I S.A.	Single line diagram	-	ACWA POWER KHALLADI S.A.
15.	Vestas Wind Systems A/S	Manufacturer specifications of Wind turbine implemented under the project activity	-	ACWA POWER KHALLADI S.A.
16.	KBS Certificatio n Services Pvt. Ltd.	Photographic evidence taken during site visit	-	KBS Certificatio n Services Pvt. Ltd.
17.	ACWA POWER KHALLAD I S.A.	Training records	-	ACWA POWER KHALLADI S.A.
18.	ACWA POWER KHALLAD I S.A.	Daily electricity generation data for the month of June 2018	-	ACWA POWER KHALLADI S.A.
19.	UNFCCC	Approved monitoring methodology: ACM0002 ver. 12.3.0 - Consolidated baseline methodology for grid-connected electricity generation from renewable sources	-	UNFCCC
20.	UNFCCC	Guidelines for Application of materiality in verifications version 2.0	-	Publicly Available
21.	UNFCCC/ PP	Registered Documents ( <a href="https://cdm.unfccc.int/Projects/DB/ERM-CVS1356088459.66/view">https://cdm.unfccc.int/Projects/DB/ERM-CVS1356088459.66/view</a> ): 1. Registered PDD- Version 3.4, Dated 26/12/2012 2. Validation Report prepared by ERM Certification and Verification Services – Version 02, Dated 27/12/2012	-	UNFCCC
22.	UNFCCC	CDM Validation and Verification Standard for project activities, Version 02.0 CDM Project Standard for project activities, Version 02.0 CDM project cycle procedure for project activities, Version 02.0	-	UNFCCC
23.	UNFCCC	CDM-MR-FORM - Monitoring report form for CDM project activity, Version 06.0: <a href="https://cdm.unfccc.int/Reference/PDDs_Forms/index.html">https://cdm.unfccc.int/Reference/PDDs_Forms/index.html</a>	-	UNFCCC
24.	web	Websites referred: <a href="http://www.itouchmap.com/latlong.html">http://www.itouchmap.com/latlong.html</a> (Latitude- Longitude location finder)	-	web
25.	UNFCCC	Glossary “CDM terms”	Version 09.1	Publically available
26.	ACWA POWER KHALLAD I S.A.,	Start date of operation of the first turbine (WTG V12) of the project activity: 1. Service inspection form for WTG V12 completely	-	ACWA POWER KHALLADI S.A.



Vestas Maroc Sarl, ONEE	filled on 17/10/2017 by Vestas Maroc Sarl. 2. Mechanical Completion on 20/11/2017 for WTG V12 by Vestas Maroc Sarl. 3. Email communication between ACWA Power Khalladi and ONEE (Government authority) for the communication to start the electricity supplying to grid.		
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## Appendix 4. Clarification requests, corrective action requests and forward action requests

**Table 1. Remaining FAR from validation and/or previous verifications**

No pending FAR from validation

<b>FAR ID</b>	xx	<b>Section no.</b>		<b>Date:</b> DD/MM/YYYY
<b>Description of FAR</b>				
<b>Project participant response</b>				<b>Date:</b> DD/MM/YYYY
<b>Documentation provided by project participant</b>				
<b>DOE assessment</b>				<b>Date:</b> DD/MM/YYYY

**Table 2. CL from this verification**

<b>CL ID</b>	01	<b>Section no.</b>	E.1	<b>Date:</b> 29/04/2019
<b>Description of CL</b>				
Since the project activity under verification is already registered as CDM project as "Project 9047: Jbel Sendouq-Khalladi ("Khalladi") wind farm project in Morocco" hence the sentence under section A.4 of the hosted MR /01/ i.e. "As required by the approved methodology ACM0002 (Version 12.3.0), the project additionality will be demonstrated using the latest version of the "Tool for the Demonstration and assessment of Additionality" is not clear.				
<b>Project participant response</b>				<b>Date:</b> 29/04/2019
Correction has been done in the Monitoring report				
<b>Documentation provided by project participant</b>				
Revised MR				
<b>DOE assessment</b>				<b>Date:</b> 01/05/2019
The sentence under section A.4 of the revised MR /02/ i.e. "As required by the approved methodology ACM0002 (Version 12.3.0), the project additionality will be demonstrated using the latest version of the "Tool for the Demonstration and assessment of Additionality" has been deleted by PP. Correction has found OK, hence this CL is closed.				

**Table 3. CAR from this verification**

<b>CAR ID</b>	01	<b>Section no.</b>	E.1	<b>Date:</b> 29/04/2019
<b>Description of CAR</b>				
The Geo coordinates of the turbines given in the section A.2 of the hosted MR are in UTM - Universal Transverse Mercator. PP need to provide the Geo coordinates in Degree minute and seconds so that it can be verified.				
<b>Project participant response</b>				<b>Date:</b> 29/04/2019
The coordinates was sent on 29/04/2019				
<b>Documentation provided by project participant</b>				
Revised MR				
<b>DOE assessment</b>				<b>Date:</b> 01/05/2019
The Geo coordinates in Degree minute and seconds have been provided in the revised MR /02/ which have been verified during on-site visit and also from the website /24/ and found OK. Hence this CAR is closed.				

<b>CAR ID</b>	02	<b>Section no.</b>	E.3	<b>Date:</b> 29/04/2019
<b>Description of CAR</b>				
<p>From the review of the Commissioning certificates, verification team has found that first wind turbine was commissioned on 06/02/2018 (i.e. WTG Level V06, V07, V08, V09, V11, V12 and V13) however section A.1 and B.1 of the hosted MR /01/ mentions commissioning of 1<sup>st</sup> turbine on 12/12/2017.</p>				
<b>Project participant response</b>				<b>Date:</b> 29/04/2019
<p>The Electricity supplied to the grid is not related with the takeovers of turbines. Commissioning Certificates are the documents where O&amp;M contractors (Vestas Maroc Sarl) assume full responsibility for the turbines (as indicate on the contract with Vestas).</p> <p>The document sent on 26th April 2019 during the audit, where vestas approve the operation of the machines ("service inspection form") is signed by Vestas, for doing them conformity for started with the operation of turbine.</p> <p>Also the email received form the ONEE where authorized ACWA Power Khalladi S.A. to start with the exportation of electricity to grid.</p>				
<b>Documentation provided by project participant</b>				
<p>"Service inspection form" for V12 completely filled on 17/10/2017.</p> <p>Mechanical Completion on 20/11/2017 for V12 by Vestas Marco Sarl dated 28/11/2017.</p> <p>Email where ONEE approve the exportation of electricity to grid</p> <p>O&amp;M Contract with Vestas</p>				
<b>DOE assessment</b>				<b>Date:</b> 01/05/2019
<p>The justification provided by the PP seems convincing. Verification team has checked the Service inspection form for WTG V12 completely filled on 17/10/2017 /26/, Mechanical Completion on 20/11/2017 for WTG V12/26/, email communication between ACWA Power Khalladi and ONEE (Government authority) for the communication to start the electricity supplying to grid /26/ and found PP's justification convincing i.e. 1<sup>st</sup> turbine started electricity supplying to grid from 12/12/2017. Also Verification team has checked the same during the site visit interview. Further Verification team has also verified the monthly protocol /09/ for the electricity supplying to grid for the month of December to cross check the same and found OK. Hence this CAR is closed.</p>				

<b>CAR ID</b>	03	<b>Section no.</b>	E.6.2	<b>Date:</b> 29/04/2019
<b>Description of CAR</b>				
<p>The electricity export/import data is monthly monitored (through bi-directional energy meters installed at substation) by ONEE in presence of the PP (found from the review of MR /01/ and also site visit interview) however the ending date of this monitoring period is 05/06/2018 which is not consistent with the monitoring cycle.</p> <p>PP need to clarify how the ER is calculated conservatively for the month June 2018 as the end date of monitoring period is 05/06/2018 is not consistent with the monthly monitoring cycle.</p>				
<b>Project participant response</b>				<b>Date:</b> 29/04/2019
<p>The end date of the monitoring period has been revised now. Now the revised monitoring period is 01/05/2014 – 30/06/2018 (Including both days).</p> <p>Ex-ante Emission reductions have also revised as per the revised monitoring period 01/05/2014 – 30/06/2018 (Including both days)</p>				
<b>Documentation provided by project participant</b>				
Revised MR				
<b>DOE assessment</b>				<b>Date:</b> 01/05/2019
<p>The extension of the monitoring period till 30/06/2018 is acceptable as per the requirement of EB 41, Para 78 "78. The Board decided to allow DOEs to request a change in the dates of a monitoring period undergoing verification, provided the change is the result of the corrective action request raised by the DOE during the verification process.". Now the revised monitoring period to be verified is 01/05/2014 – 30/06/2018 (including both the days) which is in compliance with the monthly monitoring cycle.</p> <p>Further now the ex-ante estimates have been correctly calculated for the revised chosen monitoring period (01/05/2014 – 30/06/2018 (including both the days)) as verified from revised MR /02/. Hence this CAR is closed.</p>				

**Table 4. FAR from this verification**

No FAR from this verification

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

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**Document information**

<i>Version</i>	<i>Date</i>	<i>Description</i>
02.1	11 January 2018	Editorial revision to correct the numbering of appendices in the instructions.
02.0	31 October 2017	Revision to align with the requirements of the “CDM validation and verification standard for project activities” (version 01.0).
01.0	23 March 2015	Initial publication.
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: project activities, verifying and certifying		