GUOHUA RONGCHENG PHASE II WIND FARM PROJECT

Document Prepared by

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Contact Information

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1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The purpose of the report is to calculate the emission reductions generated by Guohua Rongcheng Phase II Wind Farm Project (thereafter referred to the project) during the monitoring period (01/12/2019 to 29/06/2020), and to serve as basis for the verification and issuance of corresponding VCUs.

The Project, developed by Guohua Resourceful (Rongcheng) Wind Power Generation Co., Ltd., involves construction and operation of a wind power project that is sited in Chengshan Town, Rongcheng City, Shandong Province, People's Republic of China. The construction start date for the project is 20/11/2009. The first power unit started operation on 30/06/2010, and all the wind turbine generators were put into operation on 30/09/2010. The Project has been registered as a CDM project on 22/06/2011 (UNFCCC registration reference number: 4882).

The total installed capacity of the Project is 49.5MW consisting of 33 sets of wind turbine with unit capacity of 1.5MW. The electricity generated by the Project is delivered to the North China Power Grid (NCPG). The scenario existing prior to the start of the implementation of the project is the same as the baseline scenario, i.e. electricity would have otherwise been generated by the operation of existing power plants connected to NCPG and by the addition of new generation sources of NCPG. After the project is put into operation, the power generated will replace a part of power supply in NCPG which is dominated by fuel-fired power plants and thus reduce greenhouse gas (GHG) emission through avoiding CO_2 emissions produced by NCPG. The estimated annual emission reductions are 97,240 tCO_2e during the first crediting period.

During this monitoring period (01/12/2019 to 29/06/2020), the monitoring activities were conducted strictly in accordance with the monitoring plan contained in the registered CDM-PDD. The Project has operated without any accidental or emergency events that might impact the accuracy and/or implementation of monitoring activities during this monitoring period. The net power supply during this monitoring period is 72,128.160 MWh. The total emission reductions in this monitoring period (01/12/2019 to 29/06/2020) are 68,535 tCO_2e.

1.2 Sectoral Scope and Project Type

Sectoral scope 1: Energy industries (renewable/non-renewable sources)

Project type: Grid-connected wind power project.

The project is not a grouped project.

1.3 Project Proponent

Organization name	Guohua Resourceful (Rongcheng) Wind Power Generation Co., Ltd.
Contact person	Mr. Hu Weiping
Title	Project manager
Address	No. 3 of Dongzhimen South Street, Dongcheng District, Beijing
Telephone	010-58151719
Email	20005222@ceic.com

1.4 Other Entities Involved in the Project

Organization name	N/A
Role in the Project	N/A
Contact person	N/A
Title	N/A
Address	N/A
Telephone	N/A
Email	N/A

1.5 Project Start Date

30/06/2010, on which the VCS project began reducing GHG emissions.

1.6 Project Crediting Period

30/06/2010 - 29/06/2020, 1st renewable crediting period which covers 10 years.

There is a deviation for the crediting period. The project is registered under VCS Standard 3.4 and completed validation before 19/03/2020, thus it remains eligible to apply the crediting period requirements under VCS Version 3 which shall be a maximum of ten years and may be renewed at most twice, so the first renewable crediting period of the project shall be updated from 30/06/2010-21/06/2011 to 30/06/2010 - 29/06/2020. Besides, the project has been registered under CDM, and is not eligible for VCU issuance beyond the end of the total project crediting period under CDM (24/06/2032). However the project lifetime is 20 years. Therefore the project crediting life would be 30/06/2010 – 29/06/2030.

1.7 Project Location

The Project is located in Chengshan Town, Rongcheng City, Shandong Province, People's Republic of China, and the geographical coordinates are 122° 26'-122° 31'east longitude and 37° 20'-37° 23' north latitude, and the coordinates of the substation center is 122°30′ 54.48″east longitude and 37°21′31.78″ north latitude.

1.8 Title and Reference of Methodology

Approved consolidated baseline and monitoring methodology ACM0002.version 12.1.0-"Consolidated methodology for grid-connected electricity generation from renewable sources"

The methodology also refers to the approved versions for the following tools:

- Tool for the demonstration and assessment of additionality version 05.2;
- Tool to calculate the emission factor for an electricity system version 02

Reference:

http://cdm.unfccc.int/methodologies/PAmethodologies/approved.html

1.9 Participation under other GHG Programs

The Project was registered as a CDM project on 22/06/2011 (Ref. 4882). The first CDM crediting period is from 25/06/2011 to 24/06/2018. CERs of 248,600 tCO_2e have been issued for the monitoring periods from 25/06/2011 to 31/01/2014.

The emission reductions during this monitoring period (01/12/2019 to 29/06/2020) will only apply for issuance under VCS, which is ensured by the statement that the PP will not request the issuance of CERs under CDM and the VCUs will not be double counted.

1.10 Other Forms of Credit

Emission Trading Programs and Other Binding Limits

China has a national emissions trading scheme only cover the high-emission industries, such as thermal power generation, petrochemical, chemical, building materials, iron and steel, non-ferrous, paper, aviation and other key emission industries that emitted at least 26,000 tons of CO_2e/year, not including renewable project[1].

Thus, the project proponent: Guohua Resourceful (Rongcheng) Wind Power Generation Co., Ltd. as an enterprise for renewable energy investment, is not included in the compliance entity list by China national Emission Trading Scheme (ETS). Moreover, the project has not been registered as

[1] http://www.mee.gov.cn/xxgk2018/xxgk/xxgk05/202103/t20210330_826728.html

a CCER (Chinese Certified Emission Reductions) project in China, thus it is not eligible for emission reductions transaction under the China's ETS.

Therefore, the project does not reduce GHG emissions from activities that are included in an emissions trading program or any other mechanism that includes GHG allowance trading. The net GHG emission reductions generated during this monitoring period have not been used for compliance under such programs or mechanisms. Furthermore, a statement on no double counting will be submitted to Verra to confirm the credits during this monitoring period has not been counted and will not be counted under emission trading programs and other binding limits.

Other Forms of Environmental Credit

The project has not sought or received another form of GHG-related environmental credit, including renewable energy certificates, during this monitoring period.

1.11 Sustainable Development Contributions

The Project activity will not only supply renewable electricity to grid, but also contribute to sustainable development of the local community, which mainly include the following:

- The project utilizes wind resources to generate and supplied 72,128.160MWh renewable electricity to the power grid during this monitoring period, which contributes to SDG 7.
- The project provides 15 long-term job opportunities for local residents during this monitoring period, which has a positive effect on the local economy which contributes to SDG 8.
- The project utilizes zero-emission wind power to supply electricity to the grid, and reduces 68,535 tCO_2e of GHG emissions during this monitoring period, which contributes to SDG 13.

For evidence of SDGs, please refer to Appendix 1 for details.

Table 1: Sustainable Development Contributions

<table>
<tr><th>Row number</th><th>SDG Target</th><th>SDG Indicator</th><th>Net Impact on SDG Indicator</th><th>Current Project Contributions</th><th>Contributions Over Project Lifetime</th></tr>
<tr><td>1)</td><td>7.2</td><td>7.2.1 Renewable energy share in the total final energy consumption</td><td>Implemented activities to increase</td><td>The project has provided 72,128.160 MWh renewable energy generation during this monitoring period.</td><td>This is the first time to report sustainable development contributions of the project. The project has provided 72,128.160 MWh renewable energy generation accumulated at the end of this monitoring period.</td></tr>
<tr><td>2)</td><td>8.5</td><td>8.5.1 Average hourly earnings of employees, by sex, age, occupation and persons with disabilities</td><td>Implemented activities to increase</td><td>The project has employed 15 persons including 12 men and 3 women during this monitoring period with yearly average salary higher than the local average salary of the respective years (http://tjj.weihai.gov.cn/col/col13261/index.html).<table><tr><td>Year</td><td>Average yearly salary of the project (CNY)</td><td>Local average salary (CNY)</td></tr><tr><td>2019</td><td>114,323</td><td>71,202</td></tr><tr><td>2020</td><td>121,837</td><td>77,022</td></tr></table></td><td>Employed about 15 persons yearly.</td></tr>
</table>

3)	13.0	Tonnes of greenhouse gas emissions avoided or removed	Implemented activities to increase	By supplying 72,128.160 MWh renewable energy to the grid, the project has prevented the release of 68,535 tonnes of carbon into the atmosphere during the monitoring period.	This is the first time to report sustainable development contributions of the project. the project prevented the release of 68,535 tonnes of carbon into the atmosphere accumulated at the end of this monitoring period.

2 SAFEGUARDS

2.1 No Net Harm

In accordance with relevant laws and regulations on environmental protection, an Environmental Impact Assessment (EIA) of the proposed project has been implemented. The results of the EIA have been approved by the Environmental Protection Bureau of Shandong Province.

The EIA has assessed every possible aspect of environmental impacts of the project and recommended corresponding measures, where applicable. The environmental impacts and corresponding mitigation measures during operation have been discussed in the registered CDM-PDD. No negative environmental impacts haven been identified.

Furthermore, the project makes positive contributions to the sustainable development as described in section 1.11 of this report e.g., providing job opportunities and clean energy to the local community, and mitigating GHG emissions.

In conclusion, construction and operation of the project does not cause any negative environmental nor socio-economic impacts.

2.2 Local Stakeholder Consultation

LSC prior to the project implementation

A public survey was conducted in February 2009 by the project owner. Questionnaires were distributed to the stakeholders in the directly affected area, requesting comments on the proposed project construction. As there are few people living around the wind farm project site, 50 copies of questionnaire were distributed and 50 copies of the questionnaire were returned. Most of the local residents knew about wind power projects and all of them held positive and supportive attitude towards the construction of the proposed project. They hope that the project can be put into operation as soon as possible.

LSC during the operation period

During this monitoring period, the project carried out the communication with local stakeholders in line with the on-going communication mechanism, i.e.,

The project owner published the contact information of the contact person who is responsible for stakeholders' comments to the local government and residents. Stakeholders were informed of the contact information, and their comments can be directly collected by the contact person. The comments would be fed back to the stakeholders by the contact person for a timely response. Besides, the contact person of project owner also meets local villagers to collect their comments and suggestions at least yearly. Actually the contact person met local villagers to collect their comments and suggestions in May 2020. Once the contact person received negative comments from the stakeholders, the contact person would record the negative comments and the feedback. The local authority also conducts spot checks on the implementation of the project at periodic intervals as per relevant regulations.

In line with VCS requirements all the processed have been implemented to receive comments from local stakeholders as well as communicate with them. By the end of this monitoring period, the project did not receive any negative comments nor grievance from the stakeholders.

2.3 AFOLU-Specific Safeguards

The project is a non-AFOLU project, and this section is not required.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The total installed capacity of the Project is 49.5MW consisting of 33 sets of wind turbine with unit capacity of 1.5MW. See Table 2 below for key technical specifications.

Table 2. Major technical parameters of the key equipments of the Project

Parameter	Value
Model of wind turbine	82/1500
Manufacture	Goldwind Science and Technology Co., Ltd.
1.Rotor	
Rotor Diameter	82m
Amount of vane	3
Height of hub	70m
Cut-in wind speed	3m/s
Cut-out wind speed	22 m/s
2.Generator	
Rated power	1,580kW
Rated voltage	690V
3. Weight	
Weight of nacelle	11.8t(excluding rotor and generator)
Weight of generator	43.6t
Weight of vane	6.085t
Weight of rotor	32.105t (including vane and hub)

No abnormal circumstance occurred during this monitoring period. There is no event or situation occurred during the monitoring period, which may impact the applicability of the methodology and may impact the GHG emission reductions or removals and monitoring. The project was operational as normal during the monitoring period.

3.2 Deviations

3.2.1 Methodology Deviations

No methodology deviation exists.

3.2.2 Project Description Deviations

There is a deviation for the crediting period. The project is registered under VCS Standard 3.4 and completed validation before 19/03/2020, thus it remains eligible to apply the crediting period requirements under VCS Version 3 which shall be a maximum of ten years and may be renewed at most twice, so the first renewable crediting period of the project shall be updated from 30/06/2010-21/06/2011 to 30/06/2010 - 29/06/2020. Besides, the project has been registered under CDM, and is not eligible for VCU issuance beyond the end of the total project crediting period under CDM (24/06/2032). However the project lifetime is 20 years. Therefore the project crediting life would be 30/06/2010 – 29/06/2030. This deviation is related to the change on the duration of the crediting period, which does not impact the applicability of the methodology, additionality or the appropriateness of the baseline scenario.

3.3 Grouped Projects

The Project is not a grouped project.

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	$EF_{grid,CM,y}$
Data unit	tCO_2e/MWh
Description	The combined margin grid emission factor of the North China Power Grid where the Project connected to
Source of data	Registered CDM-PDD
Value applied	0.9502
Justification of choice of data or description of measurement methods and procedures applied	Determined ex-ante and fixed for the 1st crediting period
Purpose of Data	Calculation of baseline emissions.
Comments	-

4.2 Data and Parameters Monitored

Data / Parameter	$EG_{export,y}$
Data unit	MWh
Description	Electricity delivered to North China Power Grid by the project in year y
Source of data	Electricity meter reading

Description of measurement methods and procedures to be applied	Two bidirectional meters (M1, M2) are installed at the main line to measure the Electricity delivered to North China Power Grid by the project in year y
Frequency of monitoring/recording	Monthly recorded and aggregated
Value monitored	72,405.130
Monitoring equipment	See table below
QA/QC procedures to be applied	Meters have been properly calibrated annually according to the requirement from Technical administrative code of electric energy metering (national standard reference: DL/T448), and in compliance with the requirement of monitoring plan. Meter readings are crosschecked with sales receipts. All data and records are archived during the crediting period and at least 2 years after the end of the crediting period.
Purpose of the data	Calculation of baseline emissions
Calculation method	-
Comments	-

Data / Parameter	$EG_{import,y}$
Data unit	MWh
Description	Electricity consumed by the project which is imported from the North China Power Grid through the main line in year y
Source of data	Electricity meter reading
Description of measurement methods and procedures to be applied	Two bidirectional meters (M1, M2) are installed at the main line to measure the Electricity consumed by the project which is imported from the North China Power Grid through the main line in year y
Frequency of monitoring/recording	Monthly recorded and aggregated
Value monitored	276.930
Monitoring equipment	See table below
QA/QC procedures to be applied	Meters have been properly calibrated annually according to the requirement from Technical administrative code of electric energy metering (national standard reference: DL/T448), and in compliance with the requirement of monitoring plan. Meter readings are crosschecked with sales receipts.

	All data and records are archived during the crediting period and at least 2 years after the end of the crediting period.
Purpose of the data	Calculation of baseline emissions
Calculation method	-
Comments	-

Data / Parameter	$EG_{importbackup,y}$
Data unit	MWh
Description	Electricity consumed by the project which is imported from the North China Power Grid through the backup line in year y
Source of data	Electricity meter reading
Description of measurement methods and procedures to be applied	The meter M3 is installed on the backup line to measure the Electricity consumed by the project which is imported from the North China Power Grid through the main line in year y
Frequency of monitoring/recording	Monthly recorded and aggregated
Value monitored	0.040
Monitoring equipment	See table below
QA/QC procedures to be applied	Meters have been properly calibrated annually according to the requirement from Technical administrative code of electric energy metering (national standard reference: DL/T448), and in compliance with the requirement of monitoring plan. Meter readings are crosschecked with sales receipts. All data and records are archived during the crediting period and at least 2 years after the end of the crediting period.
Purpose of the data	Calculation of baseline emissions
Calculation method	-
Comments	-

Data / Parameter	$EG_{facility,y}$
Data unit	MWh
Description	Quantity of net electricity supplied by the project to the grid in year y
Source of data	Calculation: $EG_{facility,y}=EG_{export,y}-EG_{import,y}-EG_{importbackup,y}$

Description of measurement methods and procedures to be applied	Calculated by $EG_{facility,y}=EG_{export,y}-EG_{import,y}-EG_{importbackup,y}$
Frequency of monitoring/recording	Monthly recorded and aggregated
Value monitored	72,128.160
Monitoring equipment	See table below.
QA/QC procedures to be applied	Calculated by $EG_{facility,y}=EG_{export,y}-EG_{import,y}-EG_{importbackup,y}$
Purpose of the data	Used for baseline emission calculation
Calculation method	Calculated by $EG_{facility,y}=EG_{export,y}-EG_{import,y}-EG_{importbackup,y}$
Comments	-

Table 3 Information of meters

Meter	Type	Serial No.	Accuracy	Calibration date	Valid till	Calibrator
M1	Electricity meter	10030265270079	0.5	19/04/2019	18/04/2020	Center of Electricity Measurement, Weihai Power Grid Company
				14/04/2020	13/04/2021	
M2	Electricity meter	30111500	0.5	19/04/2019	18/04/2020	
				14/04/2020	13/04/2021	
M3	Electricity meter	10030265270067	0.5	19/04/2019	18/04/2020	
				14/04/2020	13/04/2021	

4.3 Monitoring Plan

Organization Structure

Project owner organized a special carbon project workgroup to take charge of the monitoring work of the whole project. The general manager of the project entity appointed a carbon project manager. Monitoring staff, on-site engineers and internal audit staff are responsible for the collection of the data and information required in the monitoring plan. The collected data and information is documented and sent to the carbon project manager monthly. The carbon project manager is in charge of the implementation of the monitoring plan and report to the general manager of the project owner. The general manager makes the confirmations on monitoring, calculation data and reports.

For details regarding the management structure of the monitoring plan, please refer to Figure 1.

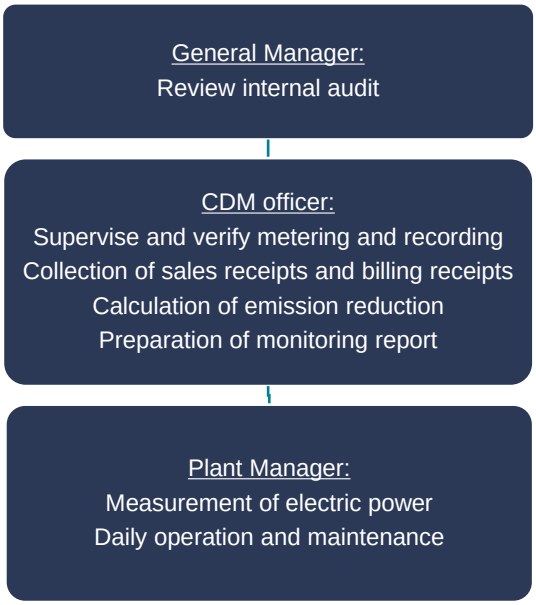

Figure 1. Management Structure of Monitoring Plan

Data collection procedures

Two bidirectional meters (M1 and M2) are installed at the main line to measure the Electricity delivered to North China Power Grid by the project in year y ($EG_{export,y}$) and the Electricity consumed by the project which is imported from the North China Power Grid through the main line in year y ($EG_{import,y}$). The accuracy of the meters is 0.5 and uncertainty level of the meters does not exceed 0.5%. At the same time, for the safe operation of the project, a 10 kv back-up line is connected for the emergency. One meter with the accuracy of 1.0 is installed to measure the Electricity consumed by the project which is imported from the North China Power Grid through the backup line in year y ($EG_{importbackup,y}$).

M1 and M2 have been properly configured and checked by both grid company and project owner. M1 is owned, operated and maintained by the project owner. Hence, the data of M1 is recorded by the project owner. M2 is owned, operated and maintained by the grid company, the data from the M2 is for the sales receipts, which could be the cross check of M1. Data of M1 were recorded by the project owner, and the grid company has recorded the meter reading of M2 and M3 together with the project owner.

See the following figure for the monitoring points:

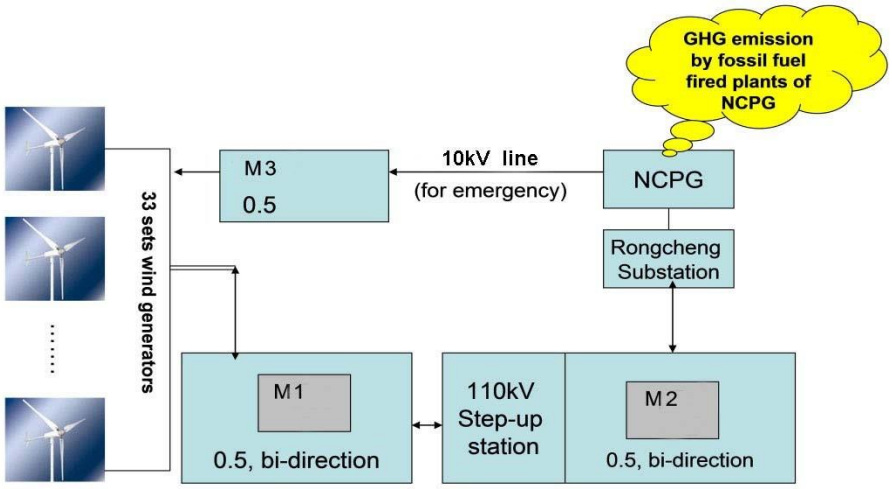

Figure 2. Monitoring points

The cut-off time of $EG_{export,y}$, $EG_{import,y}$ and $EG_{importbackup,y}$ is 24:00 of the last day of each month. On monthly basis, the grid company issues sales receipts to the project company. Since the 1st crediting period ends on 29/06/2020, the cut-off time in June 2020 is 24:00 on 29/06/2020 (0:00 on 30/06/2020). Sale receipts are used for double check the measured data of electricity. The conservative data between the value measured and the sales receipts will be used for the emission reduction calculation. All meters mentioned above are continuously measured and monthly recorded used to calculate the Project's net electricity delivered to the grid.

Emergency procedures

In case of emergencies, which means that under the condition that project entity cannot monitor the main meter due to the unexpected accident, the project entity follows the following procedure: In case that the monitoring meters cannot be monitored due to the unexpected accident, the data is confirmed between the grid company and the project owner. During this monitoring period, no emergency happened.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

As per the registered PD, the baseline emission of the project is calculated as below:

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

Table 4 Baseline emissions calculation

Year	$EG_{facility,y}$	$EF_{grid,CM,y}$	BE_y
	MWh	tCO_2e/MWh	tCO_2e
2019 (01/12/2019 to 31/12/2019)	10,840.550	0.9502	10,300
2020 (01/01/2020 to 29/06/2020)	61,287.610	0.9502	58,235
total	72,128.160	/	68,535

The monitored monthly electricity data is shown in the tables below:

Table 5 Monitoring results (MWh)

Period start	Period end	$EG_{export,y}$			$EG_{import,y}$			$EG_{importbackup,y}$			$EG_{facility,y}$
		Values from meter readings (M1)	Values from sales receipts (M2)	Conservative values min(M1,M2)	Values from meter readings (M1)	Values from sales receipts (M2)	Conservative values max(M1,M2)	Values from meter readings (M3)	Values from sales receipts (M3)	Conservative values max(M3,sales receipts)	
01/12/2019	31/12/2019	11,245.500	10,888.860	10,888.860	47.250	48.310	48.310	0.000	0.000	0.000	10,840.550
Subtotal 2019		-	-	10,888.860	-	-	48.310	-	-	0.000	10,840.550
01/01/2020	31/01/2020	9,208.500	9,042.770	9,042.770	50.750	52.400	52.400	0.016	0.016	0.016	8,990.354
01/02/2020	29/02/2020	11,763.500	11,422.980	11,422.980	30.625	31.280	31.280	0.008	0.008	0.008	11,391.692
01/03/2020	31/03/2020	11,895.625	11,647.450	11,647.450	35.000	35.510	35.510	0.008	0.008	0.008	11,611.932
01/04/2020	30/04/2020	11,731.125	11,563.810	11,563.810	18.375	18.740	18.740	0.006	0.006	0.006	11,545.064
01/05/2020	31/05/2020	13,258.875	12,972.760	12,972.760	25.375	25.610	25.610	0.002	0.002	0.002	12,947.148
01/06/2020	29/06/2020	4,941.125	4,866.500	4,866.500	63.875	65.080	65.080	0.000	0.000	0.000	4,801.420
Subtotal 2020		-	-	61,516.270	-	-	228.620	-	-	0.040	61,287.610
Total		-	-	72,405.130	-	-	276.930	-	-	0.040	72,128.160

5.2 Project Emissions

As per the methodology and the registered CDM-PDD, the project emission is 0.

5.3 Leakage

As per the methodology and the registered CDM-PDD, the leakage is 0.

5.4 Net GHG Emission Reductions and Removals

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)
2019 (01/12/2019 to 31/12/2019)	10,300	0	0	10,300
2020 (01/01/2020 to 29/06/2020)	58,235	0	0	58,235
Total	68,535	0	0	68,535

Comparison of the actual emission reductions with the estimated values of this monitoring period is analysed as follows:

Annual estimated emission reductions are 97,240 tCO_2e

Total days during this monitoring period are 212 days

Calculated estimation of the emission reductions: 97,240 * 212 / 365 = 56,479 tCO_2e

The actual emission reductions achieved during this monitoring period are 21.35% higher than the estimated ex-ante amount. The reason is because the wind resource at the project site variates each month which results in fluctuation on electricity generation between months of the year. This monitoring period covers several months with monthly electricity generation above the average from December to April among the year. For example, in the year from December 2012 to November 2013, monthly average net electricity supply from December 2012 to June 2013 was 9,106.321MWh, which is 43.65% more than the from July 2013 to November 2013 (6,339.046 MWh). Details are indicated below:

Table 6 Net electricity supply from December 2012 to November 2013

Month	$EG_{facility,y}$ (MWh)			Monthly average (MWh)
01/12/2012-31/12/2012	12,680.637	63,744.244	66.79%	9,106.321
01/01/2013-31/01/2013	10,988.427			

01/02/2013-28/02/2013	6,883.524			
01/03/2013-31/03/2013	14,515.330			
01/04/2013-30/04/2013	11,946.190			
01/05/2013-31/05/2013	4,658.158			
01/06/2013-30/06/2013	2,071.978			
01/07/2013-31/07/2013	1,951.748	31,695.231	33.21%	6,339.046
01/08/2013-31/08/2013	4,994.830			
01/09/2013-30/09/2013	3,948.022			
01/10/2013-31/10/2013	8,876.899			
01/11/2013-30/11/2013	11,923.732			