GANSU YUMEN SANSHILIJINGZI WIND POWER PROJECT

Document Prepared by Longyuan (Beijing) Carbon Asset Management Technology Co., Ltd.

Project Title	**Gansu Yumen Sanshilijingzi Wind Power Project**
Version	02
Report ID	-
Date of Issue	27-Jul-2022
Project ID	124
Monitoring Period	30-Mar-2012 to 29-Mar-2018 (both days included)
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1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

Gansu Yumen Sanshilijingzi Wind Power Project is located in Yumen Town, Yumen City, Gansu province. Totally 58 Gamesa58-850KW wind turbines with a nominal capacity of 850 kW was installed, providing a total capacity of 49.3MW and an average annual generation of 107,872 MWh connected into Northwest China Power Grid (NWPG). The project will achieve CO_2 emission reduction by replacing electricity generated by fossil fuel fired power plant connected into NWPG. The project is estimated to achieve 106,556 tones CO_2 emission reduction annually.

The construction of the project started on 26-Jul-2007,and the commissioning of the first wind turbine was in December 2007, and all wind turbines were fully operational since 01-Jun-2008. The project has been registered successfully as a CDM project on 08-Jan-2009 with the CDM registration reference number of 2193. The lifetime of the project is 20 years.

During this monitoring period, the operation condition of all the wind turbines and the operation environment haven't been changed from the previous monitoring periods, which are also consistent with the description of the registered CDM PDD.

During the second monitoring period (from 30-Mar-2012 to 29-Mar-2018) under VCS program, the project has generated the total net electricity supply of 292,377.492 MWh and achieved 273,926 tCO_2e emission reduction by replacing electricity generated by fossil fuel fired power plants connected into Northwest China Power Grid（NWPG）.

1.2 Sectoral Scope and Project Type

Sectoral scope: 1 energy industries (Renewable sources).

Project type: Grid-connected wind power project.

The project is not a grouped project.

1.3 Project Proponent

Organization name	**Gansu Jieyuan Wind Power Co., Ltd.**
Contact person	Mr. Kong Shujian
Title	General Manager
Address	No.3 Yongning Road, New City District, Yumen, Gansu Province, China
Telephone	0931-2954975
Email	shujian.kong@ceic.com

1.4 Other Entities Involved in the Project

Organization name	**Longyuan (Beijing) Carbon Asset Management Technology Co., Ltd.**
Role in the Project	Consultant
Contact person	Mrs. YU Shanshan
Title	General Manager
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1.5 Project Start Date

01-Jun-2008 (operation start date).

On 01-Jun-2008, the project had commenced with real, quantifiable, additional and permanent emissions reductions which can be considered as Verified Emission Reductions (VERs) under the Voluntary Carbon Standard 2007 (VCS 2007) after being verified. The first VCS monitoring period started from 01-Jun-2008, which is the start date of operation.

1.6 Project Crediting Period

Crediting Period: 01-Jun-2008 to 31-May-2018 (both days included).

The project is registered under VCS 2007 and completed validation before 19-March-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.

The project is also a registered CDM project (Ref.2193) with a 7*3 renewable project crediting period, the VCS issuance is not eligible for beyond the end of those 21 years.

The lifetime of the project is about 20 years, so the crediting period of the project can be from 01-Jun-2008 to 31-May-2028. However, according to the paragraph 3.8.8 and 3.8.9 in VCS Standard (Version 4.3), the project shall be validated against the (current) scope of the VCS. Such validation report shall be issued after the end of the (previous) project crediting period but within two years after the end of the (previous) project crediting period. Where projects fail to renew the project crediting period, the project crediting period shall end and the project shall be ineligible for further crediting.

Therefore, the first renewable crediting period of the project shall be updated from 01-Jun-2008~07-Jan-2009 to 01-Jun-2008~31-May-2018. Since the project proponent failed to renew the crediting period of this project within the requested period, the VCS crediting

period is from 01-Jun-2008 to 31-May-2018, which is corresponding to this monitoring period.

1.7 Project Location

Gansu Yumen Sanshilijingzi Wind Power Project is located in Yumen Town with 13km to its southeast, Gansu Province of China. The site of the project is trapezium. Its five geographical vertex coordinates are (E:96°54′45″, N:40°08′13″), (E:96°58′54″, N:40°10′03″), (E:96°58′54″, N:40°13′44″) , (E:96°58′41″, N:40°13′44″) ,and (E:96°54′45″, N:40°09′00″). Its altitude is about 1560m. The location of the project is shown in Figure 1.

Figure 1: The location of the project

1.8 Title and Reference of Methodology

Approved consolidated baseline and monitoring methodology ACM0002: Consolidated methodology for grid-connected electricity generation from renewable sources (Version 06)

The methodology also refers to the following tool:

Tool for the demonstration and assessment of additionality (Version 4)

The applied methodology and tool can be found from the following link:

https://cdm.unfccc.int/methodologies/PAmethodologies/approved

1.9 Participation under other GHG Programs

The project is a registered CDM project with reference No. 2193, the detailed information can be found at https://cdm.unfccc.int/Projects/DB/TUEV-SUED1218655051.51/view

Start Date	End Date	GHG Emission Reduction (tCO_2e)	Credit	Program
01-Jun-2008	07-Jan-2009	48,436	VCU	VCS
08-Jan-2009	29-Dec-2009	77,674	CER	CDM
30-Dec-2009	28-Jun-2010	46,961	CER	CDM
29-Jun-2010	28-Jun-2011	74,627	CER	CDM
29-Jun-2011	29-Mar-2012	29,272	CER	CDM

This is the second monitoring period under VCS program from 30-Mar-2012 to 29-Mar-2018 for the project. All emission reductions during this monitoring period have not and will not seek CDM CER issuance. Emission reductions during this monitoring period will only seek issuance under VCS program.

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: Gansu Jieyuan Wind Power 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 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 is a renewable wind power project located in Yumen Town with 13km to its southeast, Gansu Province of China.

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

The project utilizes wind resources to generate and supply 292,377.492MWh renewable electricity to the power grid during this monitoring period, which contributes to SDG 7.

The project provides 4 long-term job opportunities for local residents during this monitoring period, which has a positive effect on the local economy and contributes to SDG 8.

The renewable electricity generated by the project replaces electricity generation by fossil-fuel power plants of the power grid, which reduces 273,926 tCO_2e GHG emission during this monitoring period and contributes to SDG 13.

Please refer to APPENDIX 1: <SUPPORTING EVIDENCE> for evidence of the project's contribution to SDG 7, SDG 8 and SDG 13.

Table 1: Sustainable Development Contributions

Row	SDG Target	SDG Indicator	Net Impact on SDG Indicator	Current Project Contributions	Contributions Over Project Lifetime[2]
1)	7.2	Renewable energy supplied to the power grid	Implemented activities to increase	292,377.492 MWh of electricity from renewable sources has been supplied to the power grid during the reporting period	An accumulated 292,377.492 MWh of electricity from renewable sources has been supplied to the power grid by end of the reporting period
2)	8.5	Numbers of decent job opportunities provided by implementation of the project	Implemented activities to increase	4 people (2 men and 2 women) have been employed by the project as long-term employee which have an income rate higher than the local average level.	4 people (2 men and 2 women) have been employed by the project as long-term employee by end of the reporting period.
3)	13.0	Tonnes of greenhouse gas emissions avoided	Implemented activities to increase	The project has achieved a total GHG emission reduction of 273,926 tCO_2e during the reporting period.	An accumulated 273,926 tCO_2e of GHG emission reduction have been achieved by the project by the end of the reporting period

[2] The contributions over the project lifetime column are intended for displaying the cumulative SD contributions that have been accounted for and approved by Verra in an SD contributions report or VCS monitoring report. Since this is the first time project 124 Gansu Yumen Sanshilijingzi Wind Power Project has claimed SD contributions, the contributions over the project lifetime should be the same as the current contributions for the period from 30-Mar-2012 to 29-Mar-2018.

2 SAFEGUARDS

2.1 No Net Harm

In accordance with relevant environmental laws and regulations, an environmental impact assessment (EIA) of the project was completed in June 2006 and approved on 11-Jan-2007 by the Environment Protect Bureau of Gansu Province. The project is likely to cause the following environmental impacts:

Impacts on Air Environment

Wind Power plants are known to contribute to zero atmospheric pollution as no fuel combustion is involved during any stage of the operation. The sources of air pollution are mainly due to the construction activities including the transportation of construction material, road construction and improvement and cadre construction etc. The impacts on air environment will be ended when the construction is completed. Several measures shall be taken into account, such as prohibiting the construction under strong wind weather, reducing as much as possible the area of construction, spraying water when undertaking construction, and reducing the speed of vehicles in the field. Hence, air pollution caused by the project is not significant to the surrounding environment.

Impacts on Noise Environment

The noise of the project in construction phase is from vehicles and machines on-site. According to the monitoring data from the construction site, the noise is at a level between 91-102 dB. Based on the formula of declining of sound emitted from a non-directional source, it is estimated that the maximum noise effective distance of the project is 50m in daytime and 300m at night. Moreover, the magnitude of the impacts during construction phase exists for a temporary period of time till the end of construction phase. However, operational noise from the rotating blades is expected to be minimal due to the higher background noise caused by strong winds. The closest residential area to the site of the

project is over 5km away. Therefore, the noise of the project will not have impact on nearby residents.

Impacts on Water and Solid Waste

The wind-farm does not consume any water, nor does it generate any wastewater in the operation phase. The possible negative impacts are the household wastewater and solid waste produced by builders and staff, and the waste earth from digging of the foundation in the construction phase. Under normal conditions with highly automated monitoring and control system, the household wastewater will be first treated in a septic tank, and then be disinfected to discharge for circumjacent virescence. Moreover, the amount of household solid waste will be very little, which will not have impact on the environment. Besides, the solid waste will be collected and moved to the landfill site of the nearest city. The waste earth from the digging should be firstly used for refilling. The rest of the waste earth should be placed in the low area of the site and replanted with grass. Following the suggestion, the water and solid waste should have no significant impact on the environment.

Impacts on telecommunications and television transmissions

Since set of substation will be constructed in the project, the electromagnetism impact of the project should be evaluated. Based on the analogies of the built wind-farms, the result concludes that the operation of wind farm will not have electromagnetism impact on the nearby enterprises and residential areas that are 5 km away from the wind farms. Therefore, the electromagnetism of this project in the operation phase doesn ' t impact the production and daily life of nearby enterprises and residents.

Impacts on Ecosystem Environment

A serious potential concern for wind farms is their impact on vegetation, animals and migrating birds. The land occupied by the proposed project is barren and unfertile. Therefore the water and soil loss does not happen for the project. Moreover, there are no migratory birds / endangered species in the region of the project activity. Therefore, the

activities to be carried out will not generate any negative impact on the ecological environment.

Socio-Economic Impacts

The project is estimated to supply annually 107,872 MWh of power to the Gansu Power Grid and to reduce 106,556 tonnes CO_2 emission. So the project generates eco-friendly, GHG free power that contributes to sustainable development of the region. Moreover, the locals have benefited economically for the construction of the project. The project activity not only helps the uplift of skilled and unskilled manpower in the region, but also improves employment rate and livelihood of local populace in the vicinity of the project.

In conclusion, no net harm on local environment and social community has been detected for the project.

2.2 Local Stakeholder Consultation

LSC prior to the project implementation

Local stakeholder consultation has been conducted on 01-Jul-2007. All comments received have been well addressed prior to the project implementation. the project owner successfully held a stakeholder meeting in Yumen City. The local stakeholder was invited by telephone notice by project owners. Totally 9 stakeholder representatives participated the meeting, respectively from the local Government, local Environmental Protection Bureau, local Development and Reform Bureau, local Agricultural Power Bureau, and Chijinbao Village in Yumen City. The comments in the meeting focus on following questions:

- Does the proposed project benefit more to improve environment?
- What is the most important influence the proposed project made?
- Does the proposed project result in environmental problem?

- Did the migration happen? Did the proposed project owner compensate for the land occupied by the proposed project?

- Do you support the proposed project?

The project participants have also carried out a public survey on the project in the format of questionnaires. The survey had a 100% response rate (30 questionnaires returned out of 30).

The survey shows that the proposed project receives strong support from local people. 100% of the informants support and welcome the proposed project, no negative comments were received. 100% of the informants know about the proposed project. 100% of the informants live or work far away from the proposed project. 97% of the informants believe that the proposed project will have positive impacts on economy and social in local region. 93% of the informants believe that the implementation of the proposed project will improve the life quality of local residents, by providing more employment opportunities for local residents, increasing incomes of the local residents, etc. 33% of the informants think that the project participants should pay attention to the problem of soil erosion, and other 57% of the informants think that the project participants should pay attention to noise problems in the implementation of the proposed project. However, as the environmental impact assessment demonstrates, both impacts mainly occur during construction period, and accompanied by mitigating measures such as strict operation and restored vegetation, and the impacts will be minimized after the construction. The proposed project owner has adopted measures to strengthen environment protection, with which the local villagers are satisfied.

In conclusion, there was no significant negative comments received in the project preparation stage.

LSC during the operation period

Communications with Local stakeholders have been carried out at periodic intervals. Key implementation schedules and changes of the project have been communicated to the local authority, the neighbourhood committee, and local residents. The comments and suggestions from residents were collected by the local authority, if any.

The project owner carried out questionnaire survey for the local stakeholders to collect the relevant comments and suggestion every two years, e.g., in June 2013, July 2015 and May 2017 during this monitoring period. The local authority also conducts spot checks on the implementation of the project at periodic intervals as per relevant regulations. There have been no negative comments received for the project so far.

In line with VCS requirements all the processes have been implemented to receive comments from local stakeholders as well as communicate with them at periodic intervals.

2.3 AFOLU-Specific Safeguards

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

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

Totally 58 Gamesa58-850KW wind turbines with a nominal capacity of 850 kW were installed, providing a total capacity of 49.3MW. All wind turbines are produced in Tianjin factory which is invested by Gamesa EóLICA of Spain. The main technical specifications are as follows:

Table 3-1 Technical Characteristics of Wind Turbines[3]

Manufacturer	Gamesa Wind(Tianjin) Co.,Ltd
Diameter	58m
Speed of rotor	14.6-30.8rpm
Cut-in wind speed	3m/s
Cut-out wind speed	21m/s
Swept area	2124m^2
Hub heights	55m
Rotor Orientation	Upwind
Lifetime	20y

Each turbine will have a 0.69/10kV transformer, from which a 10kV line will link into the on-site 110kV switchgear at the substations established in the project site. By the 110kV line, the electricity generated by the project is delivered to the power grid.

The auxiliary electric system of wind farm includes onsite control, protection, measure, signalling and surveillance in central control room of wind farm. The targets to be surveilled include 58 wind turbines and transformers. The wind farm will be dispatched by Province level dispatch centre and wind turbines could be measured and signalled remotely from Lanzhou City by Internet.

The wind turbines and transmission facility could be monitored and controlled either by onsite central control room or remotely through Internet. The wind turbine finally adopted by the project is Gamesa-58-850kW imported from Spain. Due to its advantage on fully utilizing wind resources and improving efficiency, Gamesa-58-850kW has been adopted worldwide. The development of the project will contribute to promoting application of

[3] Sourced from Wind Turbines Purchase Agreement

such type of wind turbine, accelerating the accumulation of experiences and absorption of this kind of technology and advancement of domestic wind power technology.

During this monitoring period, the project was implemented in accordance with the registered CDM PDD. The Project has operated without any accidental or emergency events that might impact the GHG emission reductions or removals and monitoring.

3.2 Deviations

3.2.1 Methodology Deviations

There is no methodology deviation in this monitoring period.

3.2.2 Project Description Deviations

(1) Crediting Period

There is a deviation for the crediting period. The project is registered under VCS 2007 and completed validation before 19-Mar-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 01-Jun-2008~07-Jan-2009 to 01-Jun-2008~31-May-2018.

(2) Monitoring Plan

A revised monitoring plan has been approved by CDM EB on 18-Dec-2009. According to the revised monitoring plan, the total electricity delivered to the grid is metered by the project entity at the project site. For the project, the main meter with accuracy of 0.2s is installed at the project site for the direct measurement of total electricity delivered to the grid. The main meter is owned, operated and maintained by the project owner. The meter is bidirectional and it can also monitor the electricity imported from the grid through the main line. There is a backup meter installed for backup usage. When the main meter is out

of order, the readings from the backup meter will be used for reference. In addition, there is a backup line through which electricity may be imported from grid for emergency. There is a meter (with the accuracy of 0.5s) installed in the backup line. The electricity imported through the backup line can be monitored by the backup line meter which is owned, operated and controlled by the local electric power bureau. The meter readings of the main meter and backup line meter are used for calculation of emission reduction of the project. The net electricity delivered to the grid is the total electricity delivered to the grid by the project minus the electricity imported from grid by the project through the main line and the backup line.

$EG_y=EG_{ex}-E_{im\_main\ line}-E_{im\_backup\ line}$

Where:

EG_{ex} is the total electricity delivered to the grid by the project (MWh);

$E_{im\_main\ line}$ is the electricity imported from the grid by the project through main line (MWh);

$E_{im\_backup\ line}$ is the electricity imported from the grid by the project through backup line (MWh).

The deviations do not impact the applicability of the methodology, additionality and the appropriateness of the baseline scenario.

3.3 Grouped Projects

Not applicable as this is not a grouped project.

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

The parameter that is available at validation of registered PDD, The parameter is used to calculate EF_y.

Data / Parameter	EF_y
Data unit	tCO_2e/MWh
Description	Baseline emission factor in the year y
Source of data	PDD and validation report
Value applied	0.9369
Justification of choice of data or description of measurement methods and procedures applied	The emission factor adopted is 0.9369 tCO_2/MWh. It is the same as the one used in the PDD for the GSC and it is also validated in the validation report in which it was stated that the emission factor 0.9369 tCO_2/MWh may be accepted as it is more conservative.
Purpose of Data	Calculation of baseline emissions
Comments	The emission factor of the Project was ex-ante determined and is fixed during the first crediting period. All data and parameters had been determined at registration.

4.2 Data and Parameters Monitored

Data / Parameter	EG_{ex}
Data unit	MWh

<table>
<tr><td>Description</td><td>Total electricity delivered to the grid by the project</td></tr>
<tr><td>Source of data</td><td>Meter reading records</td></tr>
<tr><td>Description of measurement methods and procedures to be applied</td><td>Continuously measured, daily recorded and monthly aggregated.</td></tr>
<tr><td>Frequency of monitoring/recording</td><td>Continuously measured, daily recorded and monthly aggregated.</td></tr>
<tr><td>Value applied</td><td>
<table>
<tr><td>30/03/2012-31/12/2012</td><td>45,289.648</td></tr>
<tr><td>01/01/2013-31/12/2013</td><td>57,070.332</td></tr>
<tr><td>01/01/2014-31/12/2014</td><td>50,834.256</td></tr>
<tr><td>01/01/2015-31/12/2015</td><td>40,755.594</td></tr>
<tr><td>01/01/2016-31/12/2016</td><td>39,386.174</td></tr>
<tr><td>01/01/2017-31/12/2017</td><td>44,856.768</td></tr>
<tr><td>01/01/2018-29/03/2018</td><td>19,198.542</td></tr>
<tr><td>Total</td><td>297,391.314</td></tr>
</table>
</td></tr>
<tr><td>Monitoring equipment</td><td>Measured by Bi-directional meters (M1 as main meter and M1’ as backup meter) installed at the project side (Refer to Table 3 below for the detailed information of Meters and calibration).

During this monitoring period, main meter M1 was running properly, hence meter readings from backup meter M1' has not been applied.</td></tr>
<tr><td>QA/QC procedures to be applied</td><td>The meters are calibrated annually for accuracy by a qualified third party in accordance with industry standards. Electricity exported to the grid were cross checked by Sales receipts. The data have been archived electronically and</td></tr>
</table>

	kept during the creating period and 2 years after.
Purpose of data	Baseline emission calculation
Calculation method	N/A
Comments	-

Data / Parameter	$E_{im\_main\ line}$
Data unit	MWh
Description	Electricity imported from the grid by the project through the main line
Source of data	Meter reading records
Description of measurement methods and procedures to be applied	Continuously measured, daily recorded and monthly aggregated.
Frequency of monitoring/recording	Continuously measured, daily recorded and monthly aggregated.
Value applied	30/03/2012-31/12/2012: 634.590 01/01/2013-31/12/2013: 959.640 01/01/2014-31/12/2014: 887.700 01/01/2015-31/12/2015: 744.876 01/01/2016-31/12/2016: 809.886 01/01/2017-31/12/2017: 787.314 01/01/2018-29/03/2018: 189.816 Total: 5,013.822
Monitoring equipment	Measured by Bi-directional meters (M1 as main meter and

	M1' as backup meter) installed at the project side. Refer to Table 3 below for the detailed information of Meters and calibration. During this monitoring period, main meter M1 was running properly, hence meter readings from backup meter M1' has not been applied.
QA/QC procedures to be applied	The meters are calibrated annually for accuracy by a qualified third party in accordance with industry standards. Electricity imported from the grid were double checked by Sales receipts. The data have been archived electronically and kept during the creating period and 2 years after.
Purpose of data	Baseline emission calculation
Calculation method	N/A
Comments	-

Data / Parameter	$E_{im\_backup\ line}$
Data unit	MWh
Description	Electricity imported from the grid by the project through the backup line
Source of data	Meter reading records
Description of measurement methods and procedures to be applied	Continuously measured, daily recorded and monthly aggregated.
Frequency of monitoring/recording	Continuously measured, daily recorded and monthly aggregated.

Value applied	0.000
Monitoring equipment	Measured by backup line meter M2. Refer to Table 3 below for the detailed information of Meters and calibration. However, the backup line of the project has not been used since 01-Jan-2013.
QA/QC procedures to be applied	The backup line meter M2 are calibrated once per four years for accuracy by a qualified third party in accordance with industry standards. Electricity imported from the grid were double checked by Sales receipts. The data have been archived electronically and kept during the creating period and 2 years after.
Purpose of data	Baseline emission calculation
Calculation method	N/A
Comments	-

4.3 Monitoring Plan

Data monitored

As the baseline emission factor is based on ex-ante calculation, the data monitored is the Quantity of net electricity generation supplied by the project plant to the grid (EG_y). It is continuously measured, daily recorded and monthly aggregated. The data are double checked with ETNs issued by grid company.

Monitoring organization

The organizational structure and responsibilities of the personnel is shown as follows:

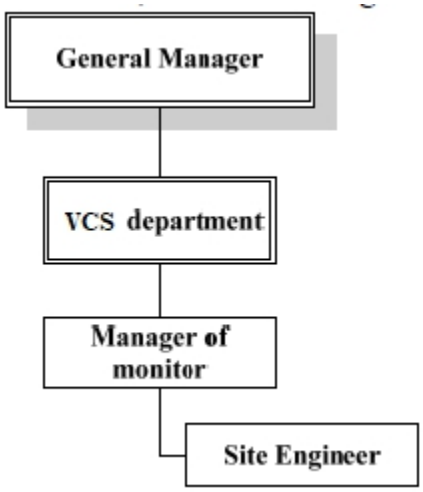

Figure 4-1 Organizational structure

The General Manager is in general control and makes key decisions. The VCS Department is responsible for specific tasks in monitoring and execution of decisions. Specifically, the Manager of VCS Department is responsible for the daily operation of the VCS Department and contact with VVB and VERRA to support their work in verification and certification. The Manager of VCS Department is also responsible for Monitoring Data review and settlement of Data uncertainties.

Manager of monitor is responsible for supervising, checking data and whole data record process, calibrating meters, recording of the readings, and reporting of readings to local electric power company or VVB.

Site engineer is responsible for collecting data (such as reading electric meter data, keeping ETNs), calculating emission reduction and preparing the monitor report.

Monitoring Equipment & Data collection

The total electricity delivered to the grid by the project(EG_{ex}) is continuously measured by main meter and backup meter installed at the 110kV line of the project site and monthly aggregated. According to the requirement of local grid company, the sales receipt of electricity delivered to the grid through the main line is based on the monitoring results by

the grid company at the transformer station of the grid and is recorded on 24:00 of the third last day of every month.

Electricity imported from the grid by the project through the main line($E_{im\ main\ line}$) is continuously measured by main meter and backup meter installed at the 110kV line of the project site and monthly aggregated, the local grid company issues the sales receipt monthly which would crosscheck the monthly recording data. The sales receipt of electricity imported from the grid through the main line is based on the monitoring results by the grid company at the transformer station of the grid and is recorded on 24:00 of the 20^{th} day of each month.

Electricity imported from the grid by the project through the backup line is continuously measured by backup line meter(the backup line meter is also for sales receipt use) and monthly aggregated, the local grid company issues the sales receipt monthly which would crosscheck the monthly recording data and the sales receipt of import through the backup line would be recorded on 24:00 of the 14^{th} of each month.

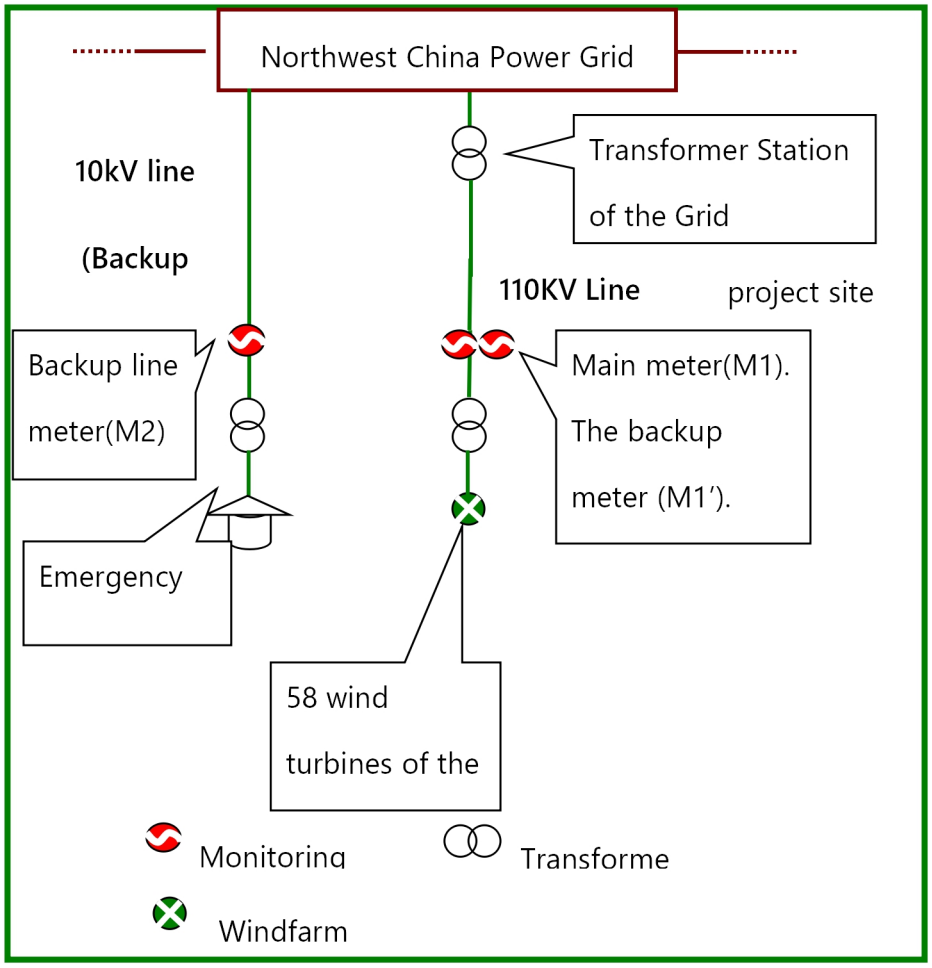

Figure 4-2 Installation of electricity meters

3. Data Management System

The metering equipments for the monitoring of EG_{ex}, $E_{im\_main\ line}$ are calibrated annually for accuracy by a qualified third party in accordance with industry standards. The metering equipment for the monitoring of $E_{im\_backup\ line}$ is calibrated every four years for accuracy by a qualified third party in accordance with industry standards. The backup line of the project has not been used since 01-Jan-2013. The calibration record of the electricity measure-related meters can be found at Table 3

Table 3. Calibration record of the meters

No.	Type	SN	Accuracy class	Required Calibration frequency	Calibration date	Calibration due on	Calibrated by
Main meter	SL7000	36088335	0.2S	Annually	09-Dec-2011 02-Dec-2012 28-Nov-2013 22-Nov-2014 18-Nov-2015 12-Nov-2016 08-Nov-2017	08-Dec-2012 01-Dec-2013 27-Nov-2014 21-Nov-2015 17-Nov-2016 11-Nov-2017 07-Nov-2018	Electric Energy Measurement Centre of State Grid Gansu Electric Power Corporation
Backup meter	SL7000	53043097	0.2S	Annually	09-Dec-2011 02-Dec-2012 28-Nov-2013 22-Nov-2014 18-Nov-2015 12-Nov-2016 08-Nov-2017	08-Dec-2012 01-Dec-2013 27-Nov-2014 21-Nov-2015 17-Nov-2016 11-Nov-2017 07-Nov-2018	Electric Energy Measurement Centre of State Grid Gansu Electric Power Corporation

Backup line meter	DTSD341	03395785	0.5S	Once per four years	25-Mar-2009	24-Mar-2013	Electric Energy Metrological Center of Yumen Power Bureau

QA/QC and emergency procedure

The main meter is used to measure the electricity delivered by the project to the grid, and as a bidirectional meter, also measure the electricity imported by the project from the grid, the backup line meter measures the electricity imported from the backup line. The net electricity supplied by the project activity to the grid is its reading of electricity delivered minus its reading of electricity imported and reading of backup line meter.

No emergency happened during this monitoring period.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

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

$$BE_y = EG_y \times EF_y$$

$$EG_y = EG_{ex} - E_{im\_main\ line} - E_{im\_backup\ line}$$

Where,

BE_y	Baseline emissions in year y (t CO_2e)
EG_y	Net electricity delivered to the grid by the project in the year y (MWh)
EG_{ex}	The total electricity delivered to the grid by the project (MWh)
$E_{im\_main\ line}$	The electricity imported from the grid by the project through the main line (MWh)
$E_{im\_backup\ line}$	The electricity imported from the grid by the project through the backup line (MWh);
EF_y	Baseline emission factor: the combined emission factor of the project grid system.

The monitored EG_y is reported in the table below.

Table 5-1 Monitored monthly value of EG_{ex}

Period	Electricity exported to the grid (EG_{ex}) (MWh)		
	Values from meter readings (main meter M1)	Values from Sales receipts	Conservative Value

	A	B	C=Min (A, B)
30/03/2012-28/04/2012	4,610.760	4,610.760	4,610.760
29/04/2012-29/05/2012	3,121.866	3,121.866	3,121.866
30/05/2012-28/06/2012	4,203.870	4,203.870	4,203.870
29/06/2012-29/07/2012	4,773.846	4,773.846	4,773.846
30/07/2012-29/08/2012	3,073.884	3,073.884	3,073.884
30/08/2012-28/09/2012	4,601.058	4,601.058	4,601.058
29/09/2012-29/10/2012	5,029.318	5,029.318	5,029.318
30/10/2012-28/11/2012	6,348.474	6,348.474	6,348.474
29/11/2012-29/12/2012	8,677.944	8,677.944	8,677.944
30/12/2012-31/12/2012	848.628	848.628	848.628
Subtotal -2012	**45,289.648**	**45,289.648**	**45,289.648**
01/01/2013-29/01/2013	4,023.756	4,023.756	4,023.756
30/01/2013-26/02/2013	4,815.426	4,815.426	4,815.426
27/02/2013-29/03/2013	6,067.578	6,067.578	6,067.578
30/03/2013-28/04/2013	3,405.798	3,405.798	3,405.798
29/04/2013-29/05/2013	4,291.254	4,291.254	4,291.254
30/05/2013-28/06/2013	4,685.076	4,685.076	4,685.076
29/06/2013-29/07/2013	3,451.866	3,451.866	3,451.866
30/07/2013-29/08/2013	4,151.400	4,151.400	4,151.400
30/08/2013-28/09/2013	5,163.840	5,163.840	5,163.840
29/09/2013-29/10/2013	5,337.684	5,337.684	5,337.684
30/10/2013-28/11/2013	6,561.720	6,561.720	6,561.720
29/11/2013-29/12/2013	4,129.752	4,129.752	4,129.752
30/12/2013-31/12/2013	985.18	985.18	985.182
Subtotal -2013	**57,070.332**	**57,070.332**	**57,070.332**
01/01/2014-29/01/2014	4,877.730	4,877.730	4,877.730
30/01/2014-26/02/2014	4,106.454	4,106.454	4,106.454
27/02/2014-29/03/2014	3,572.250	3,572.250	3,572.250
30/03/2014-28/04/2014	4,179.978	4,179.978	4,179.978
29/04/2014-29/05/2014	5,883.636	5,883.636	5,883.636
30/05/2014-28/06/2014	5,233.140	5,233.140	5,233.140
29/06/2014-29/07/2014	3,254.790	3,254.790	3,254.790
30/07/2014-29/08/2014	5,388.768	5,388.768	5,388.768
30/08/2014-28/09/2014	2,728.638	2,728.638	2,728.638
29/09/2014-29/10/2014	3,436.686	3,436.686	3,436.686
30/10/2014-28/11/2014	2,114.970	2,114.970	2,114.970
29/11/2014-29/12/2014	5,598.450	5,598.450	5,598.450
30/12/2014-31/12/2014	458.77	458.77	458.766

Period	Electricity exported to the grid (EG_{ex}) (MWh)		
	Values from meter readings (main meter M1)	Values from Sales receipts	Conservative Value
	A	B	C=Min (A, B)
Subtotal -2014	**50,834.256**	**50,834.256**	**50,834.256**
01/01/2015-29/01/2015	3,328.446	3,328.446	3,328.446
30/01/2015-26/02/2015	3,820.542	3,820.542	3,820.542
27/02/2015-29/03/2015	4,473.810	4,473.810	4,473.810
30/03/2015-28/04/2015	3,764.772	3,764.772	3,764.772
29/04/2015-29/05/2015	3,276.108	3,276.108	3,276.108
30/05/2015-28/06/2015	5,041.344	5,041.344	5,041.344
29/06/2015-29/07/2015	2,934.624	2,934.624	2,934.624
30/07/2015-29/08/2015	3,859.548	3,859.548	3,859.548
30/08/2015-28/09/2015	2,537.106	2,537.106	2,537.106
29/09/2015-29/10/2015	2,774.970	2,774.970	2,774.970
30/10/2015-28/11/2015	2,050.554	2,050.554	2,050.554
29/11/2015-29/12/2015	2,728.110	2,728.110	2,728.110
30/12/2015-31/12/2015	165.660	165.660	165.660
Subtotal -2015	**40,755.594**	**40,755.594**	**40,755.594**
01/01/2016-29/01/2016	3,876.972	3,876.972	3,876.972
30/01/2016-27/02/2016	3,145.824	3,145.824	3,145.824
28/02/2016-29/03/2016	3,648.810	3,648.810	3,648.810
30/03/2016-28/04/2016	3,791.502	3,791.502	3,791.502
29/04/2016-29/05/2016	4,111.536	4,111.536	4,111.536
30/05/2016-28/06/2016	4,182.024	4,182.024	4,182.024
29/06/2016-29/07/2016	2,649.306	2,649.306	2,649.306
30/07/2016-29/08/2016	2,476.518	2,476.518	2,476.518
30/08/2016-28/09/2016	2,148.498	2,148.498	2,148.498
29/09/2016-29/10/2016	3,065.040	3,065.040	3,065.040
30/10/2016-28/11/2016	2,253.900	2,253.900	2,253.900
29/11/2016-29/12/2016	3,933.548	3,933.548	3,933.548
30/12/2016-31/12/2016	102.696	102.696	102.696
Subtotal -2016	**39,386.174**	**39,386.174**	**39,386.174**
01/01/2017-29/01/2017	3,589.608	3,589.608	3,589.608
30/01/2017-26/02/2017	1,788.204	1,788.204	1,788.204
27/02/2017-29/03/2017	3,393.984	3,393.984	3,393.984
30/03/2017-28/04/2017	3,393.984	3,393.984	3,393.984
29/04/2017-29/05/2017	5,006.166	5,006.166	5,006.166
30/05/2017-28/06/2017	3,313.926	3,313.926	3,313.926

Period	Electricity exported to the grid (EG_{ex}) (MWh)		
	Values from meter readings (main meter M1)	Values from Sales receipts	Conservative Value
	A	B	C=Min (A, B)
29/06/2017-29/07/2017	2,612.412	2,612.412	2,612.412
30/07/2017-29/08/2017	3,900.006	3,900.006	3,900.006
30/08/2017-28/09/2017	3,443.484	3,443.484	3,443.484
29/09/2017-29/10/2017	4,859.316	4,859.316	4,859.316
30/10/2017-28/11/2017	4,248.420	4,248.420	4,248.420
29/11/2017-29/12/2017	4,946.832	4,946.832	4,946.832
30/12/2017-31/12/2017	360.426	360.426	360.426
Subtotal -2017	**44,856.768**	**44,856.768**	**44,856.768**
01/01/2018-29/01/2018	6,893.304	6,893.304	6,893.304
30/01/2018-26/02/2018	5,449.554	5,449.554	5,449.554
27/02/2018-29/03/2018	6,855.684	6,855.684	6,855.684
Subtotal -2018	19,198.542	19,198.542	19,198.542
Total	297,391.314	297,391.314	297,391.314

Note: The value from meter reading of M1 is based on the. recorded on the Power Grid Company's Sales receipts (recorded on 24:00 of the third last day of every month).

For the period from 1st to 29th in January, 30th to 31th in December during 2013-2018, the Power Grid Company issued the confirmation for EG_{ex} of the project based on the meter reading of the main meter M1.

Table 5-2 The calculation of $E_{im\_main\ line}$

Period	Electricity imported from the grid ($E_{im\_main\ line}$) (MWh)		
	Values from meter readings (main meter M1)	Values from Sales receipts	Conservative Value
	D	E	F=Max (D,E)
30/03/2012-20/04/2012	51.348	51.348	51.348
21/04/2012-20/05/2012	53.658	53.658	53.658
21/05/2012-20/06/2012	89.760	89.760	89.760
21/06/2012-20/07/2012	56.760	56.760	56.760
21/07/2012-20/08/2012	62.700	62.700	62.700
21/08/2012-20/09/2012	60.984	60.984	60.984
21/09/2012-20/10/2012	74.778	74.778	74.778
21/10/2012-20/11/2012	83.754	83.754	83.754
21/11/2012-20/12/2012	81.642	81.642	81.642
21/12/2012-31/12/2012	19.206	19.206	19.206

Period	Electricity imported from the grid ($E_{im\_main\ line}$) (MWh)		
	Values from meter readings (main meter M1)	Values from Sales receipts	Conservative Value
	D	E	F=Max (D,E)
Subtotal -2012	**634.590**	**634.590**	**634.590**
01/01/2013-20/01/2013	136.554	136.554	136.554
21/01/2013-20/02/2013	67.980	67.980	67.980
21/02/2013-20/03/2013	77.220	77.220	77.220
21/03/2013-20/04/2013	64.680	64.680	64.680
21/04/2013-20/05/2013	126.060	126.060	126.060
21/05/2013-20/06/2013	21.120	21.120	21.120
21/06/2013-20/07/2013	76.560	76.560	76.560
21/07/2013-20/08/2013	62.700	62.700	62.700
21/08/2013-20/09/2013	71.940	71.940	71.940
21/09/2013-20/10/2013	58.740	58.740	58.740
21/10/2013-20/11/2013	69.300	69.300	69.300
21/11/2013-20/12/2013	108.240	108.240	108.240
21/12/2013-31/12/2013	18.546	18.546	18.546
Subtotal -2013	**959.640**	**959.640**	**959.640**
01/01/2014-20/01/2014	30.954	30.954	30.954
21/01/2014-20/02/2014	120.120	120.120	120.120
21/02/2014-20/03/2014	128.040	128.040	128.040
21/03/2014-20/04/2014	99.000	99.000	99.000
21/04/2014-20/05/2014	45.540	45.540	45.540
21/05/2014-20/06/2014	54.120	54.120	54.120
21/06/2014-20/07/2014	40.920	40.920	40.920
21/07/2014-20/08/2014	45.540	45.540	45.540
21/08/2014-20/09/2014	44.880	44.880	44.880
21/09/2014-20/10/2014	78.540	78.540	78.540
21/10/2014-20/11/2014	79.860	79.860	79.860
21/11/2014-20/12/2014	112.200	112.200	112.200
21/12/2014-31/12/2014	7.986	7.986	7.986
Subtotal -2014	**887.700**	**887.700**	**887.700**
01/01/2015-20/01/2015	64.614	64.614	64.614
21/01/2015-20/02/2015	99.000	99.000	99.000
21/02/2015-20/03/2015	52.800	52.800	52.800
21/03/2015-20/04/2015	52.800	52.800	52.800
21/04/2015-20/05/2015	59.400	59.400	59.400

Period	Electricity imported from the grid ($E_{im\_main\ line}$) (MWh)		
	Values from meter readings (main meter M1)	Values from Sales receipts	Conservative Value
	D	E	F=Max (D,E)
21/05/2015-20/06/2015	19.800	19.800	19.800
21/06/2015-20/07/2015	34.980	34.980	34.980
21/07/2015-20/08/2015	26.400	26.400	26.400
21/08/2015-20/09/2015	59.400	59.400	59.400
21/09/2015-20/10/2015	59.400	59.400	59.400
21/10/2015-20/11/2015	105.600	105.600	105.600
21/11/2015-20/12/2015	99.000	99.000	99.000
21/12/2015-31/12/2015	11.682	11.682	11.682
Subtotal -2015	**744.876**	**744.876**	**744.876**
01/01/2016-20/01/2016	64.416	64.416	64.416
21/01/2016-20/02/2016	99.000	99.000	99.000
21/02/2016-20/03/2016	39.600	39.600	39.600
21/03/2016-20/04/2016	52.800	52.800	52.800
21/04/2016-20/05/2016	59.400	59.400	59.400
21/05/2016-20/06/2016	59.400	59.400	59.400
21/06/2016-20/07/2016	33.000	33.000	33.000
21/07/2016-20/08/2016	72.600	72.600	72.600
21/08/2016-20/09/2016	66.000	66.000	66.000
21/09/2016-20/10/2016	59.400	59.400	59.400
21/10/2016-20/11/2016	85.800	85.800	85.800
21/11/2016-20/12/2016	92.400	92.400	92.400
21/12/2016-31/12/2016	26.070	26.070	26.070
Subtotal -2016	**809.886**	**809.886**	**809.886**
01/01/2017-20/01/2017	105.930	105.930	105.930
21/01/2017-20/02/2017	79.200	79.200	79.200
21/02/2017-20/03/2017	66.000	66.000	66.000
21/03/2017-20/04/2017	66.000	66.000	66.000
21/04/2017-20/05/2017	46.200	46.200	46.200
21/05/2017-20/06/2017	39.600	39.600	39.600
21/06/2017-20/07/2017	66.000	66.000	66.000
21/07/2017-20/08/2017	52.800	52.800	52.800
21/08/2017-20/09/2017	46.200	46.200	46.200
21/09/2017-20/10/2017	52.800	52.800	52.800
21/10/2017-20/11/2017	92.400	92.400	92.400

Period	Electricity imported from the grid ($E_{im\_main\ line}$) (MWh)		
	Values from meter readings (main meter M1)	Values from Sales receipts	Conservative Value
	D	E	F=Max (D,E)
21/11/2017-20/12/2017	66.000	66.000	66.000
21/12/2017-31/12/2017	8.184	8.184	8.184
Subtotal -2017	**787.314**	**787.314**	**787.314**
01/01/2018-20/01/2018	38.016	38.016	38.016
21/01/2018-20/02/2018	46.200	46.200	46.200
21/02/2018-20/03/2018	66.000	66.000	66.000
21/03/2018-29/03/2018	39.600	39.600	39.600
Subtotal -2018	189.816	189.816	189.816
Total	5,013.822	5,013.822	5,013.822

Note: The value from meter reading of M1 is based on the. recorded on the Power Grid Company's Sales receipts (recorded on 24:00 of the 20th day of every month).

For the period from 1st to 20th in January, 21th to 31th in December during 2013-2018, the Power Grid Company issued the confirmation for $E_{im\_main\ line}$ of the project based on the meter reading of the main meter M1.

Table 5-3 The calculation of $E_{im\_backup\ line}$

Period	Electricity imported from the grid ($E_{im\_backup\ line}$) (MWh)		
	Values from meter readings (backup line meter M2)	Values from Sales receipts	Conservative Value
	G	H	I=Max (G,H)
30/03/2012-14/04/2012	0.000	0.000	0.000
15/04/2012-14/05/2012	0.000	0.000	0.000
15/05/2012-14/06/2012	0.000	0.000	0.000
15/06/2012-14/07/2012	0.000	0.000	0.000
15/07/2012-14/08/2012	0.000	0.000	0.000
15/08/2012-14/09/2012	0.000	0.000	0.000
15/09/2012-14/10/2012	0.000	0.000	0.000
15/10/2012-14/11/2012	0.000	0.000	0.000
15/11/2012-14/12/2012	0.000	0.000	0.000
15/12/2012-31/12/2012	0.000	0.000	0.000
Subtotal -2012	0.000	0.000	0.000
Total	0.000	0.000	0.000

Note: The value from meter reading of M2 is based on the. recorded on the Power Grid Company's Sales receipts (recorde on 24:00 of the 14th day of every month).

For the period from 1st to 14th in January, 15th to 31th in December during 2013-2018, the Power Grid Company issued the confirmation for $E_{im\_backup\ line}$ of the project based on the meter reading of the backup line meter M2.

The baseline emissions of the project are calculated as follows:

Table 5-4 Calculation of Baseline emissions

Year	EG_y (MWh)	$EF_{,y}$ (tCO_2/MWh)	BE_y (tCO_2)
30/03/2012-31/12/2012	44,655.058	0.9369	41,837
01/01/2013-31/12/2013	56,110.692	0.9369	52,570
01/01/2014-31/12/2014	49,946.556	0.9369	46,794
01/01/2015-31/12/2015	40,010.718	0.9369	37,486
01/01/2016-31/12/2016	38,576.288	0.9369	36,142
01/01/2017-31/12/2017	44,069.454	0.9369	41,288
01/01/2018-29/03/2018	19,008.726	0.9369	17,809
Total	**292,377.492**		**273,926**

In summary, the baseline emissions (BE_y) during this monitoring period is 273,926 tCO_2e.

5.2 Project Emissions

As per the applied methodology ACM0002 (Version 6), the project emission is zero.

5.3 Leakage

As per the applied methodology ACM0002 (Version 6), leakage of the project is not considered.

5.4 Net GHG Emission Reductions and Removals

Year	Baseline	Project	Leakage	Net GHG

	emissions or removals (tCO_2e)	emissions or removals (tCO_2e)	emissions (tCO_2e)	emission reductions or removals (tCO_2e)
2012 30-Mar-2012~31-Dec-2012	41,837	0	0	41,837
2013 01-Jan-2013~31-Dec-2013	52,570	0	0	52,570
2014 01-Jan-2014~31-Dec-2014	46,794	0	0	46,794
2015 01-Jan-2015~31-Dec-2015	37,486	0	0	37,486
2016 01-Jan-2016~31-Dec-2016	36,142	0	0	36,142
2017 01-Jan-2017~31-Dec-2017	41,288	0	0	41,288
2018 01-Jan-2018~29-Mar-2018	17,809	0	0	17,809
Total	**273,926**			**273,926**

Comparison of actual emission reduction and the estimation in the registered PDD.

This monitoring period started from 30-Mar-2012 to 29-Mar-2018, with totally 2,191 days. Based on the annual estimated emission reductions from the registered CDM PDD, the amount of emission reductions for this monitoring period would be 106,556 tCO_2e/365 d×2,191d=639,628tCO_2e. The actual emission reductions in this monitoring period (2,191 days) are 273,926 tCO_2e, which are 57.17% lower than the estimation in the PDD. It was

mainly resulted by the erratically fluctuation of wind resources in the project area, and limited absorption capacity of local grid.

APPENDIX1: <SUPPORTING EVIDENCE>

Evidence for SDG 7 and SDG 13: From project operation date onwards, the net electricity supplied to the grid and corresponding emission reduction in every monitoring period have been listed in below table. Please refer to following links for details.

https://cdm.unfccc.int/Projects/DB/TUEV-SUED1218655051.51/view

https://registry.verra.org/app/projectDetail/VCS/124

Period		**$EG_{facility,y}$**	**ER**	**Program**
From	To	MWh	tCO_2e	
01-Jun-2008	07-Jan-2009	51,699.136	48,436	VCS
08-Jan-2009	29-Dec-2009	82,905.842	77,674	CDM
30-Dec-2009	28-Jun-2010	50,124.390	46,961	CDM
29-Jun-2010	28-Jun-2011	79,653.192	74,627	CDM
29-Jun-2011	29-Mar-2012	31,244.007	29,272	CDM
30-Mar-2012	29-Mar-2018	292,377.492	273,926	VCS
Total		588004.059	550896	

Since the current project contributions with all impacts are not included in previously approved VCS monitoring reports or Sustainable Development Contribution Reports, all impacts during the previous monitoring period from 01-Jun-2008 to 29-Mar-2012 have not been calculated in the cumulative impact. Thus, the cumulative impacts in project lifetime are same as the one in this monitoring period.

Evidence for SDG 8: The proof of income and the number of the employees will be submitted as a separate document to VVB due to confidentiality requirement of the project proponent.