



# INNER MONGOLIA CHIFENG GAOFENG WIND POWER PROJECT

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

|                          |                                                                                                                                                                                                    |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Project Title</b>     | Inner Mongolia Chifeng Gaofeng Wind Power Project                                                                                                                                                  |
| <b>Version</b>           | 02                                                                                                                                                                                                 |
| <b>Report ID</b>         | -                                                                                                                                                                                                  |
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| <b>Project ID</b>        | 813                                                                                                                                                                                                |
| <b>Monitoring Period</b> | 01-May-2012 to 31-December-2017                                                                                                                                                                    |
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# 1 PROJECT DETAILS

## 1.1 Summary Description of the Implementation Status of the Project

Inner Mongolia Chifeng Gaofeng Wind Power Project, (hereafter referred to as the project) is a grid-connected renewable energy project located at northwest of Songshan District, Chifeng City, Inner Mongolia Autonomous Region, P.R.China. The objective of the project is to generate electricity using wind power generation technology and to sell it into the Power Grid. Totally 25 sets of 2000kW wind turbines (Vestas V80-2000kW of Denmark) have been installed, providing a total capacity of 50MW.

The project is expected to supply 131,700 MW of renewable electricity annually to the power grid during the 20 years lifetime. The project achieves CO<sub>2</sub> emission reduction by replacing electricity generated by fossil fuel-fired power plants connected to Northeast China Power Grid (NEPG). The estimated annual emission reduction of the project is 150,915 tCO<sub>2</sub>e.

The Project started construction on 25/08/2007. The first wind turbine of the Project started commissioning on 11/12/2008 and the project was put into full operation on 24/12/2008. The wind farm operates normally and smoothly during this monitoring period.

This is the second monitoring period from 01/05/2012 to 31/12/2017 under the VCS program for the project. The total GHG emission reductions generated in this monitoring period are 740,545 tCO<sub>2</sub>e.

## 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 | Chifeng Xinsheng Wind Power Co., Ltd                                   |
| Contact person    | Wang Haihan                                                            |
| Title             | Project manager                                                        |
| Address           | Xing 'an Street South, Xincheng District, Chifeng City, Inner Mongolia |
| Telephone         | +04 76 8831640                                                         |
| Email             | 12002645@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      | Shanshan Yu                                                                                     |
| Title               | General Manager                                                                                 |
| Address             | Room 1701-085, 17th Floor, No. 9, North Fourth Ring West Road, Haidian District, Beijing, China |
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## 1.5 Project Start Date

11/12/2008 (Date on which the first wind turbine of the Project started commissionin)

## 1.6 Project Crediting Period

The 1<sup>st</sup> crediting period of the VCS project was from 11/12/2008 to 10/12/2018 (10 years).

There is a deviation for the crediting period. The project is registered under VCS Standard Version 3 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 11/12/2008~24/10/2010 to 11/12/2008~10/12/2018. This monitoring period belongs to the first crediting period from 11/12/2008 to 10/12/2018.

## 1.7 Project Location

The project is located at northwest of Songshan District, Chifeng City, Inner Mongolia Autonomous Region, P.R.China, its geographical coordinates are north latitude 42°23'02" and east longitude 118°43'26", its altitude is 1601m.

The below figure shows the project's location:

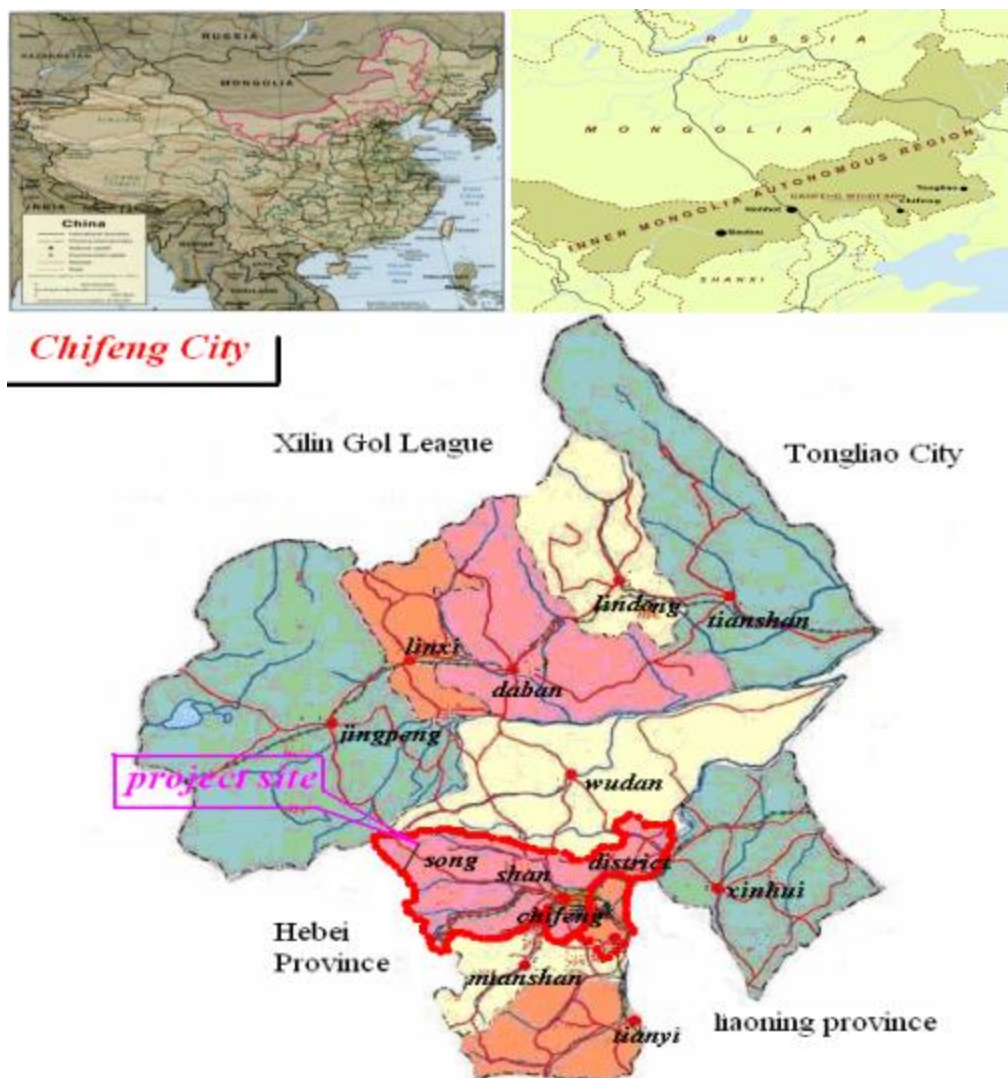


Figure 1 The Location of the project

## 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 10)

The methodology also refers to the latest approved versions of the following tools:

Tool to calculate the emission factor for an electricity system (Version 02);

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. 3439, the detailed information can be found at <https://cdm.unfccc.int/Projects/DB/DNV-CUK1266838855.4/view>.

The 219,306 tCO<sub>2</sub> of emission reductions achieved during the period from 25/10/2010 to 30/04/2012 have been issued as CERs under the CDM program. The first monitoring period under the VCS program was from 11/12/2008 to 24/10/2010, with VCUs successfully issued. This is the second monitoring period under the VCS program from 01/05/2012 to 31/12/2017 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 the VCS program.

## 1.10 Other Forms of Credit

### Emission Trading Programs and Other Binding Limits

China has a national emissions trading scheme only covers 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<sub>2</sub>e/year, not including renewable project<sup>1</sup>.

Thus, the project proponent: Chifeng Xinsheng 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.

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<sup>1</sup> [http://www.mee.gov.cn/xxgk2018/xxgk/xxgk05/202103/t20210330\\_826728.html](http://www.mee.gov.cn/xxgk2018/xxgk/xxgk05/202103/t20210330_826728.html)

## 1.11 Sustainable Development Contributions

The project activity is a renewable wind power project located in Inner Mongolia Autonomous Region, Northeast China.



The project utilizes wind resources to generate and supply 646,259.410 MWh of renewable electricity to the power grid during this monitoring period, which contributes to SDG 7.



The project provides 20 long-term decent job opportunities (including 11 female employees) for the 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 740,545 tCO<sub>2</sub>e GHG emissions during this monitoring period and contributes to SDG 13.

These contribute to achieve China's stated sustainable development priorities, including strengthening resistance capacity to climate risks, increasing labor force participation rate, increasing the share of clean energy consumption.

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 number | SDG Target | SDG Indicator                                                                 | Net Impact on SDG Indicator        | Current Project Contributions                                                                                                                                  | Contributions Over Project Lifetime                                                                                                      |
|------------|------------|-------------------------------------------------------------------------------|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| 1)         | 7.2        | Renewable energy supplied to the power grid                                   | Implemented activities to increase | 646,259.410 MWh of electricity from renewable sources has been supplied to the power grid during the reporting period.                                         | An accumulated 646,259.410 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 | 20 people including 11 female employees have been employed by the project as long-term employees which have a income rate higher than the local average level. | 20 people have been employed by the project as long-term employees 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 740,545 tCO <sub>2</sub> e during the reporting period.                                             | An accumulated 740,545 tCO <sub>2</sub> e of GHG emission reduction have been achieved by the project by end of the reporting period.    |

## 2 SAFEGUARDS

### 2.1 No Net Harm

The Environmental Impact Assessment (EIA) of the project has been conducted and approved by local government officials. The EIA report has assessed every possible aspect of the 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 PD. No negative environmental impacts have been identified.

Furthermore, the project makes positively contributes to 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, no net harm to the 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 in Aug. 2007. All comments received have been well addressed. Please refer to section E of the registered PD of the project for detailed information.

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 to the project have been communicated to the local authority, the neighborhood committee, and local residents. The comments and suggestions from residents were collected by the local authority if any.

The project owner carried out a questionnaire survey for the local stakeholders to collect the relevant comments and suggestions every two years, e.g., in May 2012, June 2014, and April 2016 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 required.

# 3 IMPLEMENTATION STATUS

## 3.1 Implementation Status of the Project Activity

The project is installed and operated 25 wind turbines (Vestas V80-2000kW of Denmark) with a unit capacity of 2000 kW, for a total capacity of 50 MW. The main technical specifications are as follows:

Table 1: Technical parameters of the Wind Turbines

| Vestas V80-2000kW of Denmark |                                   |
|------------------------------|-----------------------------------|
| Rotor 2000 kW                |                                   |
| Type                         | 3-bladed, horizontal axis         |
| Diameter                     | 80 m                              |
| Area Swept                   | 5027 m <sup>2</sup>               |
| Nominal revolutions          | 16.7 rpm                          |
| Operational interval         | 9-19 rpm                          |
| Operational data             |                                   |
| Cut-in wind speed            | 4 m/s                             |
| Nominal wind speed           | 15 m/s                            |
| Cut-out wind speed           | 25 m/s                            |
| Generator                    |                                   |
| Type                         | Double-fed Asynchronous Generator |
| Nominal Power                | 2000 kW                           |
| Operational data             | 50 Hz / 690 V                     |
| Towers                       |                                   |
| Hub heights(approx)          | 67 m                              |
| Technical Lifetime           | 20 years                          |

The project adopts a unit connection mode of one-turbine-one-transformer. Each turbine has a 690V to 35kV transformer, from which a 35kV line links into the main transformer at the Sunjiaying 35kV-to-220kV switch station. By the 220kV line, the electricity generated by the proposed project is delivered to the Chifeng Power Grid which is an integral part of the Northeast Power Grid (NEPG). Please refer to the Figure 2 of the section 4.3 for detail.

During this monitoring period, the project was implemented in accordance with the registered VCS PD. 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

The project is registered under VCS Version 3 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 1<sup>st</sup> crediting period of the project should be updated from “11/12/2008 to 24/10/2010” to “11/12/2008 to 10/12/2018”.

The deviation does 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

|                  |                                                                             |
|------------------|-----------------------------------------------------------------------------|
| Data / Parameter | EF <sub>grid,CM,y</sub>                                                     |
| Data unit        | tCO <sub>2</sub> /MWh                                                       |
| Description      | Combined margin CO <sub>2</sub> emission factor of the power grid in year y |
| Source of data   | Registered PD                                                               |
| Value applied    | 1.1459                                                                      |

|                                                                                              |                                                                       |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| Justification of choice of data or description of measurement methods and procedures applied | Determined ex-ante and fixed for the 1 <sup>st</sup> crediting period |
| Purpose of Data                                                                              | Calculation of baseline emissions                                     |
| Comments                                                                                     | -                                                                     |

## 4.2 Data and Parameters Monitored

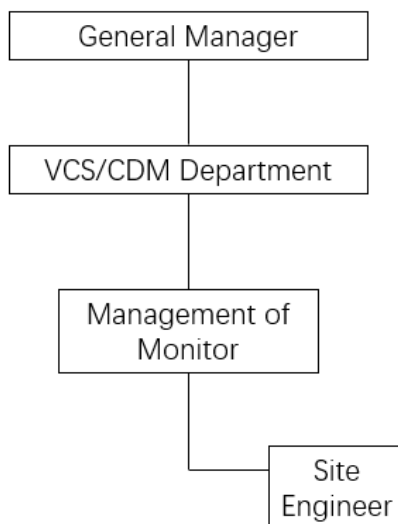
|                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                       |                                                                                                       |
|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                | EG <sub>y</sub>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                       |                                                                                                       |
| Data unit                                                       | MWh                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                       |                                                                                                       |
| Description                                                     | Net electricity supplied by the project activity to the grid during the year y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                       |                                                                                                       |
| Source of data                                                  | Electricity meter reading records from M2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                       |                                                                                                       |
| Description of measurement methods and procedures to be applied | <p>Two meters (the main meter M2's accuracy degree is 0.2S, and the backup meter M1's accuracy degree is 0.5S) have been installed to measure the electricity exported to and imported from the grid. The meter M2 has been installed at the high-voltage side of Sunjiaying 35kV-to-220kV switch station and servers as the main meter. The meter M1 has been installed at the low-voltage side of Sunjiaying 35kV-to-220kV switch station and servers as the backup meter.</p> <p>The meters both have two-way metering and can record electricity exported to and imported from the grid. The readings of the electricity meter are continuously measured and monthly recorded.</p> |                                                                                                       |                                                                                                       |
| Frequency of monitoring/recording                               | Continuously measured and monthly recorded                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                       |                                                                                                       |
| Value monitored                                                 | 646,259.410                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                       |                                                                                                       |
| Monitoring equipment                                            | Monitoring equipment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | M1 (Backup meter)                                                                                     | M2 (Main meter)                                                                                       |
|                                                                 | Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | DSSD331                                                                                               | ZMD402CT44.0457                                                                                       |
|                                                                 | Serial No.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 20070767010229                                                                                        | 94348631                                                                                              |
|                                                                 | Accuracy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0.5S                                                                                                  | 0.2S                                                                                                  |
|                                                                 | Calibration frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Annually                                                                                              | Annually                                                                                              |
|                                                                 | Calibration date                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 25/07/2011;<br>22/07/2012;<br>20/07/2013;<br>16/07/2014;<br>12/07/2015;<br>10/07/2016;<br>07/07/2017; | 25/07/2011;<br>22/07/2012;<br>20/07/2013;<br>16/07/2014;<br>12/07/2015;<br>10/07/2016;<br>07/07/2017; |
|                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                       |                                                                                                       |

|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                       |                                                                                                       |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
|                                | Calibration validity                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 24/07/2012;<br>21/07/2013;<br>19/07/2014;<br>15/07/2015;<br>11/07/2016;<br>09/07/2017;<br>06/07/2018; | 24/07/2012;<br>21/07/2013;<br>19/07/2014;<br>15/07/2015;<br>11/07/2016;<br>09/07/2017;<br>06/07/2018; |
| QA/QC procedures to be applied | Electricity sales and purchase receipts are obtained for double-checking. The electricity meters M1 (accuracy degree of 0.5S) and M2 (accuracy degree of 0.2S) are properly configured and checked annually according to the requirement of the Technical administrative code of electric energy metering (DL/T448) and compliance with the requirement of the monitoring plan.<br>Data is archived for 2 years following the end of the crediting period by means of electronic and paper backup. |                                                                                                       |                                                                                                       |
| Purpose of the data            | Calculation of baseline emissions                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                       |                                                                                                       |
| Calculation method             | The net electricity $EG_y$ is obtained through the electricity exported to the grid subtract the electricity imported from the grid.                                                                                                                                                                                                                                                                                                                                                               |                                                                                                       |                                                                                                       |
| Comments                       | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                       |                                                                                                       |

### 4.3 Monitoring Plan

#### Organizational structure

The Management Group consists of professional staff authorized by the owner of the proposed project, i.e. Chifeng Xinsheng Wind Power Co., Ltd. The management structure is illustrated as follows:



The general manager makes the overall policy decision while the VCS/CDM department is responsible for the concrete implementation of the Monitoring Plan. The monitor manager is

responsible for supervising and checking the whole data record process and the calibration of meters. Another main task of the monitor manager is facilitating the verification through providing the VVB with all required necessary information. The site engineer should collect monitoring data (e.g. electric meter data), keep receipt of sales, calculate emission reduction and prepare the monitor report. Before the start of the monitor, all members in the VCS/CDM department should have received well training on VCS/CDM issues.

### Monitoring equipment

Two meters (the main meter M2's accuracy degree is 0.2S, and the backup meter M1's accuracy degree is 0.5S) have been installed at the transformer station to measure the electricity exported to and imported from the local grid. The meter M2 has been installed at the high-voltage side of Sunjiaying 35kV-to-220kV switch station and serves as the main meter. The meter M1 has been installed at the low-voltage side of Sunjiaying 35kV-to-220kV switch station and serves as the backup meter.

The net electricity  $EG_y$  is obtained through the electricity exported to the grid subtract the electricity imported from the grid.

The installation of electricity meters is shown in the figure below:

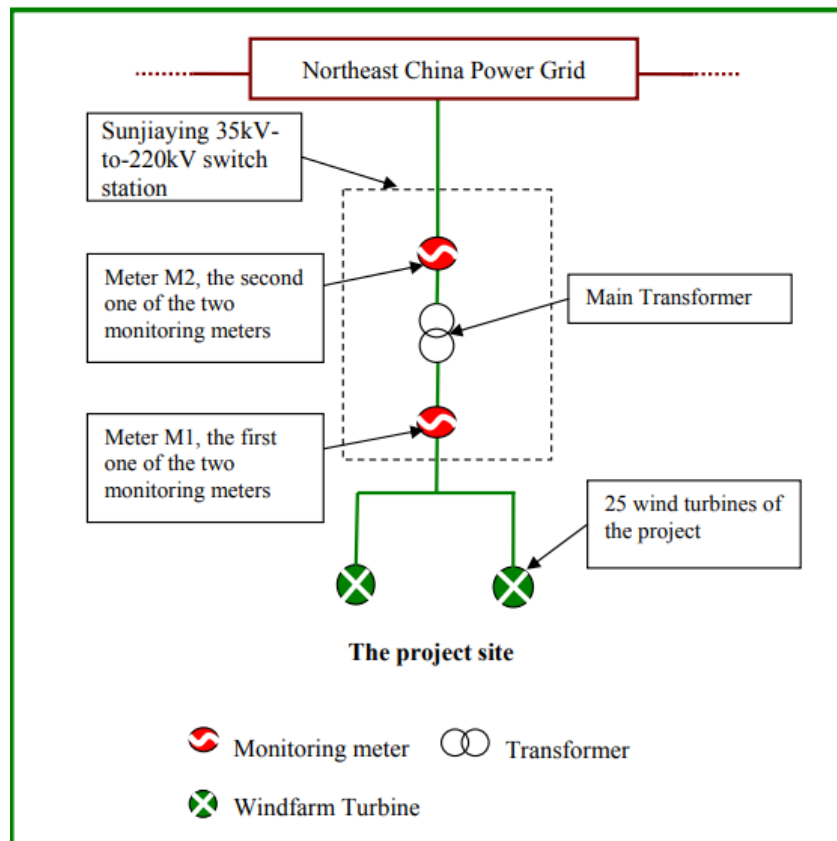


Figure 2 Installation of electricity meters

**Data collection**

Electricity exported to the grid by the project and electricity imported from the grid by the project are continuously measured and monthly recorded by the main meter M2 and backup meter M1, the grid company and the project proponent read the data of M2 and after confirmed by both sides, the grid company issues the sales and purchase receipt that used to crosscheck the monthly recording data. The cut-off time for the electricity exports and imports is at 24:00 on the last day of each month in this monitoring period.

**QA/QC and emergency procedure**

All electricity meters have been calibrated annually by qualified entity as per the requirement of Technical administrative code of electric energy metering (DL/T448). Sales and purchase receipts are used to crosscheck with meter readings, and conservative values are applied for emission reduction calculation.

If the project owner or the grid company finds any reading of the meters more than the allowable error or the monitoring equipment functions improperly, it should inform the other party immediately. The project owner and the grid company should retain a qualified measure institute together to check the meters or equipment, solve the problems and get everything into normal condition; In the mean time, both sides shall jointly prepare an acceptable estimation method according to Regulations and Rules of Power Supply issued by State Electricity Regulatory Commission of China to calculate the electricity exported to the Grid, and provide evidence to VVB for the verification to show the estimation is reasonable and conservative.

For the handling of disputes between the proposed project owner and the Grid, measures should be adopted according to relevant articles of Interim Measures for Settlement of Electricity Charges between the Power Generating Enterprises and the Grid Enterprises issued by State Electricity Regulatory Commission of China.

There is no emergency happened in this monitoring period.

## 5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

### 5.1 Baseline Emissions

According to the registered VCS PD of the Project, the baseline emission  $BE_y$  during the monitoring period results from:

$$BE_y = EG_y \times EF_{grid,CM,y} \quad (1)$$

Where,

|                  |                                                                                                      |
|------------------|------------------------------------------------------------------------------------------------------|
| $BE_y$           | The baseline emissions of the Project in year y (tCO <sub>2</sub> e)                                 |
| $EG_y$           | Net electricity supplied by the project activity to the grid during the year y (MWh)                 |
| $EF_{grid,CM,y}$ | Combined margin CO <sub>2</sub> emission factor of the power grid in year y (tCO <sub>2</sub> e/MWh) |

The monthly data of  $EG_y$  is reported in the table below.

Table 1 Monitored monthly value of EG<sub>y</sub>

| Period               |            | Electricity exported to the grid<br>by the project (MWh) |                               |                        | Electricity imported<br>from the grid by the project (MWh) |                                        |                        | EG <sub>y</sub> (MWh) |
|----------------------|------------|----------------------------------------------------------|-------------------------------|------------------------|------------------------------------------------------------|----------------------------------------|------------------------|-----------------------|
|                      |            | Monthly recording<br>data from M2                        | Values from sales<br>receipts | Conservative<br>values | Monthly<br>recording<br>data from<br>M2                    | Values<br>from<br>purchase<br>receipts | Conservative<br>values |                       |
|                      |            | A                                                        | B                             | C=min(A,B)             | D                                                          | E                                      | F=max(D,F)             |                       |
| 01/05/2012           | 31/05/2012 | 10,660.000                                               | 10,660.000                    | 10,660.000             | 15.465                                                     | 15.465                                 | 15.465                 | 10,644.535            |
| 01/06/2012           | 30/06/2012 | 7,700.000                                                | 7,700.000                     | 7,700.000              | 35.996                                                     | 35.996                                 | 35.996                 | 7,664.004             |
| 01/07/2012           | 31/07/2012 | 5,250.000                                                | 5,250.000                     | 5,250.000              | 53.328                                                     | 53.328                                 | 53.328                 | 5,196.672             |
| 01/08/2012           | 31/08/2012 | 3,790.000                                                | 3,790.000                     | 3,790.000              | 40.263                                                     | 40.263                                 | 40.263                 | 3,749.737             |
| 01/09/2012           | 30/09/2012 | 4,910.000                                                | 4,910.000                     | 4,910.000              | 49.995                                                     | 49.995                                 | 49.995                 | 4,860.005             |
| 01/10/2012           | 31/10/2012 | 12,680.000                                               | 12,680.000                    | 12,680.000             | 47.196                                                     | 47.196                                 | 47.196                 | 12,632.804            |
| 01/11/2012           | 30/11/2012 | 6,740.000                                                | 6,740.000                     | 6,740.000              | 59.594                                                     | 59.594                                 | 59.594                 | 6,680.406             |
| 01/12/2012           | 31/12/2012 | 13,820.000                                               | 13,820.000                    | 13,820.000             | 28.131                                                     | 28.131                                 | 28.131                 | 13,791.869            |
| <b>Subtotal 2012</b> |            | <b>65,550.000</b>                                        | <b>65,550.000</b>             | <b>65,550.000</b>      | <b>329.967</b>                                             | <b>329.968</b>                         | <b>329.968</b>         | <b>65,220.032</b>     |
| 01/01/2013           | 31/01/2013 | 13,290.000                                               | 13,290.000                    | 13,290.000             | 21.198                                                     | 21.198                                 | 21.198                 | 13,268.802            |
| 01/02/2013           | 28/02/2013 | 13,840.000                                               | 13,840.000                    | 13,840.000             | 35.996                                                     | 35.996                                 | 35.996                 | 13,804.004            |
| 01/03/2013           | 31/03/2013 | 9,020.000                                                | 9,020.000                     | 9,020.000              | 15.396                                                     | 15.396                                 | 15.396                 | 9,004.604             |
| 01/04/2013           | 30/04/2013 | 11,280.000                                               | 11,280.000                    | 11,280.000             | 11.866                                                     | 11.866                                 | 11.866                 | 11,268.134            |
| 01/05/2013           | 31/05/2013 | 8,890.000                                                | 8,890.000                     | 8,890.000              | 20.532                                                     | 20.532                                 | 20.532                 | 8,869.468             |
| 01/06/2013           | 30/06/2013 | 6,190.000                                                | 6,190.000                     | 6,190.000              | 24.531                                                     | 24.531                                 | 24.531                 | 6,165.469             |
| 01/07/2013           | 31/07/2013 | 6,330.000                                                | 6,330.000                     | 6,330.000              | 11.999                                                     | 11.999                                 | 11.999                 | 6,318.001             |
| 01/08/2013           | 31/08/2013 | 8,360.000                                                | 8,360.000                     | 8,360.000              | 20.531                                                     | 20.531                                 | 20.531                 | 8,339.469             |
| 01/09/2013           | 30/09/2013 | 8,390.000                                                | 8,390.000                     | 8,390.000              | 12.666                                                     | 12.666                                 | 12.666                 | 8,377.334             |

|                      |            |                    |                    |                    |                |                |                |                    |
|----------------------|------------|--------------------|--------------------|--------------------|----------------|----------------|----------------|--------------------|
| 01/10/2013           | 31/10/2013 | 11,490.000         | 11,490.000         | 11,490.000         | 9.599          | 9.599          | 9.599          | 11,480.401         |
| 01/11/2013           | 30/11/2013 | 16,340.000         | 16,340.000         | 16,340.000         | 20.665         | 20.665         | 20.665         | 16,319.335         |
| 01/12/2013           | 31/12/2013 | 17,550.000         | 17,550.000         | 17,550.000         | 16.798         | 16.798         | 16.798         | 17,533.202         |
| <b>Subtotal 2013</b> |            | <b>130,970.000</b> | <b>130,970.000</b> | <b>130,970.000</b> | <b>221.776</b> | <b>221.777</b> | <b>221.777</b> | <b>130,748.223</b> |
| 01/01/2014           | 31/01/2014 | 18,920.000         | 18,920.000         | 18,920.000         | 25.064         | 25.064         | 25.064         | 18,894.936         |
| 01/02/2014           | 28/02/2014 | 6,610.000          | 6,610.000          | 6,610.000          | 30.930         | 30.930         | 30.930         | 6,579.070          |
| 01/03/2014           | 31/03/2014 | 11,850.000         | 11,850.000         | 11,850.000         | 22.665         | 22.665         | 22.665         | 11,827.335         |
| 01/04/2014           | 30/04/2014 | 9,440.000          | 9,440.000          | 9,440.000          | 26.264         | 26.264         | 26.264         | 9,413.736          |
| 01/05/2014           | 31/05/2014 | 14,540.000         | 14,540.000         | 14,540.000         | 24.398         | 24.398         | 24.398         | 14,515.602         |
| 01/06/2014           | 30/06/2014 | 4,080.000          | 4,080.000          | 4,080.000          | 29.330         | 29.330         | 29.330         | 4,050.670          |
| 01/07/2014           | 31/07/2014 | 7,330.000          | 7,330.000          | 7,330.000          | 58.661         | 58.661         | 58.661         | 7,271.339          |
| 01/08/2014           | 31/08/2014 | 2,780.000          | 2,780.000          | 2,780.000          | 37.330         | 37.330         | 37.330         | 2,742.670          |
| 01/09/2014           | 30/09/2014 | 6,022.000          | 6,022.000          | 6,022.000          | 26.931         | 26.931         | 26.931         | 5,995.069          |
| 01/10/2014           | 31/10/2014 | 9,778.000          | 9,778.000          | 9,778.000          | 41.329         | 41.329         | 41.329         | 9,736.671          |
| 01/11/2014           | 30/11/2014 | 16,135.000         | 16,135.000         | 16,135.000         | 29.064         | 29.064         | 29.064         | 16,105.936         |
| 01/12/2014           | 31/12/2014 | 22,379.000         | 22,379.000         | 22,379.000         | 45.329         | 45.329         | 45.329         | 22,333.671         |
| <b>Subtotal 2014</b> |            | <b>129,864.000</b> | <b>129,864.000</b> | <b>129,864.000</b> | <b>397.293</b> | <b>397.295</b> | <b>397.295</b> | <b>129,466.705</b> |
| 01/01/2015           | 31/01/2015 | 15,192.000         | 15,192.000         | 15,192.000         | 31.997         | 31.997         | 31.997         | 15,160.003         |
| 01/02/2015           | 28/02/2015 | 12,440.000         | 12,440.000         | 12,440.000         | 47.995         | 47.995         | 47.995         | 12,392.005         |
| 01/03/2015           | 31/03/2015 | 16,296.000         | 16,296.000         | 16,296.000         | 39.996         | 39.996         | 39.996         | 16,256.004         |
| 01/04/2015           | 30/04/2015 | 11,627.000         | 11,627.000         | 11,627.000         | 21.331         | 21.331         | 21.331         | 11,605.669         |
| 01/05/2015           | 31/05/2015 | 11,879.000         | 11,879.000         | 11,879.000         | 18.665         | 18.665         | 18.665         | 11,860.335         |
| 01/06/2015           | 30/06/2015 | 6,190.000          | 6,190.000          | 6,190.000          | 37.329         | 37.329         | 37.329         | 6,152.671          |
| 01/07/2015           | 31/07/2015 | 2,865.000          | 2,865.000          | 2,865.000          | 50.662         | 50.662         | 50.662         | 2,814.338          |
| 01/08/2015           | 31/08/2015 | 4,192.000          | 4,192.000          | 4,192.000          | 45.329         | 45.329         | 45.329         | 4,146.671          |
| 01/09/2015           | 30/09/2015 | 5,236.000          | 5,236.000          | 5,236.000          | 34.663         | 34.663         | 34.663         | 5,201.337          |
| 01/10/2015           | 31/10/2015 | 11,873.000         | 11,873.000         | 11,873.000         | 21.331         | 21.331         | 21.331         | 11,851.669         |
| 01/11/2015           | 30/11/2015 | 6,890.000          | 6,890.000          | 6,890.000          | 34.663         | 34.663         | 34.663         | 6,855.337          |
| 01/12/2015           | 31/12/2015 | 8,956.000          | 8,956.000          | 8,956.000          | 37.330         | 37.330         | 37.330         | 8,918.670          |
| <b>Subtotal 2015</b> |            | <b>113,636.000</b> | <b>113,636.000</b> | <b>113,636.000</b> | <b>421.291</b> | <b>421.291</b> | <b>421.291</b> | <b>113,214.709</b> |
| 01/01/2016           | 31/01/2016 | 3,673.000          | 3,673.000          | 3,673.000          | 50.662         | 50.662         | 50.662         | 3,622.338          |

|                      |            |                    |                    |                    |                  |                  |                  |                    |
|----------------------|------------|--------------------|--------------------|--------------------|------------------|------------------|------------------|--------------------|
| 01/02/2016           | 29/02/2016 | 7,090.000          | 7,090.000          | 7,090.000          | 55.995           | 55.995           | 55.995           | 7,034.005          |
| 01/03/2016           | 31/03/2016 | 6,696.000          | 6,696.000          | 6,696.000          | 34.663           | 34.663           | 34.663           | 6,661.337          |
| 01/04/2016           | 30/04/2016 | 893.000            | 893.000            | 893.000            | 71.993           | 71.993           | 71.993           | 821.007            |
| 01/05/2016           | 31/05/2016 | 14,227.000         | 14,227.000         | 14,227.000         | 38.663           | 38.663           | 38.663           | 14,188.337         |
| 01/06/2016           | 30/06/2016 | 5,371.000          | 5,371.000          | 5,371.000          | 26.664           | 26.664           | 26.664           | 5,344.336          |
| 01/07/2016           | 31/07/2016 | 2,816.000          | 2,816.000          | 2,816.000          | 45.329           | 45.329           | 45.329           | 2,770.671          |
| 01/08/2016           | 31/08/2015 | 3,811.000          | 3,811.000          | 3,811.000          | 58.661           | 58.661           | 58.661           | 3,752.339          |
| 01/09/2016           | 30/09/2016 | 4,849.000          | 4,849.000          | 4,849.000          | 34.663           | 34.663           | 34.663           | 4,814.337          |
| 01/10/2016           | 31/10/2016 | 10,231.000         | 10,231.000         | 10,231.000         | 33.863           | 33.863           | 33.863           | 10,197.137         |
| 01/11/2016           | 30/11/2016 | 15,646.000         | 15,646.000         | 15,646.000         | 51.462           | 51.462           | 51.462           | 15,594.538         |
| 01/12/2016           | 31/12/2016 | 13,788.000         | 13,788.000         | 13,788.000         | 31.997           | 31.997           | 31.997           | 13,756.003         |
| <b>Subtotal 2016</b> |            | <b>89,091.000</b>  | <b>89,091.000</b>  | <b>89,091.000</b>  | <b>534.614</b>   | <b>534.615</b>   | <b>534.615</b>   | <b>88,556.385</b>  |
| 01/01/2017           | 31/01/2017 | 12,611.000         | 12,611.000         | 12,611.000         | 33.330           | 33.330           | 33.330           | 12,577.670         |
| 01/02/2017           | 28/02/2017 | 12,244.000         | 12,244.000         | 12,244.000         | 42.662           | 42.662           | 42.662           | 12,201.338         |
| 01/03/2017           | 31/03/2017 | 9,582.000          | 9,582.000          | 9,582.000          | 43.166           | 43.166           | 43.166           | 9,538.834          |
| 01/04/2017           | 30/04/2017 | 12,671.000         | 12,671.000         | 12,671.000         | 43.210           | 43.210           | 43.210           | 12,627.790         |
| 01/05/2017           | 31/05/2017 | 10,905.000         | 10,905.000         | 10,905.000         | 46.915           | 46.915           | 46.915           | 10,858.085         |
| 01/06/2017           | 30/06/2017 | 3,991.000          | 3,991.000          | 3,991.000          | 51.768           | 51.768           | 51.768           | 3,939.232          |
| 01/07/2017           | 31/07/2017 | 3,580.000          | 3,580.000          | 3,580.000          | 46.887           | 46.887           | 46.887           | 3,533.113          |
| 01/08/2017           | 31/08/2017 | 5,196.000          | 5,196.000          | 5,196.000          | 51.979           | 51.979           | 51.979           | 5,144.021          |
| 01/09/2017           | 30/09/2017 | 8,502.000          | 8,502.000          | 8,502.000          | 44.628           | 44.628           | 44.628           | 8,457.372          |
| 01/10/2017           | 31/10/2017 | 7,680.000          | 7,680.000          | 7,680.000          | 50.484           | 50.484           | 50.484           | 7,629.516          |
| 01/11/2017           | 30/11/2017 | 16,927.000         | 16,927.000         | 16,927.000         | 44.052           | 44.052           | 44.052           | 16,882.948         |
| 01/12/2017           | 31/12/2017 | 15,707.000         | 15,707.000         | 15,707.000         | 43.563           | 43.563           | 43.563           | 15,663.437         |
| <b>Subtotal 2017</b> |            | <b>119,596.000</b> | <b>119,596.000</b> | <b>119,596.000</b> | <b>542.644</b>   | <b>542.644</b>   | <b>542.644</b>   | <b>119,053.356</b> |
| <b>Total</b>         |            | <b>648,707.000</b> | <b>648,707.000</b> | <b>648,707.000</b> | <b>2,447.584</b> | <b>2,447.590</b> | <b>2,447.590</b> | <b>646,259.410</b> |

The annual baseline emissions of the project are calculated as follows:

Table 2 Calculation of Baseline emissions

| Year                     | EG <sub>y</sub><br>(MWh) | EF <sub>grid,CM,y</sub><br>(tCO <sub>2</sub> /MWh) | BE <sub>y</sub><br>(tCO <sub>2</sub> ) |
|--------------------------|--------------------------|----------------------------------------------------|----------------------------------------|
| 01/05/2012 to 31/12/2012 | 65,220.032               | 1.1459                                             | 74,735                                 |
| 01/01/2013 to 31/12/2013 | 130,748.223              | 1.1459                                             | 149,824                                |
| 01/01/2014 to 31/12/2014 | 129,466.705              | 1.1459                                             | 148,355                                |
| 01/01/2015 to 31/12/2015 | 113,214.709              | 1.1459                                             | 129,732                                |
| 01/01/2016 to 31/12/2016 | 88,556.385               | 1.1459                                             | 101,476                                |
| 01/01/2017 to 31/12/2017 | 119,053.356              | 1.1459                                             | 136,423                                |
| <b>Total</b>             | <b>646,259.410</b>       | <b>–</b>                                           | <b>740,545</b>                         |

## 5.2 Project Emissions

As per the registered VCS PD, the project emission is zero.

## 5.3 Leakage

As per the registered VCS PD, leakage of the project is not considered.

## 5.4 Net GHG Emission Reductions and Removals

| Year                     | Baseline emissions or removals (tCO <sub>2</sub> e) | Project emissions or removals (tCO <sub>2</sub> e) | Leakage emissions (tCO <sub>2</sub> e) | Net GHG emission reductions or removals (tCO <sub>2</sub> e) |
|--------------------------|-----------------------------------------------------|----------------------------------------------------|----------------------------------------|--------------------------------------------------------------|
| <b>2012</b>              |                                                     |                                                    |                                        |                                                              |
| 01/05/2012 to 31/12/2012 | 74,735                                              | 0                                                  | 0                                      | 74,735                                                       |
| <b>2013</b>              |                                                     |                                                    |                                        |                                                              |
| 01/01/2013 to 31/12/2013 | 149,824                                             | 0                                                  | 0                                      | 149,824                                                      |
| <b>2014</b>              |                                                     |                                                    |                                        |                                                              |
| 01/01/2014 to 31/12/2014 | 148,355                                             | 0                                                  | 0                                      | 148,355                                                      |
| <b>2015</b>              |                                                     |                                                    |                                        |                                                              |
| 01/01/2015 to 31/12/2015 | 129,732                                             | 0                                                  | 0                                      | 129,732                                                      |

|                                            |                |          |          |                |
|--------------------------------------------|----------------|----------|----------|----------------|
| <b>2016</b><br>01/01/2016 to<br>31/12/2016 | 101,476        | 0        | 0        | 101,476        |
| <b>2017</b><br>01/01/2017 to<br>31/12/2017 | 136,423        | 0        | 0        | 136,423        |
| <b>Total</b>                               | <b>740,545</b> | <b>0</b> | <b>0</b> | <b>740,545</b> |

**Comparison of actual emission reduction and the estimation in the registered PD.**

| Monitoring period        | Emission reduction achieved (tCO <sub>2</sub> ) | Estimated ER in registered PD (tCO <sub>2</sub> ) | Difference |
|--------------------------|-------------------------------------------------|---------------------------------------------------|------------|
| 01/05/2012 to 31/12/2017 | 740,545                                         | 856,288 <sup>2</sup>                              | -13.52%    |

The actual emission reduction achieved during this monitoring period is 13.52%<sup>3</sup> lower than the estimation for the same period in the registered VCS PD which is mainly due to wind resources fluctuations.

<sup>2</sup> 856,288 tCO<sub>2</sub> = 150,915 tCO<sub>2</sub> \* 2,071 days / 365 days

<sup>3</sup> -13.52% = (740,545 tCO<sub>2</sub> - 856,288 tCO<sub>2</sub>) / 856,288 tCO<sub>2</sub>

# APPENDIX 1: <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/DNV-CUK1266838855.4/view>

<https://registry.verra.org/app/projectDetail/VCS/813>

| Period     |            | EG <sub>y</sub> | ER                |
|------------|------------|-----------------|-------------------|
| From       | To         | MWh             | CO <sub>2</sub> e |
| 11/12/2008 | 24/10/2010 | 211,867.393     | 242,778           |
| 25/10/2010 | 30/06/2011 | 83,641.008      | 95,844            |
| 01/07/2011 | 30/04/2012 | 107,742.888     | 123,462           |
| 01/05/2012 | 31/12/2017 | 646,259.410     | 740,545           |

Since the project contributions with all impacts are not included in previously approved VCS monitoring reports or reported in Sustainable Development Contribution Reports, all impacts during the previous monitoring period from 11/12/2008 to 30/04/2012 has 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 annual income statement and per capita disposable income of residents which have been submitted to VVB for verification are not included as appendices to this report due to confidentiality requirement of the project proponent.