# Monitoring report for Gold Standard VERs

## Version 2

Project Name: Huadian Ningxia Ningdong Yangjiayao 45MW Wind-farm Project

UNFCCC Reference Number: 1592

Monitoring Period: 14th of December 2007 to 31th of May 2008

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General Information

*Project Description*

The objective of Huadian Ningxia Ningdong Yangjiayao 45MW Wind-farm Project is to generate renewable electricity using wind resources. The project is located in Yangjiayao Village, Majiatan Town, Lingwu City in Ningxia Hui Autonomous Region. The coordinates of the project is 106°38′18″ E and 37°54′39″ N. The total installed capacity of the wind farm is 45MW. A total of 30 wind turbines have been installed with a unit capacity of 1500kW.

The project construction was commenced on 23 April 2007. The project started operation on 14 December 2007. The registration date of the project is 1 June 2008. Operations started before the project activity was registered with the CDM Executive Board due to delays in the validation and registration phases of the activity.

The validation of the project activity was initiated on the 20 September 2007 when the PDD was uploaded on the UNFCCCs website for a 30 days global stakeholder period[1].

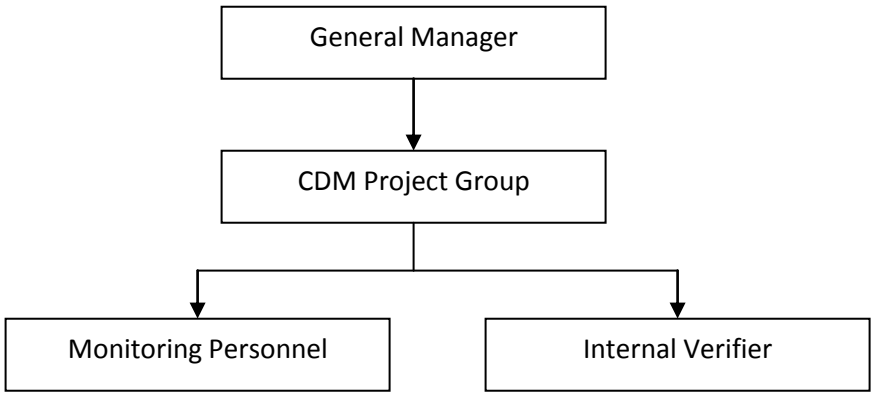
*Technical description of the equipment*

| | |
|---|---|
| Turbines | |
| Number of turbines | 30 |
| Model | FL77-1500 |
| Name of the manufacturer | Huarui Wind Power Science and Technology Co, Ltd |
| Height of the installation | 65m |
| Diameter of impeller | 77m |
| Cut in wind speed | 3m/s |
| Cut out wind speed | 25m/s |

*Monitoring Protocol*

1. Monitoring management structure:

The monitoring management structure is as follow:




[1] http://cdm.unfccc.int/Projects/Validation/DB/3HSWXJ8S2GO5REJUI0ALC6LZFO6LCE/view.html

The responsibilities of the project staff are as follow:

General Manager: Mr. Zhan Zhongnian is responsible for the overall management of the project.

CDM Project Group: It is consisted of Monitoring Personnel and Internal Verifier, the group is leaded by the Chief Engineering Mr. Yan Xiangmei.

Monitoring Personnel: To conduct the monitoring task strictly based on the monitoring manual and registered PDD. To record required monitored parameters. To report the monitoring results to Chief Engineering. To report the abnormal situation of the project to Chief Engineering. Each shift is responsible for the works.

Internal Verifier: Mr. Xing Wei is responsible for internal regular maintenance of monitoring equipment and DCS system. To verify if the monitored data is normal. To calculate the emission reductions regularly and write the monitoring report.

For power export data, the power grid company recorded monthly power export data based on $M_1$ through remote data transfer system connected to $M_1$ monthly. The $M_1$ is installed at project site. The project owner will check and confirm the monthly power export data. Then power grid company will issue the electricity transaction note to project owner monthly regarding power export data. The accountant Ms. Duo Duo from project entity will issue the electricity sales receipts and then financial manager Mr. Liu Jiucheng from project entity will confirm the electricity sales receipts. Finally the power grid company will pay the money to project owner for power export to power grid.

For power import data, the power grid company recorded monthly power import data based on $M_1$ through remote data transfer system connected to $M_1$ monthly. The project owner will check and confirm the data and then pay the money to power consumption. Finally the power grid company will provide power purchase receipts to project owner.

2. Training:

The wind-farm staffs have been trained on 30th December 2007 and 14th July 2008 respectively regarding operational regulations, quality control, data monitoring & archive and CDM knowledge. In addition, the staffs have been trained regarding safety operation at least once per month.

3. List of the ex-ante parameters:

According to ACM0002 (Version 06) and the registered PDD, the ex-ante parameters used for power grid emission factor calculation are as follows:

| Parameter | Remark |
|---|---|
| NCVi | The net calorific value (energy content) per mass or volume unit of fuel i |

| | |
|---|---|
| OXIDi | Oxidation factor of the fuel i |
| Fi, j, y | The quantity of fuel i (in a mass or volume unit) consumed for power generation by the relevant provinces j in year(s) y |
| Electricity generation of power plants in Northwest China Power Grid | Electricity generated by province j in Northwest China Power Grid in year y. |
| Internal use rate of power plant | The internal power consumption rate of power plants in province j in Northwest China Power Grid in year y. |
| EFCO2, i | The CO2 emission factor per unit of fuel i |
| CAPi, j, y | Installed capacities of power plant category i of province j in years y |
| GENEbest,coal, | The power supply efficiency of most advanced commercialized coal-fired power plants |
| GENEbest,oil/gas | The power supply efficiency of most advanced commercialized oil-fired power plants and gas-fired power plants |

Note: According to registered PDD, the baseline emission factor is calculated ex-ante and will be fixed during 1st crediting period.

4. Parameters monitored:

The monitoring methodology ACM0002 (Version 06) – "Consolidated monitoring methodology for grid-connected electricity generation from renewable sources" is selected for the project. In keeping with the monitoring methodology, the following parameter needs to be monitored for the project:

- Electricity imported from the Northwest China Power Grid ($EG_{Import, y}$)
- Electricity exported to the Northwest China Power Grid ($EG_{Export, y}$)
- Net generated electricity delivered to Northwest China Power Grid

| **ID** | **Data type** | **Data variable** | **Data unit** | **Recording frequency** | **Proportion of data to be monitored** | **How will data be archived (electronic/paper)?** | **For how long is archived data to be kept?** |
|---|---|---|---|---|---|---|---|
| $EG_{Import, y}$ | Electricity | Electricity imported from the grid in year y | MWh | Monthly recording | 100% | Electronically and in paper format | Until 2 years after the end of the crediting period |
| $EG_{Export, y}$ | Electricity | Electricity exported to the grid in year y | MWh | Monthly recording | 100% | Electronically and in paper format | Until 2 years after the end of the crediting period |
| $EG_{y}$ | Electricity | Net generated electricity delivered to the grid | MWh | Calculated | | Electronically and in paper format | Until 2 years after the end of the crediting |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | in year y | | | | | period |

*Monitored Parameters for Emission Reduction*

| | Parameter 1 | Parameter 2 | Parameter 3 | Parameter 4 |
|---|---|---|---|---|
| | **Electricity export (MWh)** | **Electricity import (MWh)** | **Net electricity (MWh)** | **EF($tCO_2$/MWh)[2]** |
| | A | B | C=A-B | D |
| December 2007 | 866.36 | 22.26 | 844.10 | 0.98768 |
| January 2008 | 902.88 | 94.07 | 808.81 | |
| February 2008 | 3659.04 | 41.45 | 3617.59 | |
| March 2008 | 6274.40 | 16.72 | 6257.68 | |
| April 2008 | 4961.44 | 18.48 | 4942.96 | |
| May 2008 | 6651.04 | 14.08 | 6636.96 | |
| **Total** | 23315.16 | 207.06 | 23108.10 | |

Note: According to registered PDD, the baseline emission factor is calculated ex-ante and will be fixed during 1st crediting period.

*Parameters for Sustainable Development*

The choice of indicators is – as required by the rules of the Gold Standard – based on the issues that have been highlighted in the sustainable development assessment as critically important for the sustainable development contribution of the Huadian Ningxia Ningdong Yangjiayao 45MW Wind-farm Project.

In the sustainable development assessment no issues have been highlighted as having a potentially negative impact on sustainable development. The key issue here is that the project provides power generation from a renewable resource, wind, and is located in a desert area with little vegetation or wildlife and little other economic activities with which the project would compete. Compared to the baseline of energy provision from fossil fuel resources, the project is inherently more sustainable.

In line with the Gold Standard Manual for CDM Project Developers and the monitoring plan of the project, the following parameters have to be monitored:

- Employment (a quantitative measure of the number of jobs created by the project when operational)
- Safety measures (annual training of the staff regarding safety and emergency procedures)

[2] The Emission Factor is determined ex ante as per the registered PDD.

| **Key indicator**<br>**Period: 14th of December 2007 to 31th of May 2008** | **Monitoring method** | **Comments** | **Data source and frequency** |
|---|---|---|---|
| Employment<br><br>22 permanent jobs. The average annual salary of employees is higher than annual average salary of employees in Lingwu City. | Files of the Local Taxation Bureau | Jobs during operation of the project | The indicator should be checked whenever the project is verified. |
| Safety measures<br><br>The safety training has been conducted during monitoring period. | Safety and emergency procedures and protocol of training | | The indicator should be checked whenever the project is verified. |
| Soil extraction | Document provided by Ningxia Heng'an Construction Supervision & Consulting Co., Ltd to prove the soil refilling measurement has been done. | | The indicator should be checked during the first verification period. |
| Waste water | Document provided by Ningxia Heng'an Construction Supervision & Consulting Co., Ltd to prove that the septic tank has been built to treat the waste water. | | The indicator should be checked during the first verification period. |

*Data Collection Process QA/QC*

The meters are installed in accordance with Technology & Management Regulations for Power Metering Devices (DL/T448-2000) and the accuracy is in line with national standard.

A bidirectional meter ($M_1$) is installed with accuracy 0.2s to monitor the electricity export and import to the grid. A second bidirectional meter ($M_2$) with 0.2s accuracy is installed at Yongli Substation. The purpose of $M_2$ is to serve as backup to $M_1$.

| ID | Uncertainty level of data (High/Medium/Low) | QA/QC procedures to be applied: |
|---|---|---|
| $EG_{Import, y}$ | Low | The accuracy of the meter is 0.2s. Electricity import records provided by power grid company is used for cross checking to ensure the consistency. The meter has been calibrated at least once a year by a qualified organization to ensure accuracy. |
| $EG_{Export, y}$ | Low | The accuracy of the meter is 0.2s. Sales receipts are used for double check to ensure the consistency. The meter has been calibrated at least once a year by a qualified organization to ensure accuracy. |
| $EG_y$ | Low | Please refer to the QA/QC procedures of $EG_{Import,y}$ and $EG_{Export,y}$ |

*Emission Reduction Calculations*

Formula from the methodology:

$ER_y=BE_y-PE_y-L_y$

According to the baseline methodology the leakage ($L_y$) and the project emissions ($PE_y$) are 0. Since there is no leakage or project emission, the emission reductions are equal to the baseline emissions:

$$ER_y=BE_y=EG_y* EF_y = 23108.10 * 0.98768 = 22823$$

| | Baseline Emissions | Project Emissions | Leakage | Emission Reductions |
|---|---|---|---|---|
| December | 834 | 0 | 0 | 834 |
| January | 799 | 0 | 0 | 799 |
| February | 3573 | 0 | 0 | 3573 |
| March | 6181 | 0 | 0 | 6181 |
| April | 4882 | 0 | 0 | 4882 |
| May | 6555 | 0 | 0 | 6555 |
| Total | 22823 | 0 | 0 | 22823 |

## Request for clarification from the Gold Standard Technical Advisory Committee dated 21st of January 2009:

Request 5:

According to the Verification Report (Verification Protocol, page 3) all the turbines have been connected to the grid on the 29th of Dec 2007. Please briefly explain in the Monitoring Report why the ERs are so much lower in January 2008 in comparison with the rest of the monitoring period (e.g. technical failure of some of the turbines, snow storm, etc.)

The turbines could not be operated as a consequence to low temperatures. For information about the snow storm in China in January 2008, please refer to link below:

http://en.wikipedia.org/wiki/2008_Chinese_winter_storms