# MONITORING REPORT

(Version 01)

Qinghai Jinshaxia 70MW Hydropower Project

(CDM registration reference number: 1467)

Registration Date: 5 May, 2008

The first Crediting Period: 5 May, 2008 – 4 May, 2015

Monitoring Period: 1 November, 2008 –31 August, 2009

Dated: 17 September, 2009

Responsible Entity: CPI Carbon Asset Management Co., Ltd.

# 1. Introduction

This document reports the emission reduction generated by the Qinghai Jinshaxia 70MW Hydropower Project, CDM registration reference number is 1467 in the following monitoring period:
1 November, 2008 –31 August, 2009

# 2. General description of the project

## 2.1 Description of the Project Activity

Jinshaxia 70MW Hydropower Project (hereinafter referred to as "the project") is located on Datong River, in Huzhu Tu Autonomous County, Haidong Prefecture, Qinghai Province, China, and is 141 km away from Xining City. The project is a low-weir diversion-type run-of-river hydropower project with an installed capacity of 70 MW.

The primary objective of the project is to generate electricity to meet the ever-increasing demand in the Qinghai Provincial Grid, which is an integral part of the Northwest China Grid (NWCG). Electricity generated by the project displaces part of the electricity generated by the NWCG which is dominated by fuel-fired power plants, and thus greenhouse gas (GHG) emission reductions could be achieved. And also, it contributes to sustainable development in the region by supply of reliable, zero-emitting renewable energy, improvement of villagers' household, education and health, increasing local incomes and providing job opportunities.

## 2.2 Technical description of the project activity

### Location of the project activity

The project is located on the downstream of the Datong River in Huzhu Tu Autonomous County, Haidong Prefecture, Qinghai Province, China, and is 141 km away from Xining City. The coordinates of the project are: 101°52′E, 36°57′N.

### Technology employed by the project activity

The project is a low-weir diversion-type run-of-river hydropower project and a designed operation lifetime of 30 years. The project is consisted of a diversion weir, a penstock, a pressure adjustment well, pressure pipelines, a powerhouse and a step-up substation. Through the penstock, a water head is formed taking advantage of the natural height drop, which then enters into the pressure adjustment well. The hydraulic pressure of the water is increased through high pressure pipeline, then the water flows into the power station and drives the generator to produce electricity. Finally, voltage of the generated power is increased to 110 kV through the step-up substation and the power is supplied to NWCG.

The diversion weir is gravity type. The length of the penstock is 6.404km, and the total length of the pressure pipelines is 148m. Four vertical-axis mixed-flow turbines (3×20MW+1×10MW) with designed head of 72.5 meters were installed. The turbines began to operate on 04/04/2007, 30/04/2007, 07/07/2007and 05/10/2007. To deliver the electricity to the grid, two transmission lines are constructed from the step-up substation to 110kV transmission substation.

All technologies utilized in the project are domestic technologies. There is no technology imported to China by the project.

## 3. Monitoring methodology and plan

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

- Net Electricity Supply

Table 3-1 Description of the monitoring parameter

| ID | Data Type | Data variable | Data unit | Recoreing frequency | Proportion of data to be monitored | How will the data be archived? (electronic /paper) | For how long is archived data to be kept? |
|---|---|---|---|---|---|---|---|
| EGy | Electricity | Net electricity supplied to the grid by the project | MWh | Hourly measurement and monthly recording | 100% | Electronic | During the crediting and two years after |

## 4. **Quality Control (QC) and Quality Assurance (QA)**

### 4.1 QC/QA procedures

| ID | Uncertainty level of data (High/Medium/Low) | Explain QC/QA procedures planned for these data, or why such procedures are not necessary |
|---|---|---|
| EGy | Low | 1. The net electricity supply is the difference of the electricity supplied by the project to NWCG and the electricity achieved by the project from NWCG. |

| | | |
|---|---|---|
| | | The electricity supplied by the project to NWCG is measured by 2 metering systems, a main metering system and a backup metering system. The main metering system is installed at Dalu 110kV transmission substation as per the approved revised monitoring plan, which is the position cross-appointed by both the project owner and the grid company in the Power Purchase Agreement. The backup metering system is installed at the on-site step-up substation. The electricity achieved by the project from NWCG is also monitored by a metering system installed at Dalu 110kV transmission substation. Readings of the main metering system are read, recorded and electronic archived by the assigned person from the grid company. The grid company confirms the data with the project owner monthly and issues the Electricity Transaction Notes (ETNs) based on the checked electricity amount.<br>The backup metering system would be used when the main metering system is out of order. The backup metering system is operated and maintained by the project owner. The project operator is responsible for recording the data from the backup metering system.<br>Both the metering systems are in compliance with the national standard "*Technical administrative code of electric energy metering*" (*DL/T448-2000*). The meters measure electricity on a continuous basis.<br>The two metering systems were calibrated quarterly by Electric Energy Measurement Inspection Center of Haidong Power Company, which was an authorized third entity by the Quality and Technology Supervision Bureau of Qinghai Province. No meter errors have occurred to-date according to the calibration reports. The calibration Reports have been provided to the verifier.<br><br>2. The assigned person from the project owner is responsible to achieve and archive the data and all the sales receipts from the grid company and from the operation department of the project monthly. Readings of the metering systems are double checked with the sales receipts. The project company is responsible to provide the data and sales receipts to the verifier. |

## 4.2 Calibration

The calibration records are outlined in the table 4-1.

Table 4-1 Calibration Records

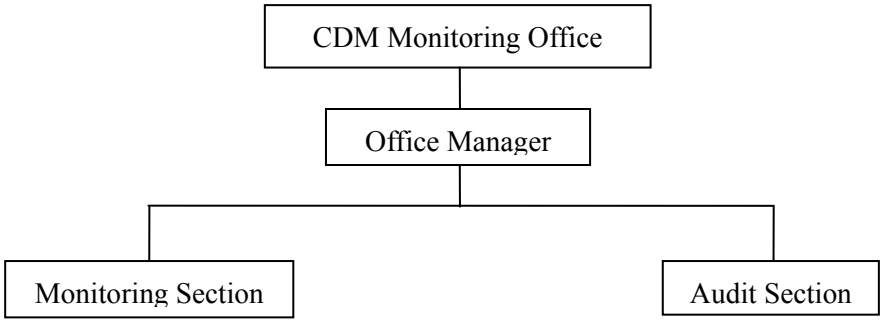
| Parameter Monitored | Meter | Accuracy Class | Serial Number[1] | Calibration in the 4th Quarter in 2008 | Calibration in the 1st Quarter in 2009 | Calibration in the 2nd Quarter in 2009 | Calibration in the 3rd Quarter in 2009 |
|---|---|---|---|---|---|---|---|
| the electricity supplied by the project to NWCG and the electricity achieved by the project from NWCG | The main metering system | 0.2S | 84# 07000024 | 30/10/08 | 13/01/09 | 13/04/09 | 13/07/09 |
| | | | 85# 07000021 | | | | |
| | The backup metering system | 0.2S | 84# 8040007 | 30/10/08 | 13/01/09 | 13/04/09 | 13/07/09 |
| | | | 85# 8040008 | | | | |

*Note：1. The project supplies electricity to the grid through 2 lines, Line I and Line II. The meters of Line I are called 84# meters and the meters of Line II are called 85# meters.*

## 4.3 Roles and responsibilities

Prior to the start of the crediting period, the project owner has set up a CDM Monitoring Office and designate a qualified staff responsible for all relevant matters, including data collection and archiving, QC/QA, and verification. The structure of the CDM Monitoring Office is outlined in Figure 1.

Figure 4-1 Organization Chart of the CDM Project Management Office




The responsibilities of the sections are briefly described as following:

- Mr. Wu Ai, Deputy Manager of the project owner, is in charge of all relevant matters with the monitoring activity.
- Mr. Chen Feng, Project Manager of Operation Department, is responsible for the daily monitoring, collecting and archiving.
- Mr. Zhang Canhai, Project Manager of Planning Development Department, is responsible for auditing the work of monitoring section and executing the QC/QA procedures.

# 5. GHG Calculations

According to the methodology: $ER_y = BE_y - PE_y - L_y$

## 5.1 Project emissions ($PE_y$)

The measured submerged area of the project is 350,050.7 $m^2$ (including the land area and the river surface area). The power density of the project is 200 $W/m^2$ (=70,000,000/350,050.7)>10$W/m^2$. Therefore, $PE_y$ = 0.

## 5.2 Leakages ($L_y$)

According to the methodology, the leakage of the project need not be considered. $L_y$=0.

## 5.3 Baseline emissions ($BE_y$)

The baseline emissions ($BE_y$ in $tCO_2e$) are the product of the baseline emissions factor ($EF_y$ in $tCO_2e/MWh$, calculated ex-ante and will not be updated during the first crediting period) times the net electricity supplied by the project activity to the grid ($EG_y$ in MWh) during the monitoring period:

$$BE_y = EF_y \times EG_y$$

**Table 5-1 Net Electricity Supply**

| period | Electricity supplied by the project to NWCG (Unit: MWh) | Electricity achieved by the project from NWCG (Unit：MWh) | Net Electricity Supply (Unit：MWh) |
|---|---|---|---|
| 01/11/2008-30/11/2008 | 9,666.360 | 0 | 9,666.360 |
| 01/12/2008-31/12/2008 | 12,557.028 | 0 | 12,557.028 |
| 01/01/2009-31/01/2009 | 8,123.280 | 0 | 8,123.280 |
| 01/02/2009-28/02/2009 | 1,080.684 | 114.048 | 966.636 |
| 01/03/2009-31/03/2009 | 3,161.004 | 0 | 3,161.004 |
| 01/04/2009-30/04/2009 | 12,648.900 | 0 | 12,648.900 |
| 01/05/2009-31/05/2009 | 15,410.340 | 0 | 15,410.340 |
| 01/06/2009-30/06/2009 | 21,638.496 | 0 | 21,638.496 |
| 01/07/2009-31/07/2009 | 47,380.212 | 0 | 47,380.212 |
| 01/08/2009-31/08/2009 | 48,264.744 | 0 | 48,264.744 |
| total | 179,931.048 | 114,048 | 179,817.000 |

For detailed information, Please see CER spreadsheet.

Net electricity supplied to the grid ($EG_y$) is: 179,817.000 MWh;
The baseline emission factor ( $EF_y$) is 0.8473 $tCO_2e/MWh$;
The baseline emission ($BE_y$) can be calculated as:

$$BE_y = EF_y \times EG_y = 179{,}817\ \text{MWh} \times 0.8473\ tCO_2e/\text{MWh} = 152{,}358\ tCO_2e$$

The annual electricity supply to the grid is 249,510 MWh(about 20,793 MWh per month) and the expected annual GHG emission reductions are 211,410 $tCO_2e$(about 17,618 $tCO_2e$ per month) in the registered PDD. The net electricity supplied by the project to NWCG is 179,817 MWh (about 17,982 MWh per month) and the GHG emission reductions are 152,358 $tCO_2e$(about 15,236 $tCO_2e$ per month) in the monitoring period(1 November, 2008 –31 August, 2009), which is less than the data in the registered PDD. If one year period is taken into account, i.e. 01/09/2008-31/08/2009, the net annual electricity supplied to the grid is 248,983 MWh and the expected annual GHG emission reductions are 211,060 $tCO_2e$, which is nearly equal to the data in the registered PDD.

## 5.4 Emission reductions

$ER_y = BE_y - PE_y - L_y$ =152,358-0-0= 152,358 $tCO_2e$

Emission reductions generated in the monitoring period (1 November, 2008 –31 August, 2009) is: 152,358 $tCO_2e$.