

MONITORING REPORT

(Version 01)

China Tongwan Hydropower Project

(CDM registration reference number: 1590)

Monitoring period: 30 October, 2008 - 31 January, 2009

Dated: 9 February, 2009

Prepared by

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Ltd

General Information

Purpose of a Monitoring Report

The aim of monitoring report is to make sure that the net generated electricity was measured, recorded and reported during monitoring period to ensure real, measurable and verifiable emission reductions.

Project Description

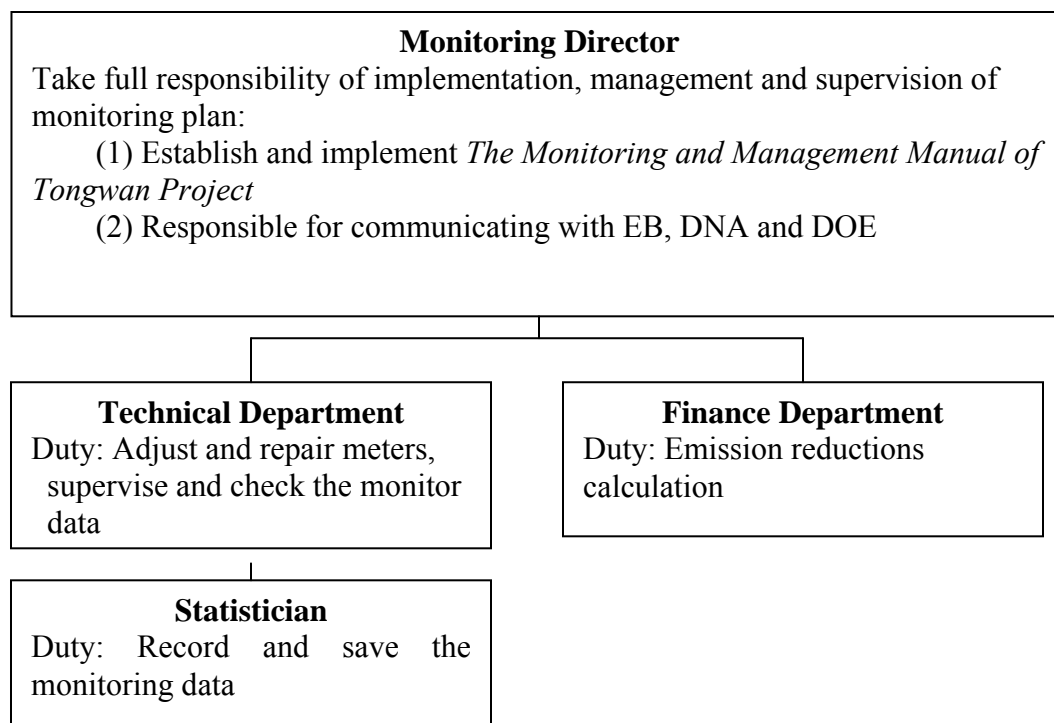
China Tongwan Hydropower Project (hereinafter referred to as “the project”) is a newly built hydropower plant, which is located in Zhongfang County of Huaihua City, Hunan Province, P. R. China. The project construction was commenced in March 2005. The total installed capacity of the project is 180 MW (45 MW×4) with expected annual net power supply of 662,000 MWh. The generated electricity by the project is delivered to the regional power grid, i.e. Central China Power Grid (CCPG).

The purpose of the project is to generate electricity by using water resources to alleviate electricity shortage in Central China. The project will contribute to the reduction of GHG emission by displacing part of the electricity supplied by CCPG, which is dominant of fuel-fired power plants.

Monitoring Protocol

Monitoring management structure:

The monitoring management structure is as follow:



The responsibilities of the project staff are as follow:

Monitoring Director: Mr. Liu Changsheng is responsible for the overall management of the monitoring plan and for the internal verification of the monitored data.

Technical Department: It is consisted of operational employees, the group is leaded by the Mr. Li Binbin. The department is responsible for internal regular maintenance of monitoring equipment and DCS system

Statistician: To conduct the monitoring task strictly based on the monitoring manual and registered PDD. The statisticians are responsible for recording required monitored parameters, for reporting the monitoring results and for reporting the abnormal situation of the project. Each shift is responsible for the works.

Finance Department: Mr. He Hua is responsible for the department. The department is responsible for calculating the emission reductions regularly and for preparing the sales receipts of electricity transaction.

The power grid company will provided monthly power export data and power import data to project owner in the early of each month. The monitoring director from project entity will check and confirm the monthly data. Then power grid company will issue the electricity transaction note to project owner monthly. The finance department from project entity will issue the electricity sales receipts and then financial manager Mr. He Hua from project entity will confirm the electricity sales receipts. Finally the power grid company will pay the money to project owner for electricity transaction.

Training: The wind-farm staffs have been trained on 25th December 2007 and 6th May 2008 respectively regarding operational regulations, quality control, data monitoring & archive and CDM knowledge.

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
NCV_i	The net calorific value (energy content) per mass or volume unit of fuel i
$OXID_i$	Oxidation factor of the fuel i
$F_{i,j,y}$	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 Central China Power Grid	Electricity generated by province j in Central China Power Grid in year y .
Internal use rate of power plant	The internal power consumption rate of power plants in province j in Central China Power Grid in year y .

$EF_{CO_2, i}$	The CO ₂ emission factor per unit of fuel <i>i</i>
$CAP_{i, j, y}$	Installed capacities of power plant category <i>i</i> of province <i>j</i> in years <i>y</i>
$GENE_{best, coal,}$	The power supply efficiency of most advanced commercialized coal-fired power plants
$GENE_{best, oil/gas}$	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.

Parameters monitored: The monitoring methodology ACM0002 (Version 06) - “Consolidated monitoring methodology for zero-emissions grid-connected electricity generation from renewable sources” is used for the project. To be in line with monitoring methodology and the monitoring plan contained in the registered PDD, the following parameters are required to be monitored for the project.

Data / Parameter:	Surface Area
Data unit:	km ²
Description:	Surface area at the full reservoir level
Source of data to be used:	Water Resources Bureau of Huaihua City
Value of data applied for the purpose of calculating expected emission reductions in section B.5	12
Description of measurement methods and procedures to be applied:	The data was measured by Water Resources Bureau of Huaihua City before the start of the operation of the project.
QA/QC procedures to be applied:	The data measured by Water Resources Bureau of Huaihua City is reliable and creditable.
Any comment:	

Data / Parameter:	EG_y
Data unit:	MWh
Description:	Net generated electricity delivered to CCPG
Source of data to be used:	Measured onsite
Value of data applied for the purpose of calculating expected emission reductions in section B.5	90060.96

Description of measurement methods and procedures to be applied:	The net generated electricity by the project is the difference of power imported from power grid and power exported to power grid. The power imported from power grid and power exported to power grid were measured continuously and were recorded monthly through two bidirectional Master Meters.
QA/QC procedures to be applied:	The monitoring data is used for emission reductions calculation. Sales receipts and electricity transaction notes are used for double check to ensure the consistency. The meters (two Master Meters and two Backup Meters) have been conducted lab calibration on 26 th October 2007 and on-site calibration on 26 th January 2008, 25 th April 2008, 24 th July 2008, 23 rd October 2008 and 18 th January 2009.
Any comment:	

Emission Reductions Calculation

The Monitoring Plan clearly states the roles and responsibilities of persons from the project owner who are involved in the monitoring of data by the project.

According to ACM0002, the emission reduction of the project is:

$$ER_y = BE_y - PE_y - L_y$$

Project emissions: The project is a new small scale hydropower plant, the power density is 15 W/m², greater than 10 W/m², $PE_y = 0$

Leakage: According to ACM0002, $L_y = 0$

Baseline emissions:

The baseline emission during the monitoring period is:

$$BE_y = EG_y \cdot EF_y$$

Where:

EG_y is electricity supplied by the project activity to the grid in year y, in MWh;

EF_y is baseline emission factor in year y, in tCO₂e/MWh.

Table 1 Monitored Data

Time	Power export (MWh)	Power import (MWh)	Net power supply (MWh)
30/10/2008-31/10/2008	714.12	0	714.12
01/11/2008-30/11/2008	9781.20	133.32	9647.88
01/12/2008-31/12/2008	29498.04	0	29498.04
01/01/2009-31/01/2009	50200.92	0	50200.92

Sum	90194.28	133.32	90060.96
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Note: All the data used for CERs calculation are from Master Meters during monitoring period and double checked by electricity transaction notes and invoices. The data on 30th October 2008 was based on meter readings and confirmed by the power grid company since it was not a full month. There is no malfunction happening to Master Meters during monitoring period.

Due to the regulation of local Power Grid Company, the monthly cut-off time for power export and power import data is 24:00 of the last day of each month.

Net power supply data is: 90060.96 MWh.

According to Page 25 of registered Tongwan PDD¹:

The project will involve influencing 3 small hydropower plants, the total installed capacity of the 3 small hydropower plants is 1.35 MW. The 3 small hydropower plants have been compensated by Tongwan project owner. The average annual total power generation of the 3 small hydropower plants is 7000 MWh. In order to be conservative, the 3 small hydropower plants are assumed to operate full year. Thus, the annual power generation of 11826 MWh ($1.35 \text{ MW} \times 8760 \text{ h} = 11826 \text{ MWh}$) is deducted from power supply by Tongwan ($66200 - 11826 = 650174 \text{ MWh}$) and the method will always be used to calculate the baseline emission during the whole 3 renewable crediting periods.

The monitoring period is 30/10/2008 to 31/01/2009, totally 94 days.

Thus the power generation to 3 small hydropower power plants during monitoring period is:

$$1.35 \text{ MW} \times 8760 \text{ h} / 365 \text{ d} \times 94 \text{ d} = 3045.6 \text{ MWh}$$

$$BE_y = (90060.96 - 3045.60) \times 0.97504 \text{ tCO}_2/\text{MWh} = 84,843 \text{ tCO}_2$$

$$ER_y = 84843 - 0 - 0 = 84,843 \text{ tCO}_2$$

The emission reductions generated in the monitoring period is 84,843 tCO₂.

¹ According to explanation document from design institute, the 3 small hydropower plants are located at the 3 different branches of Yuanshui River while Tongwan is located at Yuanshui River. The 3 small hydropower plants are 11 km, 12 km and 29 km away from Tongwan project site respectively. Due to construction of Tongwan project, the water level of the river is increased. The 3 small hydropower plants are affected by the increased water level. However, after modification of the 3 small hydropower plants, these 3 small hydropower plants are operational as before now. In order to be conservative and in line with the registered PDD, we'd like to abide by the calculation method in the registered PDD for Tongwan project.