

MONITORING REPORT FORM (CDM-MR) *
Version 01 - in effect as of: 28/09/2010

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* as contained within the document entitled "Guidelines for completing the monitoring report form (CDM-MR)" (EB 54 meeting report, annex 34).

MONITORING REPORT
Version 01 and date 10/05/2011
Guangrun Hydropower Project in Hubei Province, P.R. China
CDM registration reference number: 0904
1st Monitoring Period: 30/06/2009-31/12/2010

SECTION A. General description of the project activity

A.1. Brief description of the project activity: >>

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Guangrun Hydropower Project(GHP), a hydropower project with reservoirs, is located in Jianshi County, Enshi Tujia and Miao Minority Autonomous Prefecture, Hubei Province, P. R. China. The objective of the project is to utilize water resource of the Majia River for electricity generation through the installation and operation of three hydro power stations. The total installed capacity of the project is 28MW. The electricity supplied by the project is sold to Jianshi electricity grid, which is part of the Hubei Provincial Power Grid (HPPG) and Central China Power Grid (CCPG).

The project helps reduce GHG emissions generated from the high-growth, coal-dominated power generation. And also, it contributes to sustainable development in the region by reducing pollution, creating employment opportunities, and improving the living standard of local people. At a larger scale, the project assists China in stimulating and accelerating the commercialization of grid-connected renewable energy technologies and markets.

The construction of the project started in March 2007. The two hydraulic power stations were put into operation on 20/09/2009 (Hongwawu II), 29/11/2010 (Hongwawu I) respectively, and Zhamushui station is still under construction, it will be put into operation in October 2011.

This Monitoring Report is for the 1st monitoring period, which is from 30/06/2009-31/12/2010. The total emission reduction achieved in this monitoring period is 10,593 tCO₂e.

A.2. Project Participants

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Name of Party involved	Private and/or public entity(ies) project participants	Kindly indicate if the Party involved wishes to be considered as project participant (Yes/No)
People's Republic of China (host)	Guangrun Hydropower Development Company Ltd. ("Project Company")	No
Canada	Government of Canada – Ministry of Foreign Affairs & International Trade	Yes
Spain	Endesa Generación, S.A. ; Hidroeléctrica del Cantábrico, S.A. ; Kingdom of Spain – Ministry of Environment and Rural and Marine Affairs; Ministry of Economy and Finance ; Gas Natural SDG, S.A. ; EDP – Energias de Portugal, S.A.	Yes
Luxembourg	Government of Luxembourg – Ministry of the Environment	Yes
Italy	Ministry for the Environment,	Yes

	Land and Sea	
Netherlands	Netherlands' Ministry of Infrastructure and the Environment	Yes
Switzerland	Schweizerische Rückversicherungsgesellschafts AG	No
Belgium	Kingdom of Belgium – Walloon Region Ministry of the Environment	No
Germany	BASF SE ; KfW	No
Japan	Daiwa Securities Capital Markets Co. Ltd. ; FUJIFILM Corporation ; Idemitsu Kosan Co., Ltd. ; JX Nippon Oil & Energy Corporation ; The Okinawa Electric Power Corporation, Incorporated	No
Finland	Rautaruukki Oyj	No
Sweden	Göteborg Energi AB	No
Norway	Statkraft Carbon Invest AS	No

A.3. Location of the project activity:

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The project is located in Jianshi County, Enshi Tujia and Miao Minority Autonomous Prefecture, Hubei Province, P. R. China. The three stations are sited in different country, details are as following:

Hongwawu I Station and Hongwawu II Station: Hongwawu Country, Yezhou Town;

Zhamushui Station: Hongtuping Country, Yezhou Town.

All three of the project's hydropower stations are on the Majia River which is the branch of Qingjiang river system.

The geographical coordinates of the project are as following:

Sites	East Longitude	North Latitude
Plant of Hongwawu I Station	110.0028°	31.1544°
Plant of Hongwawu II Station	109.6661°	30.6875°
Plant of Zhamushui Station	109.6833°	30.6181°

A.4. Technical description of the project

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Each of the three hydropower stations consists of a relatively low concrete gravity dam, a narrow reservoir, and an above-ground powerhouse to produce electricity that transmits to Huangtuping Substation which connects the HPPG by high voltage transmission lines.

Hongwawu Station I and Hongwawu Station II are of the dam-gate run-of-river type, using 924m waterhead to generate electricity. The project reservoirs are largely confined within a steep narrow mountain gorge and provide only daily regulation capacity.

Station	Hongwawu Station I	Hongwawu Station II	Zhamushui Station
Manufacturer	Fujian Nanping	Fujian Nanping	Fujian Nanping
Model number	CJA475-W-110/2×10	CJA475-W-110/2×10 CJA475-W-110/1×10	HLA153-LJ-100
Number of units	3	2	2
Total Capacity (MW)	10	8	10

Rotational speed (rpm)	750	750	600
Rated head (m)	415.43	415.43	63.56

A.5. Title, reference and version of the baseline and monitoring methodology applied to the project activity:

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Approved consolidated baseline methodology ACM0002 (version 06): “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” and approved monitoring methodology ACM0002: “Consolidated monitoring methodology for zero emissions grid-connected electricity generation from renewable sources” applied to the project activity.

Reference:

<http://cdm.unfccc.int/methodologies/PAmethodologies/approved.html>

A.6. Registration date of the project activity:

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The project was registered on 27/04/2007.

A.7. Crediting period of the project activity and related information (start date and choice of crediting period):

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Due to a delay in the implementation of the project, a request was submitted and approved by UNFCCC Secretariat to change the start date of the crediting period of this project from 01/07/2008 to 30/06/2009.

Crediting Period: 30/06/2009 - 29/06/2016 (Renewable)

Changed from: 01/07/2008 - 30/06/2015

A.8. Name of responsible person(s)/entity(ies):

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Name of person/entity completing the monitoring report:

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Easy Carbon Consultancy Co., Ltd is not Project Participant.

SECTION B. Implementation of the project activity

B.1. Implementation status of the project activity

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The two stations were put into operation on 20/09/2009 and 29/11/2010 respectively. The delivery time of the project was delayed against expectation in the PDD, due to the difficulties in completing the financial closure of the project. And there was no significant malfunction or any emergency overhaul times, downtimes of equipment, exchange of equipment reported during this monitoring period from

30/06/2009 to 31/12/2010. The project implementation follows monitoring plan in the PDD and is in line with the methodology applied.

B.2. Revision of the monitoring plan

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No revision of monitoring plan is applicable for the current monitoring period.

B.3. Request for deviation applied to this monitoring period

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At the time of the completion of the Monitoring Report, no deviation request has been submitted for the current monitoring period.

B.4. Notification or request of approval of changes

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No notification or request of approval of changes of the project activity

SECTION C. Description of the monitoring system

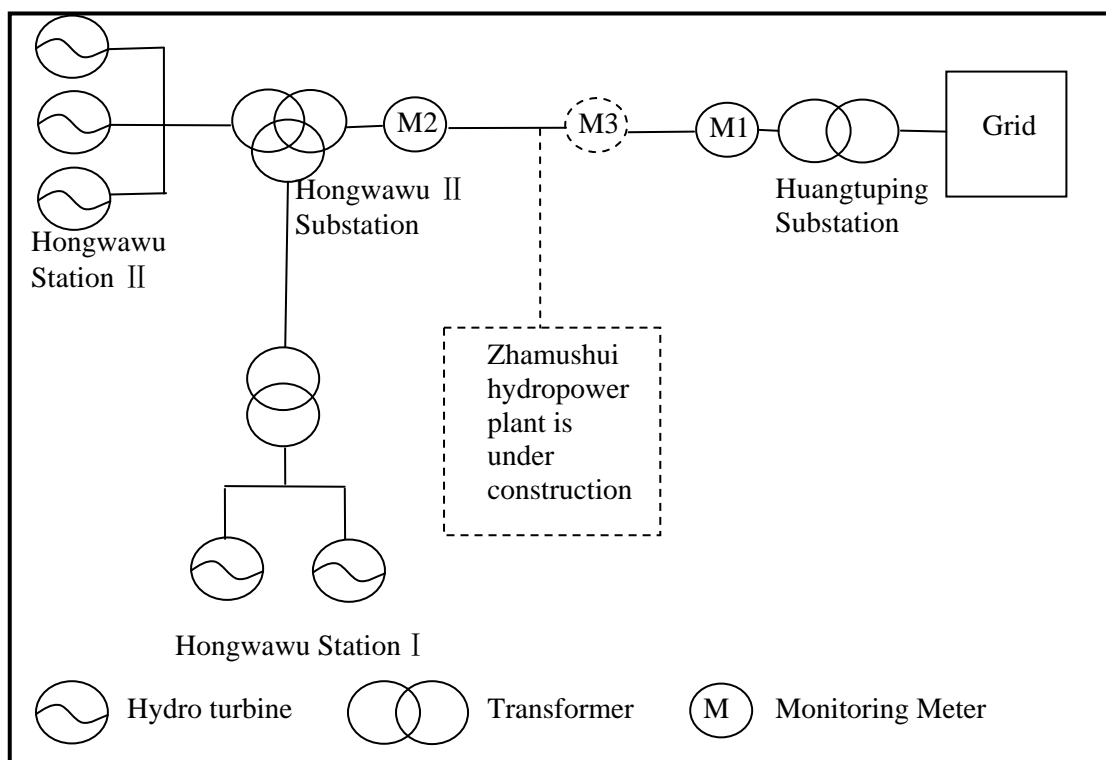
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In accordance with the Monitoring Methodology ACM0002, Ver 06, the key data that must be monitored ex-post for the specific crediting period (since the emission factor has been calculated ex ante), are:

1. The electricity supplied to the grid by the Project Activity: EG_y .
2. Surface area at full reservoir level.

All hydropower stations interconnected with the regional grid at Huangtuping substation in Jianshi County owned by HPPG. Two meters, a primary meter and a back-up meter, in case of failure of the primary meter, are installed in Huangtuping substation to measure the net electricity supplied to the grid by the project. The meters installed by the monitoring system of the project during this crediting period have an accuracy of 0.2s (primary meter) and 0.5s (back-up meter). The meters measure the electricity supply on a continuous basis. The project company and Jianshi Electric Power Company identifies jointly the exact points at which the amount of electricity delivered to the electric grid will be measured. The metering equipment is calibrated annually by the Jianshi Electric Power Company according to the power purchase agreement.

The location of the primary meter (M1) is at Huangtuping Substation, and back-up meter (M2) is at Hongwawu II Substation in the project site as the following chart. There is no any other power line through which the project could import or export electricity.



Note: Serial No of primary meter (M1) is 09090158090077, and Serial No of back-up meter (M2) is 96129233. The meter M3 will install at the Zhamushui Station to monitor the electricity generated from GHP and will be as the back-up meter when Zhamushui hydropower plant is put into operation.

Documents evidencing the calibrations are available and are archived.

The amount of electricity that has been delivered by the project to the electric grid is recorded every month jointly by designated staff of Project Company and Jianshi Electric Power Company. After that, Jianshi Electric Power Company will pay to the project company within a certain period based on the monthly meter readings and the project company will give corresponding receipt.

When the project is fully commissioned, an independent consulting company (Hubei Hydro Construction and Investigation Design Institute) was hired to measure the surface area at full reservoir level.

Procedures for ensuring effective monitoring of the project are described in a document “CDM Project Management and Operating Procedures” that the Project Company utilizes. The document contains the following sections:

- Chap 1 Introduction
- Chap 2 Overall Project Management
- Chap 3 CDM Project Management and Calculations
 - 3.1 Data to be monitored and recorded
 - 3.2 Emissions Reduction Calculation for the Project
- Chap 4 Procedures to be followed
 - 4.1 Monitoring Procedures
 - 4.2 Calibration Procedures
 - 4.3 Maintenance Procedures
 - 4.4 Procedure for Training of Personnel engaged in the MVP
- Chap 5 Records Keeping, Error Handling and Reporting Procedures
 - 5.1 Records Keeping and Internal Reporting Procedure
 - 5.2 Error Handling Procedure
 - 5.3 External Reporting Procedure
 - 5.4 Procedure for corrective actions arising

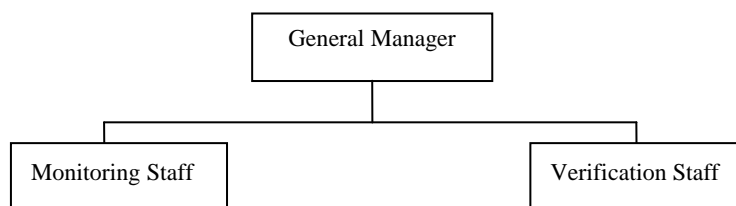
5.5 Change of CDM Manager

Chap 6 Confirmation of the adoption of these CDM Operating Procedure.

The grid emission factor is 0.9244 tCO₂e/MWh determined ex ante and is used throughout the crediting period.

The Monitoring Plan states the roles and responsibilities of persons involved in the monitoring of grid-connected electricity generation by the project.

This monitoring plan is implemented by professional staff authorized by the project sponsor. The management structure is illustrated as follows:



The responsibilities of the project staff are as follow:

General Manager: To be responsible for supervising the whole monitoring procedure.

Monitoring Staff: To be responsible for collecting data and do internal audit.

Verification Staff: To be responsible for collection of sales receipts.

When error happens, Error Handling Procedure will be followed as it is required in the “CDM Project Management and Operating Procedures” by the Project Company.

SECTION D. Data and parameters

D.1. Data and parameters determined at registration and not monitored during the monitoring period, including default values and factors

(Copy this table for each data and parameter. To report multiple values, a table may be used)

Data / Parameter:	EF _y
Data unit:	tCO ₂ e/MWh
Description:	Emission factor.
Source of data used:	China Electric Power Yearbook (2003, 2004, 2005)
Value(s) :	0.9244
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculations
Additional comment:	The baselines emission factor was determined ex ante and is used throughout the first crediting period.

D.2. Data and parameters monitored

(Copy this table for each data and parameter. To report multiple values, a table may be used)

Data / Parameter:	EG _y
Data unit:	MWh
Description:	Electricity supplied to the CCPG by the Project in year y.
Measured /Calculated	Directly measured at the Huangtuping substation

/Default:	
Source of data:	Jianshi County Electricity Power Company which is a part of CCPG
Value(s) of monitored parameter:	11,460.3
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	<p>Primary meter :</p> <p>Type: Electricity energy meter Accuracy class:0.2s; Serial No. 09090158090077; Calibration frequency: annually; Date of last calibrations: calibration in 2010 was on 31/03/2010. Validity: 30/03/2011</p> <p>Backup meter:</p> <p>Type: Electricity energy meter Accuracy class:0.5s; Serial No. 96129233; Calibration frequency: annually; Date of first calibrations: calibration in 2009 was on 27/09/2009. Validity: 26/09/2010 Date of last calibrations: calibration in 2010 was on 16/09/2010. Validity: 15/09/2011</p> <p>The Meter is set to zero at time of calibration.</p>
Measuring/ Reading/ Recording frequency:	The electricity is continuously measured and monthly recorded. Data is archived for 2 years following the end of the last crediting period by means of electronic and paper backup. The accuracy of electricity meter is not lower than 0.5s. The meter is calibrated according to the rules of Relative Technical Administrative Code of Electric Energy Metering (DL/T448-2000).
Calculation method (if applicable):	The net electricity supplied to the grid is the electricity supplied to the grid minus the electricity imported from the grid
QA/QC procedures applied:	The electricity generation from the plant is monitored and recorded at the central control room. The project operator is responsible for recording such data. Receipts for electricity sales are kept for further verification, when necessary.

Data / Parameter:	Surface area
Data unit:	m ²
Description:	Surface area at full reservoir level
Measured /Calculated /Default:	Measured at start of project
Source of data:	Project Company
Value(s) of monitored parameter:	Hongwawu reservoir : 240,200 (Hongwawu station I and Hongwawu station II share the same reservoir)
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project Emission Calculations
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last	The project company hired Hubei Hydro Construction and Investigation Design Institute, an independent professional hydro power design institute, to conduct an ex-post measurement of the surface area with CAD software and maps.

calibration, validity)	
Measuring/ Reading/ Recording frequency:	The project company hired Hubei Hydro Construction and Investigation Design Institute, an independent professional hydro power design institute, to conduct an ex-post measurement of the surface area. Report regarding with the calculation of the surface area is issued by the design Institute, which is based on the three station-reservoir maps, and auto CAD software was used on computer with interpolation method and area inquire function to get the results.
Calculation method (if applicable):	Not applicable
QA/QC procedures applied:	Not applicable

SECTION E. Emission reductions calculation

E.1. Baseline emissions calculation

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The baseline emission BE_y (tCO₂e) during the monitoring period results from:

$$BE_y = EG_y * EF_y$$

Where

EG_y – Electricity supplied to the grid by the project during the monitoring period (MWh);

EF_y – CO₂ emission factor of the grid (tCO₂e /MWh) (calculated ex-ante and will not be updated during the first crediting period).

The net electricity supplied to the grid measured by the meter (M1) installed at the Huangtuping substation was aggregated on designated time in every month (normally on 28th each month), as in the below table.

The electricity imported from the grid during this monitoring period covering from 30/06/2009 to 31/12/2010.

Net Electricity supplied to the CCPG by the Project

Monitoring period		Electricity Supplied to the Grid (MWh)	Electricity imported from the grid (MWh)	Net electricity supplied to the grid (MWh)
		Monitoring result after being double checked with sales receipts	Monitoring result after being double checked with sales receipts	
From	To	A	B	C=A-B
30/06/2009	27/09/2009	1,365.342	90.816	1,274.526
28/09/2009	27/10/2009			
28/10/2009	27/11/2009			
28/11/2009	27/12/2009			
28/12/2009	27/01/2010			
28/01/2010	27/02/2010			
28/02/2010	27/03/2010			
28/03/2010	31/03/2010			
01/04/2010	27/04/2010	2,015.904	54.780	10,185.676
28/04/2010	27/05/2010			
28/05/2010	27/06/2010			
28/06/2010	27/07/2010			

28/07/2010	27/08/2010	2,033.724		
28/08/2010	27/09/2010	784.794		
28/09/2010	27/10/2010	1,020.065		
28/10/2010	27/11/2010	344.034		
28/11/2010	31/12/2010	323.078		
Total		11,605,930.0	145,596.0	11,460.3

According to the registered PDD, the Emission factor of the grid is determined ax-ante; the ax-ante determined emission factor is 0.9244tCO₂e/MWh.

$$BE_y = EG_y * EF_y = 11,460.3 \text{ MWh} * 0.9244 \text{ tCO}_2\text{e/MWh} = 10,593 \text{ tCO}_2\text{e}.$$

E.2. Project emissions calculation

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After the two hydropower stations started commissioning, the ex-post monitoring by a third-party independent hydro power design institute shows that the surface area at full Reservoir level of Hongwawu stations is 240,200 m². The re-calculated Power Density of the Hongwawu stations is 74.94 W/m², which exceed the 10 W/m².

Hence, according to ACM0002 (Version 06) and registered PDD, no Project Emissions is to be counted by the Project.

$$\text{Hence, } PE_y = 0$$

E.3. Leakage calculation

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According to ACM0002 (Version 06) and registered PDD, the main indirect emissions potentially giving rise to leakage in the context of electric sector projects result from power plant construction, fuel handling (mining, processing, and transportation) and land inundation (for hydroelectric projects). The project developer does not need to consider such indirect emissions when applying the methodology. Project activities using this baseline methodology shall not claim any credit for the project on account of reducing these emissions below the level of the baseline scenario. The leakage from the project is zero.

$$L_y = 0$$

E.4. Emission reductions calculation / table

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Total baseline emissions: $BE_y = 10,593 \text{ tCO}_2\text{e}$.

Total project emissions: $PE_y = 0$

Total leakage: $L_y = 0$

Total emission reductions: $ER_y = BE_y - PE_y - L_y = BE_y - 0 - 0 = 10,593 \text{ tCO}_2\text{e}$.

Emission reductions generated in the monitoring period (30/06/2009–31/12/2010): 10,593 tCO₂e.

E.5. Comparison of actual emission reductions with estimates in the CDM-PDD

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According to the registered PDD, the emission reductions of the project are estimated to be 75,832 tCO₂e per annum. This monitoring period from 30/06/2009 to 31/12/2010, the effective emission reduction has 465 days (20/09/2009 to 31/12/2010). Therefore, the emission reductions estimated in the PDD for this monitoring period should be 96,608 tCO₂e. So, the comparison of actual emission reductions in the monitoring report with the estimated in the registered PDD:

Item	Values applied in ex-ante calculation of the registered CDM-PDD	Actual values reached during the monitoring period
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Emission reductions (tCO₂e)	96,608	10,593
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The emission reductions achieved by the project during this monitoring period are significantly lower than the estimates in the registered PDD. This is because the project was in partial operation during the monitoring period. Two hydraulic power stations, Hongwawu station I and Hongwawu station II, with a total capacity 18MW have been put into operation before this monitoring period. During the monitoring period covered, the operational days of Hongwawu II is the same as that of 465 days, and the operational days of Hongwawu station I was 33 days only.

Hereby, the emission reductions of the project per MW per day are used to compare the actual emission reductions with estimates in the CDM-PDD.

According to the registered PDD, the emission reductions of the project after the implementation of all three Stations with a total capacity 28MW are estimated to be 75,832 tCO₂e per annum.

The emission reductions of the project per MW per day after the implementation of all three Stations: 75,832 tCO₂e per annum/28MW/365d = 7.42 tCO₂e per MW per day.

During this monitoring period from 30/06/2009 to 31/12/2010, the emission reductions per MW per day: 10,593 tCO₂e / (10MW *465d + 8MW *33d) = 2.16 tCO₂e per MW per day.

The emission reductions per MW per day achieved by the project during this monitoring period are still below the estimates in the registered PDD.

The comparison of actual emission reductions per MW per day in the monitoring report with the estimates in the registered PDD is as following:

Item	Values applied in ex-ante calculation of the registered CDM-PDD	Actual values reached during the monitoring period
Emission reductions per MW per day (tCO₂e per MW per day)	7.42	2.16

E.6. Remarks on difference from estimated value in the PDD

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The comparison shows that the actual emission reduction is lower than the expectation in the registered PDD. The reason for the difference is mainly because of the power generation by the project in the year 2009 was much lower than the expectation in the Feasibility Study Report of the project. This hydro power project has the severe environment and complex terrain, which extended the construction period of Hongwawu station I and Zhamushui station. Therefore, the emission reduction of the project during this monitoring period was less than estimated value in the PDD.

History of the document

Version	Date	Nature of revision
01	EB 54, Annex 34 28 May 2010	Initial adoption.
Decision Class: Regulatory Document Type: Guideline, Form Business Function: Issuance		