



**Monitoring report form for CDM project activity**  
(Version 08.0)

*Complete this form in accordance with the instructions attached at the end of this form.*

**MONITORING REPORT**

<b>Title of the project activity</b>	Hunan Xiaotan Hydropower Project		
<b>UNFCCC reference number of the project activity</b>	2842		
<b>Version number of the PDD applicable to this monitoring report</b>	03		
<b>Version number of this monitoring report</b>	01		
<b>Completion date of this monitoring report</b>	10/05/2021		
<b>Monitoring period number</b>	1 <sup>st</sup> monitoring period		
<b>Duration of this monitoring period</b>	30/06/2010-31/12/2012		
<b>Monitoring report number for this monitoring period</b>	N/A		
<b>Project participants</b>	Chenxi County Qiongtian Hydropower Co., Ltd.		
<b>Host Party</b>	P. R. China		
<b>Applied methodologies and standardized baselines</b>	Methodologies Used: ACM0002-Consolidated baseline methodology for grid-connected electricity generation from renewable sources (version 7)		
<b>Sectoral scopes</b>	Sectoral scopes:1: Energy industries (renewable - / non-renewable sources)		
<b>Amount of GHG emission reductions or net anthropogenic GHG removals achieved by the project activity in this monitoring period</b>	Amount achieved before 1 January 2013	Amount achieved from 1 January 2013 until 31 December 2020	Amount achieved from 1 January 2021
	67,459	0	0
<b>Amount of GHG emission reductions or net anthropogenic GHG removals estimated ex ante for this monitoring period in the PDD</b>	124,547		

## SECTION A. Description of project activity

### A.1. General description of project activity

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Hunan Xiaotan Hydropower Project (hereinafter referred to as “the project”) is a new hydropower plant, locates on Chenshui Branch of Yuanjiang River in Xiaotan Town, Chenxi County, Huaihua City, Hunan Province. The total installed capacity of the project is 20 MW. 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 from the fossil fuel fired power plants of the CCPG (Central China Power Grid), which is dominant with fossil fuel fired power plants.

Relevant dates for the project activity is as below:

Event	Date
Project starting date	07/08/2006
Registration date	23/06/2010
Operation of the 1 <sup>st</sup> generator	04/11/2011
Operation of the 2 <sup>nd</sup> generator	30/11/2010

Total emission reductions achieved in this monitoring period are 67,459 tCO<sub>2</sub>e.

### A.2. Location of project activity

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The project locates in Xiaotan Town, Chenxi County, Huaihua City, 8 km away from the county. The project activity is a riverbed-hydroelectric station, and the power house is very close to the dam. Therefore, the dam and the power house has the same GPS coordinates, namely 110°08'39"E and 27°56' 19"N.

### A.3. Parties and project participants

Parties involved	Project participants	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
The Peoples' Republic of China (Host)	Chenxi County Qiongtian Hydropower Co., Ltd.	No

### A.4. References to applied methodologies and standardized baselines

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**Title of the approved baseline and monitoring methodology:** ACM0002-Consolidated baseline methodology for grid-connected electricity generation from renewable sources (version 7)

Please refer to below link for the methodology:

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

**Title of the methodology to calculate the emission factor:** Tool to calculate the emission factor for an electricity system (version 01.1)

Please refer to below link for the methodology:

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

### A.5. Crediting period type and duration

>> The renewable crediting period is chosen for the project. The start date of the first crediting period is 30/06/2010. The first crediting period of the project activity is from 30/06/2010 to 29/06/2017.

## SECTION B. Implementation of project activity

### B.1. Description of implemented project activity

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The implementation and operation of project is in strict accordance with the description in the registered PDD. The implementation of the project is as follows:

Event	Time
Project starting date	07/08/2006
Registration date	23/06/2010
Crediting period	30/06/2010-29/06/2017 (renewable)
Operation of the 1 <sup>st</sup> generator	04/11/2011
Operation of the 2 <sup>nd</sup> generator	30/11/2010
1 <sup>st</sup> monitoring period	30/06/2010-31/12/2012

There was no special events happened during this monitoring period, which may impact the applicability of the methodology. The project was under normal operation during this monitoring period.

### B.2. Post-registration changes

#### B.2.1. Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents

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The project operation is in accordance with the monitoring plan (MP), and there was no any deviation to the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents

#### B.2.2. Corrections

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There was no corrections to the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents

#### B.2.3. Changes to the start date of the crediting period

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Starting date of the first crediting period was changed from 23/06/2010 to 30/06/2010. This change has been approved by EB.

#### B.2.4. Inclusion of monitoring plan

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Not applicable.

#### B.2.5. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents

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There are no permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents.

**B.2.6. Changes to project design**

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There are no changes to the project design.

**B.2.7. Changes specific to afforestation or reforestation project activity**

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Not applicable.

**SECTION C. Description of monitoring system**

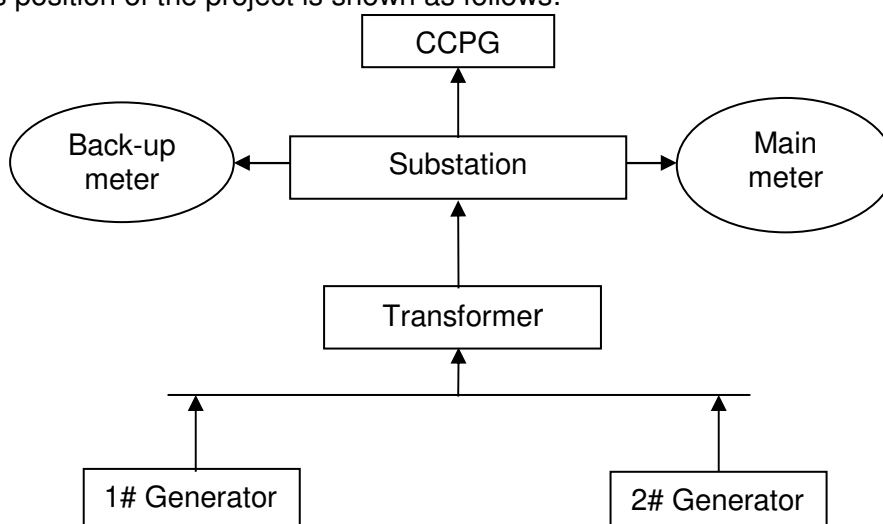
&gt;&gt;

**1. Location of meters**

The main meter and back-up meter installed at the connection point of the grid is used to monitor the electricity exported to the CCPG and the electricity imported from the CCPG. All data used for CERs calculation are obtained from main meter during this monitoring period.

The meters have been calibrated once per year in accordance with the industry standard and the calibration records show the operation of meters is in normal situation.

The meters position of the project is shown as follows:

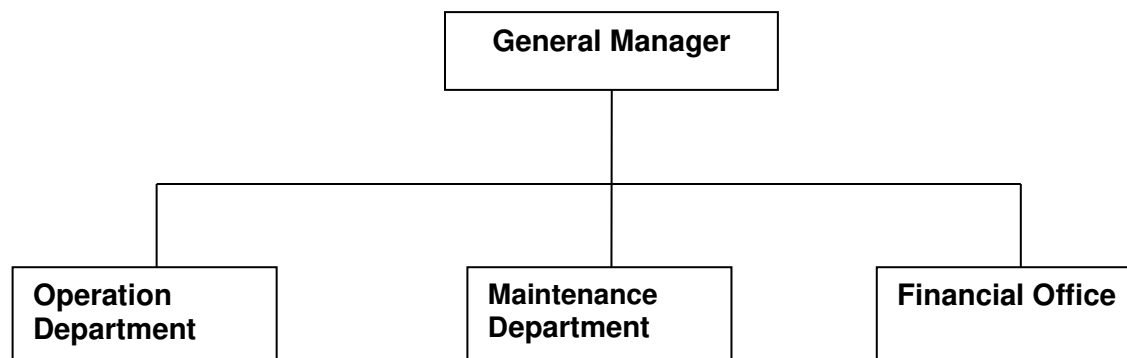


The calibration information of meters is as follows:

Name of the meter	Serial No.	Accuracy	Calibration date	Valid until	Calibration entity
Main meter	90609644	0.5S	04/06/2010	03/06/2011	Measurement institute of Chenxi power grid company
			02/06/2011	01/06/2012	
			31/05/2012	30/05/2013	
Back-up meter	90600402	0.5S	01/07/2010	31/06/2011	
			02/06/2011	01/06/2012	
			31/05/2012	30/05/2013	

**2. Monitoring management structure**

In order to obtain reliable monitoring data, the project owner will establish a monitoring management structure prior to the start of the crediting period. Clear responsibilities will be assigned to all staffs involved in the CDM project. A General Manager will be appointed who has the overall responsibilities for the monitoring of the project, other staffs will be responsible for the data recording, data collecting, data archiving and emission reductions calculation. The detailed structure is as follows:



The duty of each position summarized as follows:

**General Manager** is take charge of the implementation and management of the monitoring plan overall; check and supervise the activities such as recording, collecting and archiving of the monitoring data; be responsible for communicating with DOE and Hunan CDM Project Service Centre.

**Operation Department** is take charge of the operation of turbines and generators, record and keep the electricity monitoring data.

**Maintenance Department** is responsible for maintenance of the facilities of the hydropower plant.

**Financial Office** is responsible for archiving of monitoring data.

### 3. Data collection procedure

The readings of the main meter are used for calculating the emission reductions when the main meter is in normal operation state. The monitoring processes are as follows:

- (1) The designated persons from the grid company and the project company record the readings of the meter for the electricity delivered to CCPG and consumed by the project activity from CCPG;
- (2) The power grid company provides the project owner with a settling accounts sheet about the net electricity supplied to CCPG monthly;
- (3) The project owner provides the power grid company with a sale receipt after the power grid company has confirmed the settling accounts sheet, and preserves the copy of the sale receipt.

### 4. Emergency measures/procedures

When the main meter or back-up meter have a breakdown, the electricity generation difference will be treated as follows:

- a. When main meter has a breakdown, the readings of back-up meter will be adopted;
- b. If both of the main meter and back-up meter have breakdowns, the project owner should notice the power grid company immediately and solve the problem with a conservative calculation method.

After handling of the emergency, the project owner must prepare a report regarding the emergency to explain to DOE that the handling method is reasonable.

**SECTION D. Data and parameters****D.1. Data and parameters fixed ex ante**

<b>Data/Parameter</b>	EF <sub>y</sub>
Unit	tCO <sub>2</sub> e/MWh
Description	Emission factor of CCPG
Source of data	Registered PDD
Value(s) applied	0.9735
Choice of data or measurement methods and procedures	The data is used for baseline emission calculations. The figure is calculated ex-ante and is fixed during the crediting period.
Purpose of data/parameter	EF <sub>OM</sub> is 1.2783 tCO <sub>2</sub> e/MWh, and EF <sub>BM</sub> is 0.6687 tCO <sub>2</sub> e/MWh.
Additional comments	EF <sub>y</sub>

**D.2. Data and parameters monitored**

<b>Data/Parameter</b>	EG <sub>y</sub>
Unit	MWh
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y
Measured/calculated/default	Measured
Source of data	Main meter
Value(s) of monitored parameter	66, 296 MWh

Monitoring equipment	<p>The data was measured by the Main Meter.</p> <p>Main meter:</p> <p>Type: DTSD62-2a</p> <p>Accuracy class: 0.5S</p> <p>S/N number: 90609644</p> <p>Calibration frequency: annually</p> <p>Calibration information:</p> <table border="1"> <thead> <tr> <th>Calibration date</th> <th>Valid until</th> </tr> </thead> <tbody> <tr> <td>04/06/2010</td> <td>03/06/2011</td> </tr> <tr> <td>02/06/2011</td> <td>01/06/2012</td> </tr> <tr> <td>31/05/2012</td> <td>30/05/2013</td> </tr> </tbody> </table> <p>Calibration entity: Measurement institute of Chenxi power grid company</p>	Calibration date	Valid until	04/06/2010	03/06/2011	02/06/2011	01/06/2012	31/05/2012	30/05/2013
	Calibration date	Valid until							
04/06/2010	03/06/2011								
02/06/2011	01/06/2012								
31/05/2012	30/05/2013								
<p>Back-up meter:</p> <p>Type: DTSD62-2a</p> <p>Accuracy class: 0.5S</p> <p>S/N number: 90600402</p> <p>Calibration frequency: annually</p> <p>Calibration information:</p> <table border="1"> <thead> <tr> <th>Calibration date</th> <th>Valid until</th> </tr> </thead> <tbody> <tr> <td>01/07/2010</td> <td>30/06/2011</td> </tr> <tr> <td>02/06/2011</td> <td>01/06/2012</td> </tr> <tr> <td>31/05/2012</td> <td>30/05/2013</td> </tr> </tbody> </table> <p>Calibration entity: Measurement institute of Chenxi power grid company</p>	Calibration date	Valid until	01/07/2010	30/06/2011	02/06/2011	01/06/2012	31/05/2012	30/05/2013	
Calibration date	Valid until								
01/07/2010	30/06/2011								
02/06/2011	01/06/2012								
31/05/2012	30/05/2013								
Measuring/reading/recording frequency	Continuous measurement by meter installed at the connection point to the grid ,daily reading and monthly recording.								
Calculation method (if applicable)	The meter will be calibrated once a year.								
QA/QC procedures	The main meter will be calibrated once a year and net electricity supplied by the project activity to CCPG would be double checked by receipt of sales.								
Purpose of data/parameter	The data is used for the calculation of baseline emission.								
Additional comments	/								

Data/Parameter	$Cap_{PJ}$
Unit	W
Description	Installed capacity of the hydro power plant after the implementation of the project activity.
Measured/calculated/default	Measured
Source of data	Project site
Value(s) of monitored parameter	20,000,000

Monitoring equipment	/
Measuring/reading/recording frequency	Yearly monitored based on recognized standards.
Calculation method (if applicable)	/
QA/QC procedures	/
Purpose of data/parameter	The data are used for the calculation of power density.
Additional comments	/

<b>Data/Parameter</b>	$A_{PJ}$
Unit	m <sup>2</sup>
Description	Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full.
Measured/calculated/default	Measured
Source of data	Project site
Value(s) of monitored parameter	650,000
Monitoring equipment	/
Measuring/reading/recording frequency	Yearly monitored from topographical surveys, maps, satellite pictures, etc
Calculation method (if applicable)	/
QA/QC procedures	/
Purpose of data/parameter	The data are used for the calculation of power density.
Additional comments	/

### D.3. Implementation of sampling plan

>>

Not applicable.

## SECTION E. Calculation of emission reductions or net anthropogenic removals

### E.1. Calculation of baseline emissions or baseline net removals

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According to ACM0002, the baseline emissions during this monitoring period is calculated as follows:

$$BE_y = EG_y * EF_y$$

Where:

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

$EF_y$  is baseline emission factor in year y, in tCO<sub>2</sub>e/MWh. According to the registered PDD, the  $EF_y$  is 0.9735tCO<sub>2</sub>e/MWh, and is fixed during the crediting period.

The monitoring results based on main meter are as follows:

Period	Electricity export (MWh)	Electricity import (MWh)	Net electricity generation (MWh)
	A	B	C = A - B



30/11/2010-20/12/2010	1343.100	38.940	1304.160
21/12/2010-20/01/2011	1362.900	0.000	1362.900
21/01/2011-20/02/2011	1603.800	0.660	1603.140
21/02/2011-20/03/2011	805.200	12.540	792.660
21/03/2011-20/04/2011	0.000	0.000	0.000
21/04/2011-20/05/2011	217.800	79.860	137.940
21/05/2011-20/06/2011	1452.000	13.200	1438.800
21/06/2011-20/07/2011	2640.660	9.240	2631.420
21/07/2011-20/08/2011	346.500	45.540	300.960
21/08/2011-20/09/2011	1510.740	14.520	1496.220
21/09/2011-20/10/2011	2358.180	2.640	2355.540
21/10/2011-20/11/2011	2968.680	3.300	2965.380
21/11/2011-20/12/2011	1430.220	11.880	1418.340
21/12/2012-13/01/2012	1107.480	21.120	1086.360
14/01/2012-13/02/2012	1450.020	13.860	1436.160
14/02/2012-13/03/2012	2529.120	7.260	2521.860
14/03/2012-13/04/2012	3979.800	0.000	3979.800
14/04/2012-13/05/2012	2059.200	14.520	2044.680
14/05/2012-13/06/2012	4428.600	15.180	4413.420
14/06/2012-13/07/2012	5920.200	0.000	5920.200
14/07/2012-13/08/2012	6960.360	1.320	6959.040
14/08/2012-13/09/2012	4480.740	0.000	4480.740
14/09/2012-13/10/2012	4579.740	4.620	4575.120
14/10/2012-13/11/2012	6238.320	0.000	6238.320
14/11/2012-13/12/2012	5529.480	0.000	5529.480
14/11/2012-31/12/2012	2303.400	0.000	2303.400
sum	69606.24	305.58	69296.04

Note: The data sources are from the main meter readings and can be cross checked by electricity sales receipts. There is no malfunction happened to main meter during this monitoring period.

According to above calculation methods, the net electricity generation used for emission reductions calculation is 69296.04MWh. The baseline emission factor ( $EF_y$ ) is 0.9735tCO<sub>2</sub>/MWh, which is fixed during the first crediting period. Then the baseline emissions ( $BE_y$ ) are calculated as follows:

$$BE_y = EG_y * EF_y = 69296.04\text{MWh} * 0.9735\text{tCO}_2/\text{MWh} = 67,459 \text{ tCO}_2$$

## E.2. Calculation of project emissions or actual net removals

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According to the registered PDD, the project is a newly built hydropower station, the power density of project is 11 W/m<sup>2</sup>, greater than 10W/m<sup>2</sup>. According to baseline methodology, it is not needed to consider project emissions.

Therefore  $PE_y = 0$ .

## E.3. Calculation of leakage emissions

>>

According to baseline methodology ACM0002, leakage is not to be considered.

## E.4. Calculation of emission reductions or net anthropogenic removals

	Baseline GHG emissions	Project GHG emissions	Leakage GHG emissions	GHG emission reductions or net anthropogenic GHG removals (t CO <sub>2</sub> e)
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				Before 01/01/ 2013	From 01/01/ 2013 until 31/12/ 2020	From 01/01/ 2021	Total amount
<b>Total</b>	67,459	0	0	67,459	0	0	67,459

**E.5. Comparison of emission reductions or net anthropogenic removals achieved with estimates in the registered PDD**

Amount achieved during this monitoring period (t CO <sub>2</sub> e)	Amount estimated ex ante for this monitoring period in the PDD (t CO <sub>2</sub> e)
67,459	124,547* * As the 1# generator starts operation on 04/11/2011, thus the total operation days is 423 days to 31/12/2012, 2# generator starts operation on 30/10/2010, thus the total operation days is 761days to 31/12/2012 thus the total estimated emission reduction can be calculated as: $76790/365/2*(423+761)=124,547 \text{ tCO}_2\text{e}$ .

**E.5.1. Explanation of calculation of “amount estimated ex ante for this monitoring period in the PDD”**

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It can be found from E.5 that the actual emission reduction achieved during the monitoring period is lower than the registered PDD. It is due to the availability of water resources during the monitoring period.

**E.6. Remarks on increase in achieved emission reductions**

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The achieved emission reduction is lower than the estimated in the PDD.

**E.7. Remarks on scale of small-scale project activity**

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Not applicable.

## Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
08.0	6 April 2021	Revision to: <ul style="list-style-type: none"> <li>• Reflect the “Clarification: Regulatory requirements under temporary measures for post-2020 cases” (CDM-EB109-A01-CLAR).</li> </ul>
07.0	31 May 2019	Revision to: <ul style="list-style-type: none"> <li>• Ensure consistency with version 02.0 of the “CDM project standard for project activities” (CDM-EB93-A04-STAN);</li> <li>• Add a section on remarks on the observance of the scale limit of small-scale project activity during the crediting period;</li> <li>• Add "changes specific to afforestation or reforestation project activity" as a possible post-registration changes;</li> <li>• Clarify the reporting of net anthropogenic GHG removals for A/R project activities between two commitment periods;</li> <li>• Make editorial improvements.</li> </ul>
06.0	7 June 2017	Revision to: <ul style="list-style-type: none"> <li>• Ensure consistency with version 01.0 of the “CDM project standard for project activities” (CDM-EB93-A04-STAN);</li> <li>• Make editorial improvements.</li> </ul>
05.1	4 May 2015	Editorial revision to correct version numbering.
05.0	1 April 2015	Revisions to: <ul style="list-style-type: none"> <li>• Include provisions related to delayed submission of a monitoring plan;</li> <li>• Provisions related to the Host Party;</li> <li>• Remove reference to programme of activities;</li> <li>• Overall editorial improvement.</li> </ul>
04.0	25 June 2014	Revisions to: <ul style="list-style-type: none"> <li>• Include the Attachment: Instructions for filling out the monitoring report form (these instructions supersede the "Guideline: Completing the monitoring report form" (Version 04.0));</li> <li>• Include provisions related to standardized baselines;</li> <li>• Add contact information on a responsible person(s)/ entity(ies) for completing the CDM-MR-FORM in A.6 and Appendix 1;</li> <li>• Change the reference number from <i>F-CDM-MR</i> to <i>CDM-MR-FORM</i>;</li> <li>• Editorial improvement.</li> </ul>
03.2	5 November 2013	Editorial revision to correct table in page 1.
03.1	2 January 2013	Editorial revision to correct table in section E.5.
03.0	3 December 2012	Revision required to introduce a provision on reporting actual emission reductions or net GHG removals by sinks for the period up to 31 December 2012 and the period from 1 January 2013 onwards (EB 70, Annex 11).

<i>Version</i>	<i>Date</i>	<i>Description</i>
02.0	13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20).
01.0	28 May 2010	EB 54, Annex 34. Initial adoption.
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: monitoring report		