



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

Title of the project activity	Sichuan Muchuan County Huogu Hydropower Project		
UNFCCC reference number of the project activity	3309		
Version number of the PDD applicable to this monitoring report	PDD Version: 4.2		
Version number of this monitoring report	2.0		
Completion date of this monitoring report	15/09/2021		
Monitoring period number	3 rd		
Duration of this monitoring period	26/05/2016-24/07/2019		
Monitoring report number for this monitoring period	Not applicable.		
Project participants	Sichuan Muchuan County Qixing Huogu Hydropower Development Co., Ltd.		
Host Party	P. R. China		
Applied methodologies and standardized baselines	ACM0002 ver. 12.3.0 - Consolidated baseline methodology for grid-connected electricity generation from renewable sources		
Sectoral scopes	Energy industries (renewable - / non-renewable sources)		
Amount of GHG emission reductions or net anthropogenic GHG removals achieved by the project activity in this monitoring period	Amount achieved before 1 January 2013	Amount achieved from 1 January 2013 until 31 December 2020	Amount achieved from 1 January 2021
	0	367,087 tCO ₂ e	0
Amount of GHG emission reductions or net anthropogenic GHG removals estimated ex ante for this monitoring period in the PDD	446,639 tCO ₂ e		

SECTION A. Description of project activity

A.1. General description of project activity

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Sichuan Muchuan County Huogu Hydropower Project (hereinafter referred to as the "Project") which is located in Lidian Town, Muchuan County, Leshan City, Sichuan Province, P. R. China, is constructed and operated by Sichuan Muchuan County Qixing Huogu Hydropower Development Co., Ltd.

The Proposed Project aims to generate electricity from hydropower resources and to displace the same amount of electricity from the China Central Power Grid (CCPG) whose generation mix is dominated by coal-fired, electricity generating power plants.

The project employs two units of ZZ550-LH-340 turbines and two units of SF20-30/5500 generators to convert mechanical energy available in the water flow into electrical energy.

The earlier starting date of the project is 06/06/2007, on which main equipment contract of the project was signed. The date of construction is 10/08/2007. The project starts commercial operation on 22/01/2012. The units were in good condition during the operation of the project.

During the monitoring period, a net electricity of 430,424.003MWh has been delivered to the power grid by the project, thus there are totally 367,087tCO₂e reduced by the project.

A.2. Location of project activity

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The Project is located in Lidian Town, Muchuan County, Leshan City of Sichuan Province, P. R. China. The straight-line distance from the location of the dam to Mabian County and Muchuan County are respectively 18km and 21km. The geographical coordinates of the Project site are 103°40'27"E and 28°55'23"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)
People's Republic of China (host)	Sichuan Muchuan County Qixing Huogu Hydropower Development Co., Ltd.	No

A.4. References to applied methodologies and standardized baselines

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The Project applies to the approved methodology: ACM0002 "Consolidated Baseline Methodology for grid-connected electricity generation from renewable sources" (Version 12.3.0). Information regarding to the methodology could be found at:

<http://cdm.unfccc.int/methodologies/DB/UB3431UT9I5KN2MUL2FGZXZ6CV71LT>

In line with the approved methodology, the Project applies to the following tools:
"Tool to calculate the emission factor for an electricity system" (Version 02.2.1)

Information regarding to the tools could be found respectively at:

<http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v2.2.1.pdf>

A.5. Crediting period type and duration

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The Project adopts renewable crediting period. The first crediting period is from 25/07/2012 to 25/07/2019. This monitoring period is from 26/05/2016-24/07/2019.

SECTION B. Implementation of project activity**B.1. Description of implemented project activity**

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The model of the hydro turbine used in the Project is ZZ550-LH-340 and the model of generator is SF20- 30/5500. The key technical specifications of these two equipment are listed as Tables below:

Table A-1 Key technical specifications of Hydro turbines

Parameters Name	Unit	Data
Model	/	ZZ550-LH-340
Quantity	/	2
Rated Output	MW	20.619
Rated Rotation	r/min	200
Rated head	m	26
Rated flow	m ³ /s	86.4
Equipment life time	year	40

Table A-2 Key technical specifications of Generators

Parameters Name	Unit	Data
Model	/	SF20-30/5500
Quantity	/	2
Installed capacity	MW	20
Rated Voltage	kV	10.5
Rated current	A	1294
Rated frequency	Hz	50
Rated Rotation	r/min	200
Rated Power Factor	%	85
Equipment life time	year	40

There is no special events happened during the monitoring period. No overhaul or equipment exchange occurred during the monitoring period 26/05/2016- 24/07/2019.

No events or situation that occurred during the monitoring period, which may impact the GHG emission reductions or removals and monitoring.

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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Not applicable.

B.2.2. Corrections

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Not applicable.

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

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Not applicable.

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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Not applicable.

B.2.6. Changes to project design

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Not applicable.

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

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Not applicable.

SECTION C. Description of monitoring system

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The monitoring plan is made according to ACM0002 “Consolidated Baseline Methodology for grid-connected electricity generation from renewable sources”. Monitoring procedure should be implemented firmly according to monitoring plan to ensure real, measurable and long-term greenhouse gas (GHG) emission reduction of the Project is monitored and reported.

1. Monitoring Objective

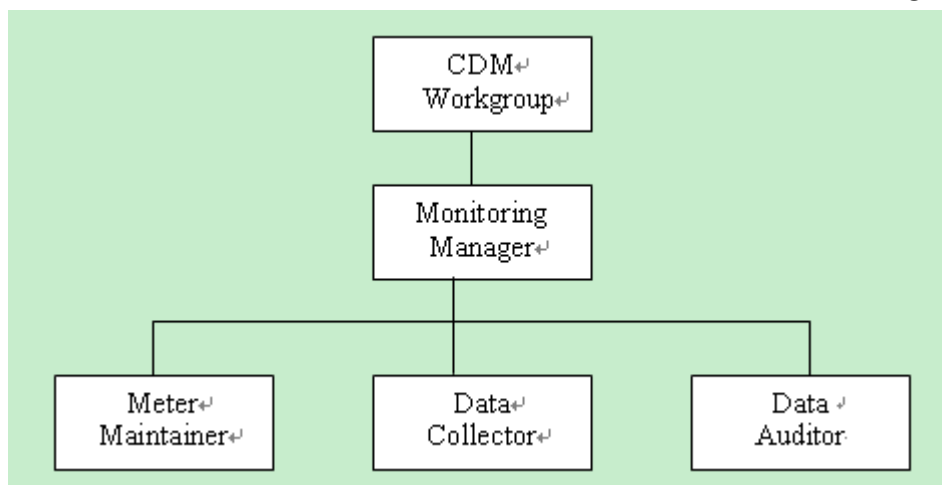
Since the emission factor is calculated as ex-ante and according to the Monitoring Methodology ACM0002, the following data should be monitored:

- a) Quantity of net electricity generation supplied by the project plant to the grid in year y ($EG_{facility,y}$)
- b) Installed capacity of the hydro power plant after the implementation of the project activity (Cap_{PJ})
- c) Area of the reservoir measured in the surface of the water, after the implementation of the Project activity, when the reservoir is full (A_{PJ}).

2. Monitoring Organization

A CDM group will be established to carry out the monitoring plan. The project owner will designate a CDM manager to responsible for daily monitoring and reporting. Under the CDM manager, there will be three positions involved, respectively referred as meter maintainer, data collector and data auditor.

Followed figure shows the CDM group structure:



The CDM Manager is fully responsible for implementing monitoring plan and reviewing monitoring results.

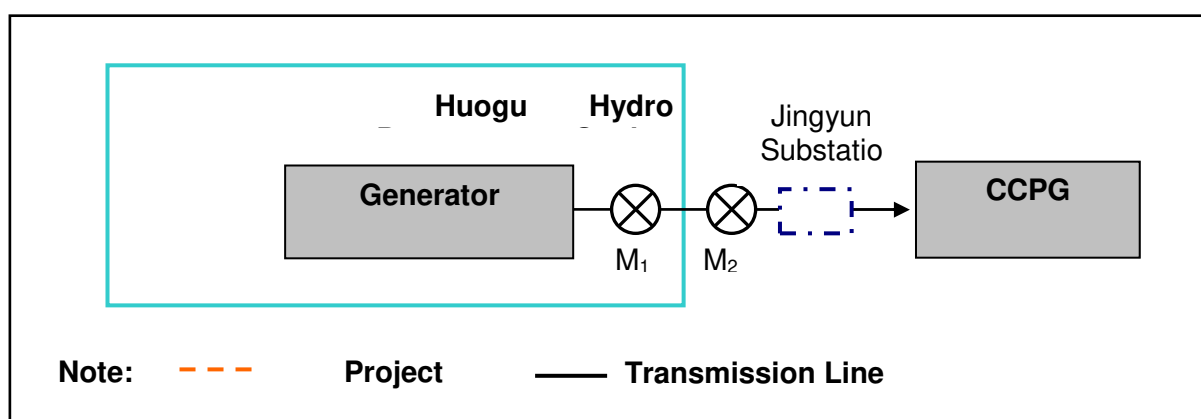
The maintainer is in charge of the organization of calibration tasks and regular maintenance of the meters equipped in the Project. The meters will be calibrated by specific technical staff and third party verification in accordance to relevant regulation and standard. The surface area of the reservoir at full reservoir level and installed capacity will be measured by competent Authority yearly.

The Data collector is responsible for regular collecting of the financial data, including meters reading records and the electricity sales invoices or receipts. Those data will be audited and verified by the CDM group.

The Data Auditor will check the validity of the data by comparing with previous recorded data and data from third party such as the Power Corporation. If an obvious discrepancy does exist, it should be reported to Monitoring Manager. The validated data will be archived electronically in CDM data management system by the Data auditor.

3. Installation of meters

The metering equipment will be properly configured and checked annually according to the requirement from Technical administrative code of electric energy metering (DL/T448—2000). The metering equipment will be checked by the Project owner and Grid Company before operation. The diagram of the meters' position is shown as following:



Two meters with accuracy of 0.2s are installed in order to ensure maximum availability of CDM data, and to improve the appropriate level of quality. Total electricity produced by the project activity is recorded by M_1 which installed at the output end of the station. M_2 installed at the substation is a bidirectional meter that measures quantity of net electricity generation supplied by the Project to the Grid and the electricity deliver to the Project from the Grid, and the difference of the two readings is the net electricity supplied by the Project ($EG_{facility,y}$). Above data will be measured continuously, recorded hourly and monthly aggregated.

M₁ is owned and maintained by the project owner, and M₂ is owned and maintained by Sichuan Power Grid which belongs to CCPG. In addition, in case of a conflict between M₁ and M₂ the latter should govern. Meanwhile, if one of the meters exceeds the allowable range specified in the national standards, then it should be replaced by a new meter. If a breakdown of M₂ happened, the net electricity data should be data from M₁ minus line loss and internal consumption. The calculation of line loss should be the average of at least three months' data.

4. Data Collection

The main meter data collection process is presented as follow:

- a) The project owner read M₁ on site hourly and record the data everyday
- b) The power grid read M₂ monthly and recorded
- c) At a fixed day of each month, Grid Company sends the project owner notification of net electricity generation. Then, the project owner offers the electricity sales invoices to Grid Company. After that, the Project owner records the net electricity generation of the Project.

The surface area of the reservoir at full reservoir level and installed capacity will be measured by competent Authority yearly. The data will be recorded and archived in electronic form annually.

Data and records are checked prior to being stored and archived. Data from the project are checked to identify possible errors or omissions. The data checks include cross checks of the two electricity meters, and checks of the electricity figures on the receipts.

The supplementary information regarding to the monitoring for Quantity of net electricity generation supplied by the project plant to the grid in year y ($EG_{\text{facility},y}$) has been provided. The power grid read M₂ and recorded at 0:00 everyday. The data were measured continuously, recorded daily and monthly aggregated. Grid company issued settlement to the project owner according to the recorded electricity data from 0:00 on the 26th of the previous month to it of this month. The exact data were the electricity delivered to the power grid minus the electricity supplied by the power grid. Data measured by M₂ were cross checked by the electricity sales documents, the conservative data between the measured data and data from Electricity Transaction Notes (ETN) were used to calculate CERs during the verification.

5. Calibration

The Power Interchange Agreement between the owner and the Grid Company defines the metering arrangements and the required quality control procedures to ensure accuracy.

The metering equipments are calibrated and checked annually for accuracy. Calibration of the two meters will be carried out by a third party who appointed by the Project owner. Both the calibration records will be maintained by Project owner and designated third party. The entire meter records shall be jointly inspected and sealed with the present of all parties involved, and shall not be interfered with by either party except the other party or its accredited representatives are present.

6. Data management system

All the data monitored under the monitoring plan will be kept in electronic and hard copy format for 2 years after the end of the last crediting period or the last issuance of CERs for this Project, whichever occurs later. The monitored data will be presented to DOE to for verification.

7. Monitoring Report

At the end of each crediting year, a monitoring report will be compiled including the metering results and evidence (i.e. sales receipts).

SECTION D. Data and parameters

D.1. Data and parameters fixed ex ante

(Copy this table for each data or parameter.)

Data/parameter:	Cap_{BL}
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Unit	W
Description	Installed capacity of the hydro power plant before the implementation of the project activity
Source of data	Project site
Value(s) applied	0
Choice of data or measurement methods and procedures	Due to it is a new hydro power plant, according to ACM0002, this value is zero.
Purpose of data	Calculation for Project emission
Additional comments	/

Data/parameter:	A_{BL}
Unit	m ²
Description	Area of the reservoir measured in the surface of the water, before the implementation of the project activity, when the reservoir is full (m ²).
Source of data	Project site
Value(s) applied	0
Choice of data or measurement methods and procedures	Due to it is a new reservoir, according to ACM0002 (Version 12.3.0), this value is zero.
Purpose of data	Calculation for Project emission
Additional comments	/

Data/Parameter	$EF_{grid,CM,y}$
Unit	tCO ₂ /MWh
Description	Combined Margin Emission Factor
Source of data	Calculated according to the procedure outlined in B.6.1 of the registered PDD (Version 4.2)
Value(s) applied	0.85285
Choice of data or measurement methods and procedures	Sourced from DNA of China
Purpose of data/parameter	Calculation for Baseline emission
Additional comments	/

D.2. Data and parameters monitored

(Copy this table for each data or parameter.)

Data/Parameter	$EG_{facility,y}$
Unit	MWh/yr
Description	Quantity of net electricity generation supplied by the project plant to the grid in year y
Measured/calculated/default	Calculated
Source of data	Meter
Value(s) of monitored parameter	430,424.003

Monitoring equipment	<p>M₁: Type: ZMD402CT44 Accuracy class: 0.2s Serial number: No.28003197 Calibration Date:</p> <table border="1"> <tr><td>10/01/2016</td></tr> <tr><td>07/01/2017</td></tr> <tr><td>07/01/2018</td></tr> <tr><td>07/01/2019</td></tr> </table> <p>Calibration Company: Sichuan Electric Power Test & Research Institute (The project owner read M₁ on site and record the data at 0:00 everyday)</p> <p>M₂: Type: ZMD402CT44 Accuracy class: 0.2s Serial number: No.28003196 Calibration Date:</p> <table border="1"> <tr><td>10/01/2016</td></tr> <tr><td>07/01/2017</td></tr> <tr><td>07/01/2018</td></tr> <tr><td>07/01/2019</td></tr> </table> <p>Calibration Company: Sichuan Electric Power Test & Research Institute (The power grid read M₂ and recorded at 0:00 everyday)</p> <p>Data and records were checked prior to being stored and archived. Data from the project were checked to identify possible errors or omissions. The data checks included cross checks of the two electricity meters, and checks of the electricity figures on the receipts.</p>	10/01/2016	07/01/2017	07/01/2018	07/01/2019	10/01/2016	07/01/2017	07/01/2018	07/01/2019
10/01/2016									
07/01/2017									
07/01/2018									
07/01/2019									
10/01/2016									
07/01/2017									
07/01/2018									
07/01/2019									
Measuring/reading/recording frequency	The data will be measured continuously, recorded hourly and monthly aggregated.								
Calculation method (if applicable)	Measured directly by electricity meter. The exact data were the electricity delivered to the power grid minus the electricity supplied by the power grid. The data were measured continuously, recorded hourly and monthly aggregated.								
QA/QC procedures	The meter is calibrated yearly. Data measured by the meter is cross checked by the electricity sales documents, the conservative data between the measured data and data from Electricity Transaction Notes (ETN) is used to calculate CERs during the verification.								
Purpose of data/parameter	Calculation for Baseline emission								
Additional comments	/								

Data/parameter:	<i>Cap_{PJ}</i>
Unit	W
Description	Installed capacity of the hydro power plant after the implementation of the project activity
Measured/calculated/default	Monitored
Source of data	Equipment nameplates at Project site

Value(s) of monitored parameter	2016: 40,000,000 2017: 40,000,000 2018: 40,000,000 2019: 40,000,000
Monitoring equipment	/
Measuring/reading/recording frequency:	Yearly.
Calculation method (if applicable):	/
QA/QC procedures:	The data is crosschecked by specification manual.
Purpose of data:	Calculation for Project emission
Additional comments:	/

Data/parameter:	A_{PJ}
Unit	m ²
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 from topographical surveys, maps
Source of data	Project site
Value(s) of monitored parameter	2016: 891,028 m ² 2017: 891,088 m ² 2018: 891,108 m ² 2019: 891,165 m ²
Monitoring equipment	/
Measuring/reading/recording frequency:	Yearly.
Calculation method (if applicable):	The calculation involves two steps: Input the water level monitored at any time when the reservoir is full and derive the according water surface area with water level- water surface graph depicted by topographical surveys which is carried out by qualified third party.
QA/QC procedures:	/
Purpose of data:	Calculation for Project emission
Additional comments:	/

D.3. Implementation of sampling plan

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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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Electricity exported to the grid by the project			
Period	Read from M ₂ (MWh)	Electricity exported to the grid by sales receipts(MWh)	Conservative value for electricity exported to the grid (MWh)

CDM-MR-FORM

26/05/2016-25/06/2016	18208.344	18204.120	18204.120
26/06/2016-25/07/2016	9643.920	9643.260	9643.260
26/07/2016-25/08/2016	11620.752	11623.92	11620.752
26/08/2016-25/09/2016	9866.736	9868.452	9866.736
26/09/2016-25/10/2016	10647.582	10647.582	10647.582
26/10/2016-25/11/2016	9996.426	9996.360	9996.360
26/11/2016-25/12/2016	7284.816	7284.882	7284.816
26/12/2016-25/01/2017	8256.732	8326.534	8256.732
26/01/2017-25/02/2017	5797.308	5728.562	5728.562
26/02/2017-25/03/2017	8211.522	8210.532	8210.532
26/03/2017-25/04/2017	12452.286	12456.180	12452.286
26/04/2017-25/05/2017	12005.202	12003.618	12003.618
26/05/2017-25/06/2017	14124.000	14123.670	14123.670
26/06/2017-25/07/2017	13868.910	13871.088	13868.910
26/07/2017-25/08/2017	14674.176	14670.942	14670.942
26/08/2017-25/09/2017	14297.778	14300.616	14297.778
26/09/2017-25/10/2017	15298.602	15298.008	15298.008
26/10/2017-25/11/2017	10064.406	10062.822	10062.822
26/11/2017-25/12/2017	8447.274	8446.944	8446.944
26/12/2017-25/01/2018	3417.876	3416.622	3416.622
26/01/2018-25/02/2018	3781.932	3785.034	3781.932
26/02/2018-25/03/2018	8954.220	8954.550	8954.220
26/03/2018-25/04/2018	13157.892	13158.354	13157.892
26/04/2018-25/05/2018	11631.048	11633.160	11631.048
26/05/2018-25/06/2018	14874.288	14868.216	14868.216
26/06/2018-25/07/2018	12158.454	12163.272	12158.454
26/07/2018-25/08/2018	13857.162	13855.710	13855.710
26/08/2018-25/09/2018	15249.960	15246.660	15246.660
26/09/2018-25/10/2018	16996.980	17002.128	16996.980
26/10/2018-25/11/2018	11242.638	11242.242	11242.242
26/11/2018-25/12/2018	7744.836	7743.054	7743.054
26/12/2018-25/01/2019	6052.266	6053.718	6052.266
26/01/2019-25/02/2019	5664.120	5666.100	5664.120
26/02/2019-25/03/2019	9051.108	9047.280	9047.280
26/03/2019-25/04/2019	10265.772	10271.118	10265.772
26/04/2019-25/05/2019	13648.734	13648.800	13648.734
26/05/2019-25/06/2019	19490.592	19493.034	19490.592
26/06/2019-24/07/2019	18712.339	18708.651	18708.651
Total	430718.989	430725.795	430614.875

Period	read from M ₂ (MWh)	Electricity imported to the grid by sales receipts(MWh)	Conservative value for electricity imported to the grid(MWh)
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CDM-MR-FORM

26/05/2016-25/06/2016	2.508	2.508	2.508
26/06/2016-25/07/2016	0.528	0.528	0.528
26/07/2016-25/08/2016	0.528	0.528	0.528
26/08/2016-25/09/2016	0.792	0.792	0.792
26/09/2016-25/10/2016	0.000	0.000	0.000
26/10/2016-25/11/2016	2.310	2.310	2.310
26/11/2016-25/12/2016	7.656	7.656	7.656
26/12/2016-25/01/2017	2.508	2.508	2.508
26/01/2017-25/02/2017	10.23	10.23	10.23
26/02/2017-25/03/2017	1.782	1.782	1.782
26/03/2017-25/04/2017	6.138	6.138	6.138
26/04/2017-25/05/2017	6.270	6.270	6.270
26/05/2017-25/06/2017	1.386	1.386	1.386
26/06/2017-25/07/2017	2.112	2.112	2.112
26/07/2017-25/08/2017	1.188	1.188	1.188
26/08/2017-25/09/2017	0.660	0.660	0.660
26/09/2017-25/10/2017	0.000	0.000	0.000
26/10/2017-25/11/2017	2.574	2.574	2.574
26/11/2017-25/12/2017	5.148	5.148	5.148
26/12/2017-25/01/2018	27.786	27.786	27.786
26/01/2018-25/02/2018	32.736	32.736	32.736
26/02/2018-25/03/2018	7.128	7.128	7.128
26/03/2018-25/04/2018	2.772	2.772	2.772
26/04/2018-25/05/2018	2.178	2.178	2.178
26/05/2018-25/06/2018	3.828	3.828	3.828
26/06/2018-25/07/2018	0.066	0.066	0.066
26/07/2018-25/08/2018	1.518	1.518	1.518
26/08/2018-25/09/2018	1.254	1.254	1.254
26/09/2018-25/10/2018	0.066	0.066	0.066
26/10/2018-25/11/2018	0.528	0.528	0.528
26/11/2018-25/12/2018	8.448	8.448	8.448
26/12/2018-25/01/2019	14.718	14.718	14.718
26/01/2019-25/02/2019	18.216	18.216	18.216
26/02/2019-25/03/2019	3.828	3.828	3.828
26/03/2019-25/04/2019	8.646	8.646	8.646
26/04/2019-25/05/2019	2.706	2.706	2.706
26/05/2019-25/06/2019	0.132	0.132	0.132
26/06/2019-24/07/2019	0.000	0.000	0.000
Total	190.872	190.872	190.872

Net electricity supplied to CCPG

Period	Conservative value for electricity exported to the grid(MWh)	Conservative value for electricity imported to the grid(MWh)	Conservative value for net electricity supplied to CCPG(MWh)
26/05/2016-25/06/2016	18204.120	2.508	18201.612
26/06/2016-25/07/2016	9643.260	0.528	9642.732
26/07/2016-25/08/2016	11620.752	0.528	11620.224
26/08/2016-25/09/2016	9866.736	0.792	9865.944
26/09/2016-25/10/2016	10647.582	0.000	10647.582
26/10/2016-25/11/2016	9996.360	2.310	9994.050
26/11/2016-25/12/2016	7284.816	7.656	7277.160
26/12/2016-25/01/2017	8256.732	2.508	8254.224
26/01/2017-25/02/2017	5728.562	10.23	5718.332
26/02/2017-25/03/2017	8210.532	1.782	8208.750
26/03/2017-25/04/2017	12452.286	6.138	12446.148
26/04/2017-25/05/2017	12003.618	6.270	11997.348
26/05/2017-25/06/2017	14123.670	1.386	14122.284
26/06/2017-25/07/2017	13868.910	2.112	13866.798
26/07/2017-25/08/2017	14670.942	1.188	14669.754
26/08/2017-25/09/2017	14297.778	0.66	14297.118
26/09/2017-25/10/2017	15298.008	0.000	15298.008
26/10/2017-25/11/2017	10062.822	2.574	10060.248
26/11/2017-25/12/2017	8446.944	5.148	8441.796
26/12/2017-25/01/2018	3416.622	27.786	3388.836
26/01/2018-25/02/2018	3781.932	32.736	3749.196
26/02/2018-25/03/2018	8954.220	7.128	8947.092
26/03/2018-25/04/2018	13157.892	2.772	13155.120
26/04/2018-25/05/2018	11631.048	2.178	11628.870
26/05/2018-25/06/2018	14868.216	3.828	14864.388
26/06/2018-25/07/2018	12158.454	0.066	12158.388
26/07/2018-25/08/2018	13855.710	1.518	13854.192
26/08/2018-25/09/2018	15246.660	1.254	15245.406
26/09/2018-25/10/2018	16996.980	0.066	16996.914
26/10/2018-25/11/2018	11242.242	0.528	11241.714
26/11/2018-25/12/2018	7743.054	8.448	7734.606
26/12/2018-25/01/2019	6052.266	14.718	6037.548
26/01/2019-25/02/2019	5664.120	18.216	5645.904
26/02/2019-25/03/2019	9047.280	3.828	9043.452
26/03/2019-25/04/2019	10265.772	8.646	10257.126
26/04/2019-25/05/2019	13648.734	2.706	13646.028
26/05/2019-25/06/2019	19490.592	0.132	19490.460
26/06/2019-24/07/2019	18708.651	0.000	18708.651
Total	430614.875	190.872	430424.003

The baseline emissions in year y (BE_y) are calculated as

$$BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$$

The net electricity of the project is 430,424.003 MWh.

The emission factor of CCPG is 0.85285tCO₂e/MWh.

Thus the baseline emission is

$$BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$$

$$= 430,424.003 \times 0.85285 = 367,087 \text{ tCO}_2\text{e}$$

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

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PD= (Cap _{PJ} - Cap _{BL})/(A _{PJ} - A _{BL})				
Project emission	2016	2017	2018	2019
PD (W/m ²)	44.8920	44.8889	44.8879	44.8920
Cap _{PJ} (W)	40000000	40000000	40000000	40000000
Cap _{BL} (W)	0	0	0	0
A _{PJ} (m ²)	891028	891088	891108	891165
A _{BL} (m ²)	0	0	0	0
Project emission (tCO ₂)	0	0	0	0

According to the ACM0002, if the power density of the project activity is greater than 10 W/m², the Project emissions (PE_{HP,y}) is zero. Through above calculation, the power density of the Project between 2016 and 2019 exceeded 10 W/m², so there is no project emission in the project.

E.3. Calculation of leakage emissions

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According to approved methodology and registered PDD, there is no leakage emission in the project.

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

	Baseline GHG emissions or baseline net GHG removals (t CO ₂ e)	Project GHG emissions or actual net GHG removals (t CO ₂ e)	Leakage GHG emissions (t CO ₂ e)	GHG emission reductions or net anthropogenic GHG removals (t CO ₂ e)			
				Before 01/01/2013	From 01/01/2013 until 31/12/2020	From 01/01/2021	Total amount
Total	367,087	0	-	0	367,087	0	367,087

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

Ex-ante calculation of registered PDD	
Annual emission reduction of the registered CDM-PDD (tCO ₂)	141,158.5
Daily emission reduction of the registered CDM-PDD (tCO ₂)	386.7
Monitoring period (Day)	1,155
Values estimated in ex-ante calculation of registered PDD (tCO ₂)	446,639

Item	Amount achieved during this monitoring period (t CO₂e)	Amount estimated ex ante for this monitoring period in the PDD (t CO₂e)
Emission reductions or GHG removals by sinks (tCO ₂ e)	367,087	446,639

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 above that the actual emission reductions reached during the monitoring period are 17.81% less than the value applied in ex-ante calculation of the registered PDD. The reason is that the electricity generation of the hydropower plant highly depends on water resources availability. Thus the power generation of the project differs from month to month.

E.6. Remarks on increase in achieved emission reductions

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Not applicable.

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