



**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	Qinghai Maqin Gequ Level 2 Hydropower Station		
UNFCCC reference number of the project activity	7507		
Version number of the PDD applicable to this monitoring report	Version 3.0		
Version number of this monitoring report	Version 1.0		
Completion date of this monitoring report	05/08/2021		
Monitoring period number	The second monitoring period		
Duration of this monitoring period	01/10/2015-31/12/2020		
Monitoring report number for this monitoring period	Not applicable		
Project participants	Qinghai Maqin Gequ River Cascade Hydropower Development Co.,LTD Carbon & Energy Capital Co., LTD.; Carbon 350 Ltd. Climate Wedge Ltd Oy		
Host Party	People's Republic of China		
Applied methodologies and standardized baselines	ACM0002/ Version 12.3.0		
Sectoral scopes	Sectoral scope(s) 01		
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
	N. A	1,143,924 tCO ₂ e	N. A
Amount of GHG emission reductions or net anthropogenic GHG removals estimated ex ante for this monitoring period in the PDD	930,486 tCO ₂ e		

SECTION A. Description of project activity

A.1. General description of project activity

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The Qinghai Maqin Gequ Level hydropower station (hereinafter referred to as the "Project") is constructed and operated by Qinghai Maqin Gequ River Cascade Hydropower Development Co., LTD. It involves the installation of 2 turbine-generator sets, each of which is with a unit capacity of 24MW. So the total installed capacity of the hydropower station is 48MW. The amount of designed generated power is 250,870MWh of which 223,525MWh is delivered to Qinghai provincial grid connected to NWPG. The purpose of this project is to generate zero-greenhouse gas emission (GHG) electricity through the application of hydropower technology and displace the same amount of electricity from the Northwest China Power Grid (NWPG) that is mainly dominated by electricity derived from fossil fuel fired power plants.

Relevant dates of the project activity are listed below:

Table A.1 Relevant dates of the project activity

Starting date of the construction	20/04/2011
The date on which the first hydro turbine started operation	10/06/2014
The date on which all the hydro turbine started operation	21/06/2014

The project was registered as a CDM project on 03/10/2012. CDM registration reference number is 7507. The start date of the crediting period is on 01/01/2014.

The project helps to reduce GHG emissions generated from the fossil fuel power generation. During the first monitoring period (01/01/2014-30/09/2015), the project has generated total electricity supply of 348,780.428MWh and achieved 276,440 tCO₂e emission reductions by replacing electricity generated by fossil fuel fired power plants connected to Northwest China Grid. During the second monitoring period (01/10/2015-31/12/2020), the project has generated total electricity supply of 1,443,271.084MWh excluding imported electricity and achieved 1,143,924 tCO₂e emission reductions by replacing electricity generated by fossil fuel fired power plants connected to Northwest China Grid.

A.2. Location of project activity

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The project is located at the Maqin County, Guoluo Zang Autonomous Prefecture, Qinghai Province, P.R. China. The straight-line distances from the location of factory to Dawu town and Xining city, the provincial capital of Qinghai are respectively 53km and 493km.

The geographical coordinate of the dam is 100°15'06"E, 34°46'50"N.

The geographical coordinate of the plant is 100°13'32"E, 34°50'35"N.

The location of the project is listed below (figure A2-1)

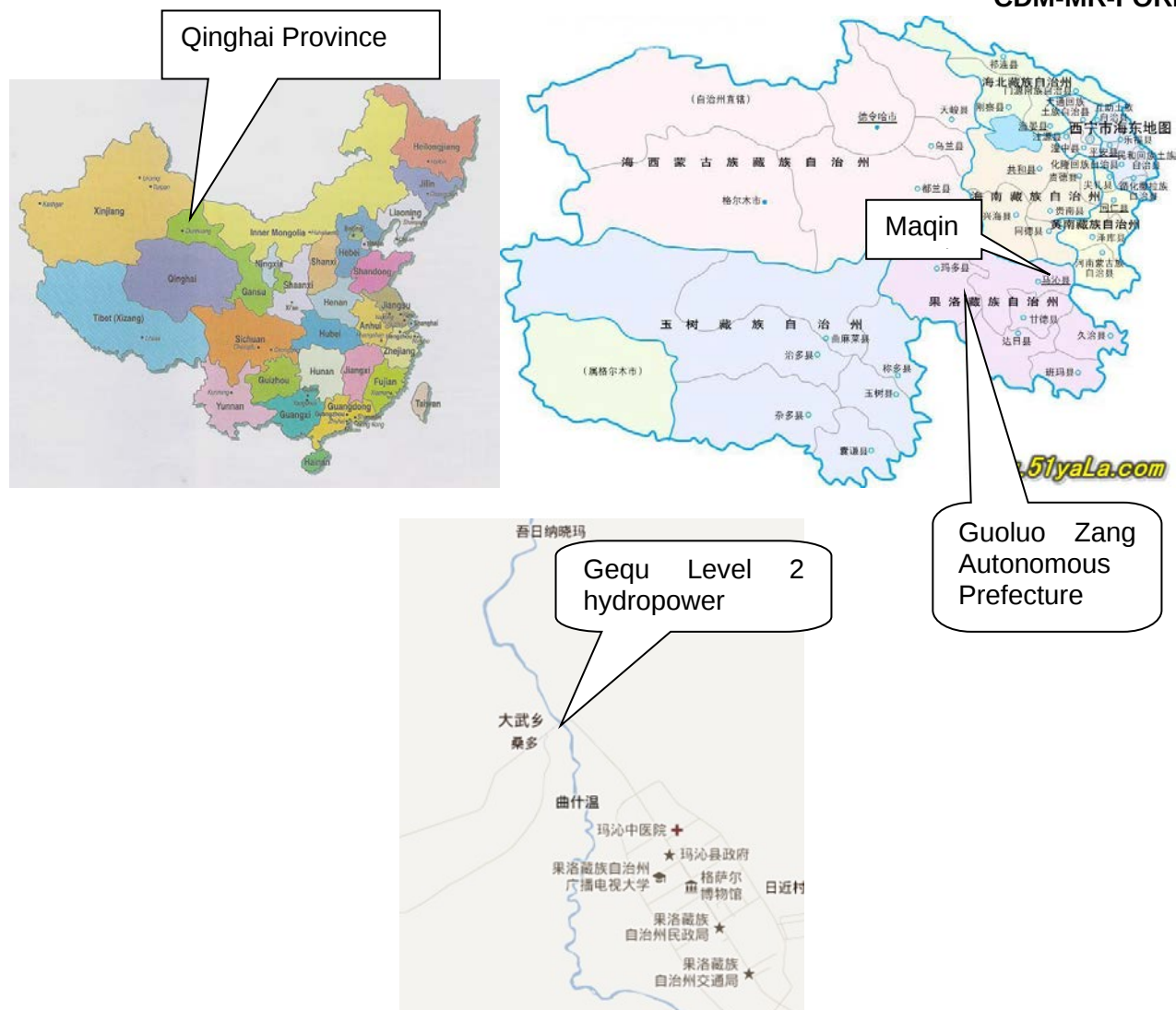


Figure A2-1 The location of the project

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)	Qinghai Maqin Gequ River Cascade Hydropower Development Co., LTD	No
United Kingdom	Carbon& Energy Capital CO., LTD.; Carbon 350 Ltd.	No
Finland	Climate Wedge Ltd Oy	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)

“Tool for the demonstration and assessment of additionality” (Version 06.0.0)

“Tool for calculate the emission factor for an electricity system” (Version 02.2.1)

“Combined tool to identify the baseline scenario and demonstrate additionality” (Version 04.0.0)

For more information, please visit:

A.5. Crediting period type and duration

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The project chooses renewable crediting period 3*7 years. The first crediting period of the project activity is from 01/01/2014 to 31/12/2020.

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

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The project registration date is 03/10/2012. The 2# turbine started operation on 10/06/2014 and two turbines fully operated on 21/06/2014.

The main manufacturing technology is to convert mechanical energy available in the water flow into electrical energy by using hydro turbines and generators. Main components of the project include the dam on the river, diversion canal, factory buildings, booster station, transmission project and residential area. The project is a daily regulated hydropower project. The normal water level of the project is designed to be 3,412m. Under the normal water level, the reservoir capacity is designed to be 3,967,000m³. The surface area of the reservoir is designed to be 245,900m². The power density of the project is 195.2W/m² and the power load factor of the project is 59.7%.

The model of the hydro turbine used in the project is CJA237-L-155/6*14 and the model of generator is SF24-12/3300. The key technical specifications of the equipment are listed below.

Table B.1-1 Key technical specifications of Hydro turbines

Parameters name	Unit	Data
Model	/	CJA237-L-155/6*14
Quantity	/	2
Rated output	MW	24
Rated rotation speed	r/min	500
Rated head	m	376.7
Rated flow	m ³ /s	7.96

Table B.1-2 Key technical specifications of generators

Parameters Name	Unit	Data
Model	/	SF24-12/3300
Quantity	/	2
Installed capacity	MW	24
Rated voltage	kV	10.5
Rated current	A	1649.6
Rated frequency	Hz	50
Rated Rotation Speed	r/min	500
Rated power factor	%	80

During the monitoring period, the project was in normal operational status, and no special events or situations that may impact the applicability of the methodology occurred. The project is implemented in accordance with the validated and registered PDD.

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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There are no temporary deviations from registered monitoring plan or applied methodology.

B.2.2. Corrections

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There are no corrections to the project during the monitoring period.

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

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There are no changes to start date of crediting period.

B.2.4. Inclusion of monitoring plan

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There are no changes to inclusion of a monitoring plan.

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 from 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 project design of registered project activity.

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 approved monitoring methodology ACM0002 is used for developing the monitoring plan. Monitoring tasks are implemented according to the monitoring plan in order to ensure that the real, measurable and long-term greenhouse gas (GHG) emission reduction for the project is monitored and reported.

1 Monitoring data

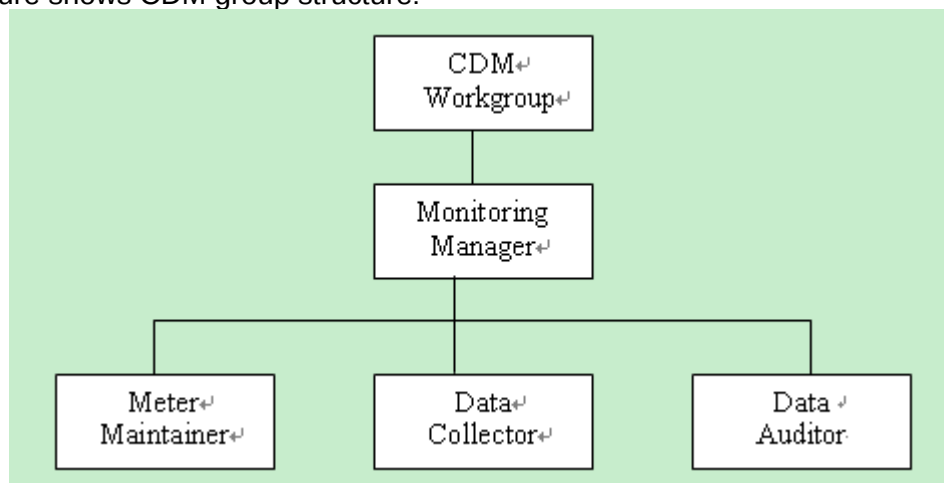
According to the monitoring methodology ACM0002 (Version 12.3.0), the following data should be monitored:

- 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 hydropower 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 is established to carry out the monitoring plan. The project owner designated a CDM manager to responsible for daily monitoring and reporting. Under the CDM manager, there is three positions involved, respectively referred as meter maintainer, data collector and data auditor.

Followed figure shows CDM group structure:



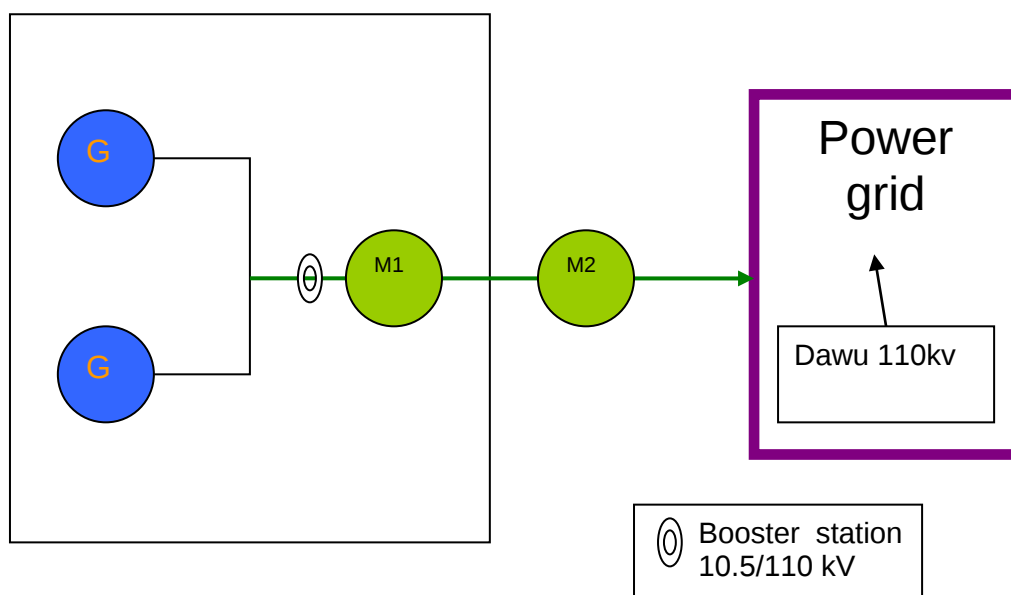
The CDM Manager is fully responsible for implementing monitoring plan and reviewing monitoring results.

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

The data auditor is responsible for checking the validity of the data by comparing with previous recorded data and data from party such as the Power Corporation. If an obvious discrepancy does exist, the data auditor reports it to the monitoring manager. The validated data is archived electronically in CDM data management system by the data auditor.

3 Installation of meters

The metering equipment is properly configured and checked annually according to the requirement from Technical administrative code of electric energy metering (DL/T448-2000, issued by State Economic and Trade Commission on Nov. 03, 2000 and implemented on Jan. 1, 2001). The metering equipment is checked by the project owner and Grid Company before operation. The diagram of the meters' position is shown below:



The main meter M2 (accuracy level $\pm 0.5S$) is a bidirectional power meter that is installed at the Grid Company, which monitors the quantity of net electricity generation supplied by the Project to the grid ($EG_{\text{facility},y}$) ie. $EG_{\text{facility},y}$ equals to electricity exported to the grid by the project subtracts the electricity imported to the project from the grid. M2 is owned and maintained by power grid company. The backup meter M1 is installed at the project site and monitors the electricity coming out from the plant to grid and the electricity received by the plant from the grid, M1 is owned and maintained by the project owner. The difference between the measured data of M2 and M1 is the line loss.

4 Data collection

The project owner is responsible for monitoring the meter M1 and the Grid Company is responsible for monitoring the main meter M2, and they guarantee the measuring equipment are in good operation.

The main meter data collection process is presented as follows:

- The project owner reads M1 on site hourly and records the data at 24:00 every day;
- The power grid company reads M2 and records the data monthly;
- 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.

The project owner verifies the installed capacity of the project on site annually and takes a record. The area of reservoir measured in the surface of water when reservoir is full and is calculated annually using the schematics and area maps, and the data is recorded.

5 Calibration

The calibration of electric energy meter is carried out annually according to relevant National electric industry standards or regulations. After calibration, meters are inspected on behalf of the project owner and Grid Company and is not accessible by either party except in the presence of both parties or its accredited representatives.

In case of emergency

If the error of the main meter is out of permissible limits, the data of the backup meter is used to determine the electricity amount; the calculation of line loss is determined by maximum historical records between M1 and M2. If both the main meter and the backup meter fail, the project owner and Grid Company shall jointly prepare a reasonable and conservative estimate of the correct reading. If the grid company and project owner can't determine a reasonable and accurate way to

confirm the electricity generation during the meter failure period, then the electricity generated during this period will be neglected for conservative approach.

6 Data management system

All the data monitored under the monitoring plan will be kept 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 for verification.

7 Monitoring report

At the end of each crediting year, a monitoring report will be compiled including the metering results and receipts

8 Personnel training

The monitoring plan is executed by qualified professionals who were trained by the project owner. The training made sure the relevant personnel to master the necessary mechanical, electric and installing knowledge, know well the working principle and the fundamental structure of generator, understand the reasons of common malfunction and the corresponding solving methods, expertly use the monitoring system. If personnel alternation happens in future, the worker taking over should be ensured to receive the same training.

SECTION D. Data and parameters

D.1. Data and parameters fixed ex ante

(Copy this table for each data or parameter.)

Data/Parameter	EF_{grid,CM,y}
Unit	tCO ₂ e/MWh
Description	The baseline emission factor of the Grid
Source of data	Registered PDD
Value(s) applied	0.7926
Choice of data or measurement methods and procedures	-
Purpose of data/parameter	Used for baseline emission calculation
Additional comments	EF _{grid,CM,y} is fixed ex-ante for the first crediting period

D.2. Data and parameters monitored

(Copy this table for each data or parameter.)

Data/Parameter	EG_{facility,y}
Unit	MWh
Description	Quantity of net electricity generation supplied to grid in year y by the project plant
Measured/calculated/default	Measured and calculated
Source of data	Meter/ Invoices
Value(s) of monitored parameter	1,443,271.084

Monitoring equipment	Main meter	
	Type	DTZ747
	Code number	01400009
	Accuracy class	0.5S
	Calibration frequency	Yearly
	Backup meter	
	Type	DTSD341
	Code number	01400221
	Accuracy class	0.2S
	Calibration frequency	Yearly
Measuring/reading/recording frequency	Hourly measured and monthly recorded	
Calculation method (if applicable)	Net electricity delivered to Grid=Electricity delivered to the Grid-Electricity imported from the Grid.	
QA/QC procedures	Data measured by the meter are cross checked using electricity receipts; Data record and relevant documents will be archived for a period of 2 years after the crediting period.	
Purpose of data/parameter	Baseline emission calculation	
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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According to ACM0002, the baseline emission BE_y during the monitoring period results from:

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

Where

$EG_{facility,y}$ = Electricity delivered to grid in year y

$EF_{grid,CM,y}$ = Emission factor of the grid (calculated ex-ante and it's updated during the first crediting period)

According to the data from 01/10/2015 to 31/12/2020,

$EG_y = 1443255.696 \text{ MWh}$

$BE_y = EG_y \times EF_y = 1443255.696 \text{ MWh} \times 0.7926 \text{ tCO}_2\text{e/MWh} = 1143924 \text{ tCO}_2\text{e}$

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

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According to approved methodology and registered PDD, the project emission is zero.

E.3. Calculation of leakage emissions

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According to approved methodology and registered PDD, the leakage from the project is zero.

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	1,143,924	0	0	N. A	1,143,924	N. A	1,143,924

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 ₂ e)	Amount estimated ex ante for this monitoring period in the PDD (t CO ₂ e)
1,143,924 tCO ₂ e	930,486 tCO ₂ e

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

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During the monitoring period, the CO₂ emission reductions amounted to 1,143,924 t CO₂e. The estimated emission reduction is 177,166 tCO₂e/y. As Effective electricity generation time in 2015 is 92 days, the estimated emission reduction multiplying 92/365, give a volume of 44,656 tCO₂e. Plus with the estimated emission reduction in year of 2016 to 2020, the total volume is 930,486 tCO₂e. The actual overall annual power generation volume would appear to be higher than the estimates in the registered PDD, the percentage is 22.94%.

E.6. Remarks on increase in achieved emission reductions

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The increase in achieved emission reductions is mainly because the estimated emission reduction of PDD is calculated on the designed annually net power generation, which is based on the historical data of raining. While the actual emission reduction is calculated on the actual net power generation, which is accorded to the actual raining. When the raining increases, the power generation also increases. From 2015 to 2020, the annual amounts of actual raining in Maqin are larger than the historical raining amounts in Maqin. Therefore, the actual net power generation of the project are also larger, which leads to increase in amounts of emission reduction.

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

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Not applicable.

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Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
08.0	6 April 2021	Revision to: • Reflect the “Clarification: Regulatory requirements under temporary measures for post-2020 cases” (CDM-EB109-A01-CLAR).
07.0	31 May 2019	Revision to: • 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: • 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: • 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: • 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.

<i>Version</i>	<i>Date</i>	<i>Description</i>
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).
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		