



**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	Xinjiang A'letai Hua'ning Hydropower Project		
UNFCCC reference number of the project activity	7497		
Version number of the PDD applicable to this monitoring report	Version 4.1		
Version number of this monitoring report	Version 1.0		
Completion date of this monitoring report	10/09/2021		
Monitoring period number	The first monitoring period		
Duration of this monitoring period	01/07/2013-30/06/2020		
Monitoring report number for this monitoring period	Not applicable		
Project participants	XinJiang A'letai Hua'ning Hydropower Investment Developing Co., Ltd. GFACC (IOM) Limited Carbon & Energy Capital Co. LTD		
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
	0	554,116 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	730,967 tCO ₂ e		

SECTION A. Description of project activity

A.1. General description of project activity

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The Xinjiang A'letai Hua'ning Hydropower Project (hereafter referred to as "the Project") is developed by XinJiang A'letai Hua'ning Hydropower Investment Developing Co., Ltd. The Project is designed to install 2 sets of turbine generators with a unit capacity of 50 MW for each. The total installed capacity is 100 MW and the estimated net annual electricity supplied to the NWPG through Xinjiang power grid is about 324,920 MWh with average 3,322 hours operational hours per year. The objective of the Project is the generation of zero carbon emission electricity from a renewable source (in this case, hydropower) and the displacement of the same amount of electricity from the Northwest China Power Grid (NWPG) that is mainly dominated by electricity derived from coal-fired power plants.

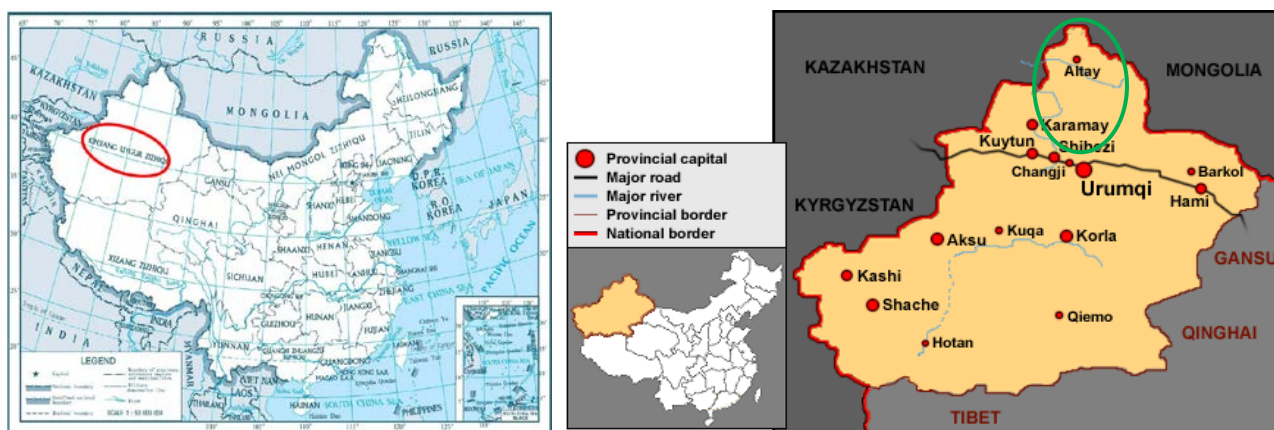
The project was registered as a CDM project on 05/10/2012. CDM registration reference number is 7497. According to the registered PDD, the start date of the crediting period is on 01/07/2013 and the first crediting period of the project activity is from 01/07/2013 to 30/06/2020. However, during the construction, the project owner faces financial barrier and it is more difficult to construct a hydro power plant in remote area. It takes more than six years for the project to complete construction. The project was put into operation on 30/08/2017 and started trial operation for commercial purpose on 19/09/2017, so the actual power generation period of the project is 30/08/2017-30/06/2020.

The project helps to reduce GHG emissions generated from the fossil fuel power generation. During the first monitoring period (01/07/2013-30/06/2020), the project has generated total electricity supply of 699,112.7529 MWh and achieved 554,116 tCO₂e emission reductions by replacing electricity generated by fossil fuel fired power plants connected to Northwest China Power Grid.

A.2. Location of project activity

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The project is located in the middle stream of Sumudayilieke River, A'letai City, Xinjiang Uygur Autonomous Region, and P.R. China. The distance from the location of the dam to A'letai city is about 110km. The geographical coordinates of the dam of the Project are 87°47'42"E, 48°13'23"N. The geographical coordinates of the plant of the Project are 87°56'00"E, 48°13'08"N. And the location of the Project is indicated in the maps below:



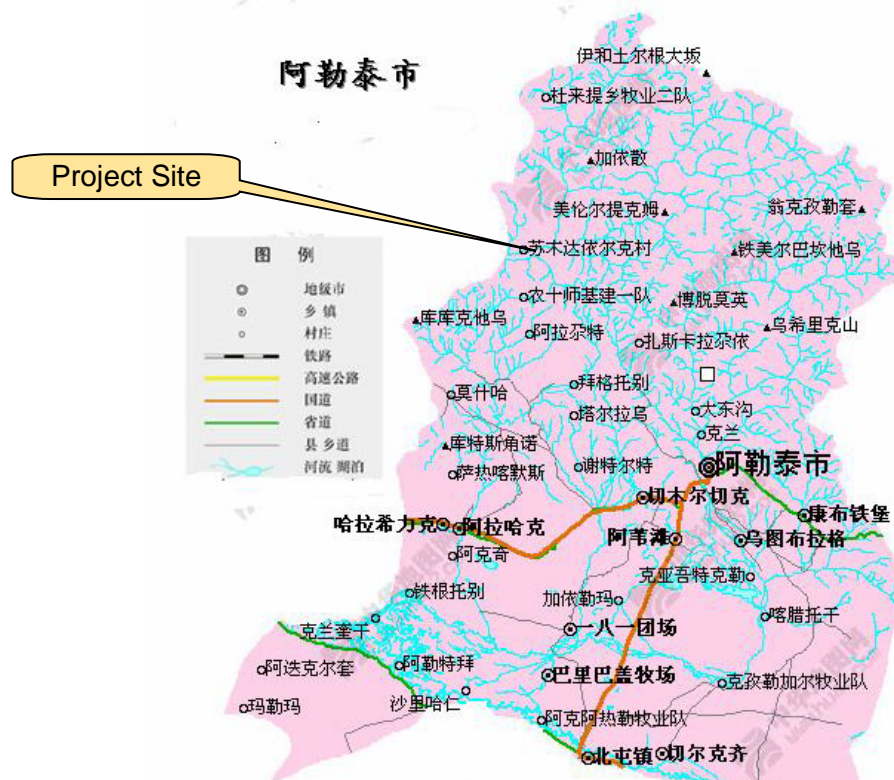


Figure A2-1 The location of the project

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)	XinJiang A'letai Hua'ning Hydropower Investment Developing Co., Ltd.	No
United Kingdom	GFACC (IOM) Limited	No
United Kingdom	Carbon & Energy Capital 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)

"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:

<http://cdm.unfccc.int/methodologies/DB/C505BVV9P8VSNNV3LTK1BP3OR24Y5L>

A.5. Crediting period type and duration

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The project activity employs the renewable crediting period (7years×3). The first crediting period of the project activity is from 01/07/2013 to 30/06/2020.

SECTION B. Implementation of project activity

B.1. Description of implemented project activity

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The Project is an accumulation reservoir hydropower station with a total installed capacity of 100MW. The main manufacturing technology is to convert mechanical energy available in the water flow into electrical energy with the help of hydro turbines and generators. Main construction components of the Project include the new constructed dam and reservoir, the water release structure, the water intake system, factory buildings and step-up switchyard. The Project is a yearly regulation hydropower project. The area of the reservoir is 2.94km² with a corresponding power density of 34.01W/m², which is greater than 4 W/m². The Project is estimated to operate average 3,322 hours per year and the power load factor is 37.92%. After operating, the average gross electricity generated by the Project will reach 332,220 MWh annually, of which 324,920 MWh will be delivered to the NWPG.

The technical specifications of the key equipments of the proposed project (without transfer of technology) are listed as Tables below:

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

Parameters name	Unit	Data
Model	/	HLFF151-LJ-216
Quantity	/	2
Rated rotation speed	r/min	375
Rated head	m	138
Rated flow	m ³ /s	40.36
Equipment lifetime	year	30

Table B.1-2 Key technical specifications of generators

Parameters Name	Unit	Data
Model	/	SF50-16/4650
Quantity	/	2
Installed capacity	MW	50
Rated voltage	kV	10.5
Rated current	A	3234.5
Rated frequency	Hz	50
Rated Rotation Speed	r/min	375
Rated power factor	%	85
Equipment lifetime	year	30

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 monitoring plan is made according to ACM0002 Consolidated Baseline Methodology for gridconnected electricity generation from renewable sources (Version 12.3.0). 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.

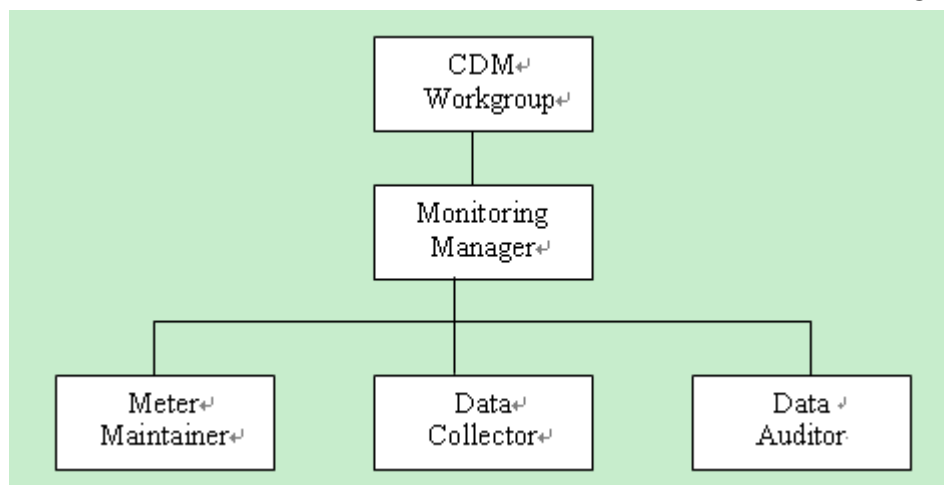
1. Monitoring Objective

Since the emission factor is calculated as ex-ante and according to the Monitoring Methodology ACM0002 (Version 12.3.0), the following data should be monitored:

- a) Net electricity delivered by the Project to the Grid ($EG_{facility,y}$)
- 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 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:



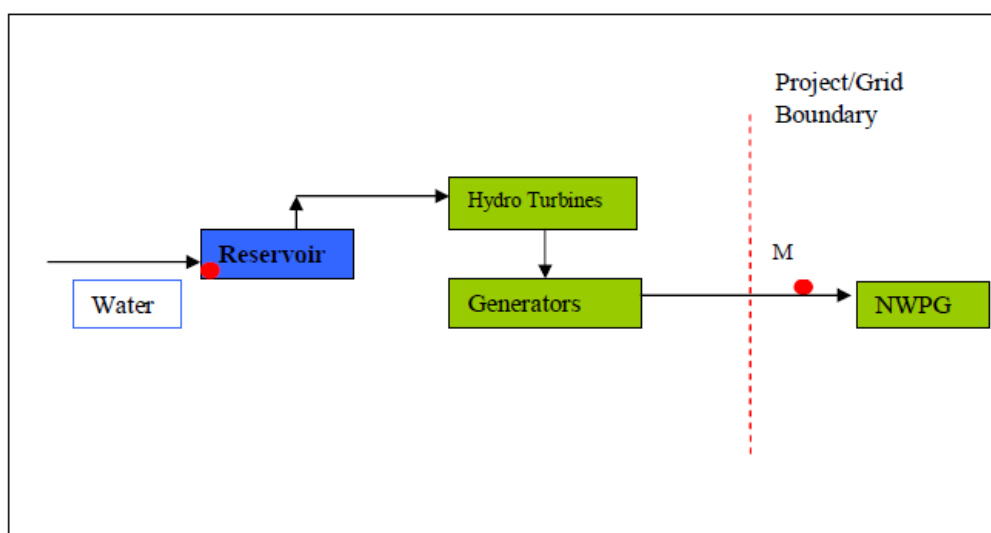
The CDM Manager is fully responsible for implementing monitoring plan and reviewing monitoring results.

The 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/T448-2016, issued by National Energy Administration on Dec. 05, 2016 and implemented on May. 01, 2017). 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:



As the baseline emission factor has been ex-ante calculated, the main monitoring object is Net electricity delivered by the Project to the Grid. Besides, the area of the reservoir measured in the surface of the water will also be monitored by qualified organization and the installed capacity of the project will be monitored in accordance with the nameplate of the generators.

The electricity meter M (accuracy level $\geq 0.5s$) is a bidirectional power meter that will be installed at the Grid Company, which is treated as the main recording system that can monitor both the electricity supplied to the grid and electricity imported by the project plant from the grid in year, which is used for the calculation of net electricity generation supplied by the project plant to the grid in year y ($EG_{\text{facility}, y}$). The data will be cross-checked by the power invoice and power statement.

4. Data Collection

The meter data collection process is presented as follow:

- a) The power grid read electricity meter M (meter accuracy level $\geq 0.5s$) on a specific day of every month;
- b) The surface area of the reservoir at full reservoir level will be measured by competent Authority yearly and the installed capacity of the project will be monitored in accordance with the nameplate of the generators. The data will be recorded and archived in electronic form annually.

The QA&QC procedures

All monitoring equipment will be maintained and calibrated in line with manufacturers' instruction and/or national standards. Calibration will be implemented at least once a year. These activities will assure that the equipment operates at the stated level of accuracy. Data collected by collector will be cross-checked by monitoring manager to detect and correct errors in accordance with the predetermined procedure. In order to check if daily monitoring activities are implemented in compliance with the CDM monitoring manual, and to continuously improve monitoring practice, internal audit will also be implemented on at least once a year. In the internal audit, document survey concerning procedures of data collection, management and archiving, status of calibration, education and training, etc. and onsite audit are made. Corrective action will be taken on any deviations from the manual identified through the internal audit.

In Case of Emergency:

If the error of the meter is out of the permissible limits, then the electricity generated during this period will be neglected for conservative approach.

5. Calibration

The metering equipment are calibrated and checked annually for accuracy. Calibration is carried out by Grid Company with records being supplied to Project owner, and these 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).

8. Personnel training

The monitoring plan needs to be executed by qualified professionals, thus the project owner will train the relevant personnel. The training will make 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, 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

Data/Parameter	Cap_{BL}
Unit	W
Description	Installed capacity of the hydro power plant before implementation of the project activity
Source of data	Registered PDD
Value(s) applied	0
Choice of data or measurement methods and procedures	Due to it is a new hydro power plant, according to ACM0002 (Version12.3.0), this value is zero.
Purpose of data/parameter	Used for baseline emission calculation
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
Source of data	Registered PDD
Value(s) applied	0
Choice of data or measurement methods and procedures	Due to it is a new reservoir, according to ACM0002 (Version12.3.0), this value is zero.
Purpose of data/parameter	Used for baseline emission calculation
Additional comments	-

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	699,112.7529	
Monitoring equipment	Main meter	
	Type	DTSD718
	Code number	6530001008000002878420
	Calibration frequency	Yearly
	Backup meter	
	Type	DTSD718
	Code number	6530001008000002878284
	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

$EG_{facility,y}$ = Net 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 01/07/2013 to 30/06/2020,

$EG_y = 699112.7529$ MWh

$BE_y = EG_y \times EF_y = 699112.7529 \text{ MWh} \times 0.7926 \text{ tCO}_2\text{e/MWh} = 554116 \text{ tCO}_2\text{e}$

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	554,116	0	0	0	554,116	N. A	554,116

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)
554,116 t CO ₂ e	730,967 t CO 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 554,116 t CO₂e. The estimated emission reduction is 257,532 tCO₂e/y. As Effective electricity generation time in the first monitoring period is 1036 days, the estimated emission reduction multiplying 1036/365, given a volume of 730,967 tCO₂e. The actual overall annual power generation volume would appear to be lower than the estimates in the registered PDD, the percentage is 24.19%.

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.

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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.

<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		