

TEMPLATE

MONITORING REPORT

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VERSION **v. 1.1**

RELATED SUPPORT - **TEMPLATE GUIDE Monitoring Report v. 1.1**

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KEY PROJECT INFORMATION

Key Project Information

GS ID (s) of Project (s)	GS 7154 ¹
Title of the project (s) covered by monitoring report	Chanju I Hydro Electric Project
Version number of the PDD/VPA-DD (s) applicable to this monitoring report	05 (GS PDD)
Version number of the monitoring report	07
Completion date of the monitoring report	08/09/2025
Date of project design certification	12/01/2022
Date of Last Annual Report	27/12/2023
Monitoring period number	01
Duration of this monitoring period	25/02/2019 to 30/06/2019 (Inclusive of both days) ²
Project Representative	Project Participant: IA Hydro Energy Private Limited Project Representative: EKI Energy Services Limited
Host Country	India
Activity Requirements applied	☐ Community Services Activities ☒ Renewable Energy Activities ☐ Land Use and Forestry Activities/Risks & Capacities ☐ N/A
Methodology (ies) applied and version number	ACM0002: Grid-connected electricity generation from renewable sources- Version 20.0
Product Requirements applied	☒ GHG Emissions Reduction & Sequestration ☐ Renewable Energy Label ☐ N/A

¹ <https://registry.goldstandard.org/projects/details/1425>

² The verification duration has been modified to span from 26/07/2017 to 30/06/2019. The site visit occurred on 24/02/2021, and the retroactive claim period covers the two years preceding the date of the site visit (25/02/2019 to 30/06/2019).

Table 1 - Sustainable Development Contributions Achieved

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
SDG 7- Affordable and Clean Energy: Ensure access to affordable, reliable, sustainable and modern energy for all	MWh of renewable energy generated	72,072.76	MWh
SDG 8- Decent Work and Economic Growth: substantially reduce the proportion of youth not in employment, education or training	Number of hiring through project activity and Number of trainings through the project activity	105 (Skilled: 74, Un-Skilled: 29, Semi-Skilled: 2) employment and 01 Trainings	Number of trainings and Employment generated through project
SDG 13- Take urgent action to combat climate change and its impacts	Emission reductions	65,759	tCO ₂ e

Table 2 – Product Vintages

		Amount Achieved
Start Dates	End Dates	CERs (SDG 13)
25/02/2019	30/06/2019	65,759

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

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Purpose of the Project activity

Chanju-I Hydro Electric Project is a grid connected run-of-river hydropower project located in Himachal Pradesh, India is being implemented by I.A. Energy, a special purpose vehicle formed for implementation of the project by M/s Indo Arya central transport ltd. Project was initially allotted to M/s Indo Arya Central Transport Limited but as per conditions of Himachal Pradesh Hydro Power Policy, a SPV (I.A. Energy) formed for implementation of the project activity. The proposed project is located in the Northern power region and has been conceived for harnessing the power potential of Chanju Nallah, a tributary of Baira nallah and sub tributary of River Ravi. The project relates to the installation of three vertical axis Francis's turbine generating units of 12 MW each to generate 36 MW of power utilizing a design head of 236.67 m and a design discharge of 16.85 m³/s. The reservoir area created by the diversion barrage would be of the order of 0.017 sq km and the power density is 2,117.64 W/m². The project is fully commissioned on 26/07/2017.

The objective of the project is to generate power from harnessing the water to meet the ever-increasing demand for power in India. The generated power is exported to the NEWNE grid (Now Indian Grid) via the sub-station at Kurthala. The project activity displaces the fossil fuel fired power generation of the grid and hence contribute to a reduction in the greenhouse gases.

Hydropower is a clean renewable source of energy and does not contribute to air or water pollution nor does it lead to the emission of greenhouse gases. The water after powering the turbines is discharged back into the Chanju nallah through an open channel tailrace just upstream of the Bhaled intake of the downstream Baira Siul project. The baseline scenario relates to the export of electricity to the grid by the operation of grid connected power plants and by the addition of new generation sources. The baseline scenario is the same as the scenario existing prior to the start of the implementation of the project activity. The project boundary includes the CO₂ emissions from electricity generation in the fossil fuel fired power plants that are displaced due to the project activity.

The total GHG emission reduction in this monitoring period 25/02/2019 to 30/06/2019 (inclusive of both days) is 65,759 tCO₂e.

Contribution of the project activity to Sustainable Development

The project is a run-of-river hydroelectric plant; hence, it does not involve the construction of a dam. Therefore, the negative impacts often associated with dams, such as the relocation of communities and residents as well as the transfer of waterways, do not occur.

Locally, the project is contributed significantly to the social and economic situation of the local residents through creation of employment opportunities during the construction of the power plant besides providing regular employment opportunities after the operation of the project.

The project activity improves the connectivity of the project area, since it results in the construction of additional roads and other infrastructure developments by spending an amount equal to 1.5% of the final cost of the project as part of the local area development assistance.

Contribution of the project activity to the Environment

The project activity utilizes available hydro sources for power generation. Hydro power plants are considered zero emission power sources. The state of Himachal Pradesh is part of the NEWNE (Now Indian Grid) regional grid system and power generation is dominated by fossil fuels. The project activity has not result in any greenhouse gas emissions and cause no negative impacts on the environment both at a local as well as at a global level. The project activity does not result in degradation of any natural resources, health standards, etc. at the project area. The project has not cause any air, water, or noise pollution.

Contribution of the project activity to Technological Well Being

The project has utilized environmentally safe and sound technologies available in the hydroelectric power generation sector. The technology is expected to be produced locally and hence no technology transfer might take place.

A.2. Location of project

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Host Country : India

Region/State/Province etc. : Himachal Pradesh, India

City/Town/Community etc. : Chamba district

The project is located on Chanju nallah, a tributary of Baira nallah and sub-tributary of the river Ravi. The access distance of the project site from:

State Capital, Shimla : 378 km

District headquarter, Chamba : 70 km

Nearest railhead, Pathankot : 190 km

The geographical co-ordinates of the power plant site are:

Longitude : 76°12'06" (76.2016) E to 76°14'52" (76.2477) E

Latitude : 32°44'14" (32.7372) N to 32°45'43" (32.7619) N

Power house Location: 32°45'40.0"N 76°12'05.0"E (32.761111, 76.201389)

The project activity is clearly illustrated in the map below:



Project Activity

A.3. Reference of applied methodology

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Methodology: ACM0002, Version 20.0³, **Sectoral Scope:** 01

Tool: It has been referred from the list of approved methodologies for CDM project activities in the UNFCCC CDM website:

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

³ <https://cdm.unfccc.int/UserManagement/FileStorage/AG07ZJQ3EXD42LT5YV9HR16M8KINPO>

The approved methodology also draws upon:

- **TOOL 01:** Tool for the demonstration and assessment of additionality - Version 7.0.0⁴
- **TOOL 07:** Tool to calculate the emission factor for an electricity system - Version 7.0⁵

This GS4GG PDD has been developed using the methodology ACM0002, Version 20.0 though registered CDM PDD follows ACM0002, Version 16.0.

The latest version of methodology is ACM0002, Version 20.0, and the project activity meets the applicability and eligibility criteria of the methodology, ensuring that all relevant requirements are adhered to for accurate and reliable implementation.

A.4. Crediting period of project

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26/07/2017 (this is commissioning date of full 36 MW capacity and is within two years back from expected GS registration)⁶

Type of crediting period	Renewable
Crediting period from	26/07/2017 – 25/07/2022
Length of the Crediting Period	5 Years
Monitoring period from	25/02/2019 – 30/06/2019
Length of the Monitoring Period	126 days

⁴ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf>

⁵ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>

⁶ A deviation was sought for prior approval to submit the documents for design review and approved by GS. Deviation reference no-COVID_DEV 201

SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

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Prior to the implementation of the project activity the electricity distribution system was supplied by at least one fossil fuel fired generating unit. The baseline scenario is the same as the scenario existing prior to the start of implementation of the project activity. The project is running smoothly since commissioning with scheduled maintenance and without any major breakdowns during the monitoring period. There is no transfer of technology involved in the project activity.

The proposed project is a run-of-river hydro-electric power plant with a design discharge of 16.85 m³/sec and design head of 236.67 m. The hydro power plant has an installed capacity of 36 MW (3x12) and is capable of producing 157,850 MWh of power per year in a 90% dependable year with 95% machine availability and operating at a plant load factor of 50.05%. The catchment area at the diversion site is 307 km².

The salient features of the Chanju I Hydro Electric Project are:

Parameter	Value
Net head	236.67 m
Type of power house	Surface
Design discharge for individual units	5.62 m ³ /sec
Type of switchgear	132 kV air insulated switchgear
Speed of turbine	750 rpm
Generation voltage	11 kV
Transmission voltage	132 kV
GSU transformer	25/20 MVA 3 phase, 11/132 kV

The main components of the project are:

- A 54 m wide gated weir
- A side intake comprising of two segments
- Twin desilting basins to provide flexibility in operation in case one is out of operation
- A 5,328 m length of water conductor system
- A 140.4m long, 2.3m diameter surface penstock
- A surface power house to house three vertical axis Francis units of 12MW each

- A tail race channel with a reverse slope that discharge into the river in the direction of the river flow
- A surface switchyard 100m x 50m which shall house the generator transformer, station transformer and the feeder bays
- 132 kV DC line from Kurthala to Bathri for evacuation of power.

The project comprises of a diversion weir across Chanju nallah at about 100m downstream of the confluence of Chanju and Bhararu nallahs, twin intakes, twin feeder/ connecting tunnels, twin desilting basins approximately 83 m long each, a headrace tunnel approximately 4580 m concrete lined and 748 m steel lined. A 528 m long construction adit, which acts as a surge gallery has been provided at Naredh nallah crossing. Tail water is proposed to be discharged into Chanju nallah through an open channel. A 132kV switchyard is proposed on the upside of the power house. The Full Reservoir Level (FRL) and Minimum Draw Down Level are proposed to be kept at El. 1,440m and El. 1,432.75m respectively. The live storage works out to be 130,700m³ which is adequate to provide two hours of peaking twice a day at full installed capacity of 36MW. The energy storage capacity of the hydroelectric plant during peak period⁷ is 50.07 GWh.

The turbine characteristics has selected such that the optimum efficiency falls close to the rated output of the unit at rated head. A pumping station has provided to supply an adequate quantity of water from the tailrace for cooling of the turbine generator bearings, generator air coolers and selected plant services and eEach synchronous generator has vertical shaft, salient pole type, 3 phase, 50Hz directly coupled to the turbine.

The power from the project activity has been planned to be injected at Nakrod by LILO arrangement in to 132 kV D/C line under construction between 132kV Kurthala sub-station. The line length up to Nakrod is about 6 kms.

⁷ 1.5 Hours twice in a day.

In the absence of the project activity the power in the grid would have been supplied by other grid connected power plants and addition of new power plants. The baseline scenario identified in Section B.4 corresponds to this situation. The technology involved is environmentally safe and produced locally.

Age and Technical Life Time:

Designed technical life time of project activity is 40 years. This confirms project activity continues to displace electricity for the life time comparable to the baseline scenario noted.

Technology Transfer:

The project activity does not involve any technology transfer. The Start date of project is 23/07/2011 (Date of Purchase order for civil work) and the total installed capacity of the project activity is 36 MW. Plant is in operation since being commissioned on 26/07/2017 (Commercial Operation of the Project). The installation details of the equipment's at the project site are remained the same during this monitoring period and there is no exchange of equipment's. Also, there are no events / situations leading to changes in project activity that occurred during the monitoring period.

B.1.1 Forward Action Requests

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Not Applicable

B.2. Post-Design Certification changes

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Not Applicable

B.2.1. Temporary deviations from the approved Monitoring & Reporting Plan, methodology or standardized baseline

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The Project Developer has submitted a deviation request seeking clarification regarding the site visit. The Gold Standard's decision is detailed below:

- DEVIATION REFERENCE NUMBER: DEVRQ-182
- DEVIATION DECISION: Approved

DEVIATION SUMMARY: The Secretariat thanks the project developer for submitting the deviation request. The request is approved considering the first

site visit for verification which took place on 24/02/2021. The PD may claim issuance from 25/02/2019 i.e. 2 years from the date of site visit by VVB.

B.2.2. Corrections

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There have not been any corrections to the parameters fixed at validation during the current monitoring period. However, following corrections were made to the project information

1. The Section A.3 of PDD salient features of project (specification/ dimensions) are corrected
2. The project activity commissioning was delayed; thus, chronology of events is mentioned in PDD along with commissioning date
3. Based on commissioning date, the start date of crediting period is revised as 26/07/2017.
4. The monitoring plan revised with mention of daily monitoring of auxiliary instead of hourly measurement
5. Section A.6 is revised as per template requirement

The above-mentioned corrections were approved on 22/02/2019 with PRC ref - PRC-10153-001⁸

B.2.3. Changes to start date of crediting period

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The start date of the crediting period is changed from 01/12/2015 to 26/07/2017⁹

B.2.4. Permanent changes from the Design Certified monitoring plan, applied methodology or applied standardized baseline

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⁸ <https://cdm.unfccc.int/PRCContainer/DB/prcp452143904/view>

⁹ <https://cdm.unfccc.int/Projects/DB/TUEV-SUED1431953233.8/view>

Post registration changes for the project activity (PRC-10153-001) was approved on 22/02/2019¹⁰. The monitoring parameter EG_{aux} (MWh) – the recording frequency is changed from hourly to daily basis.

B.2.5. Changes to project design of approved project

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Not Applicable

SECTION C. DESCRIPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT

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Monitoring procedures:

Monitoring consists of metering the gross generation and auxiliary consumption of electricity in the project activity. There are three 8 hour shifts and the readings of gross generation from meters are taken on an hourly basis by the shift engineer and recorded in logbooks. For auxiliary consumption, the daily data (Gross electricity generation of TG-1, TG-2, TG-3 & Auxiliary consumption of Aux-1, Aux-2.) is recorded in logbooks. This hourly data is signed off at the end of every shift by the engineer in charge of the shift and again at the end of each day by the power plant manager. The power plant manager analyzes the data every month and report to the head office.

Period of archiving:

The data is archived electronically every month and is maintained.

Calibration of equipment:

The calibration of energy meters is done once in a year by an independent accredited third party.

Internal Audit:

An internal audit is carried out every year at the power plant to ensure that the parameters are being monitored in accordance with the PDD. Periodic training of employees are ensure that there are no discrepancies in transferring of the data from

¹⁰ <https://cdm.unfccc.int/PRCContainer/DB/prcp452143904/view>

logbooks to soft copy. The audit reports have been provided to the DOE undertaking periodic verification.

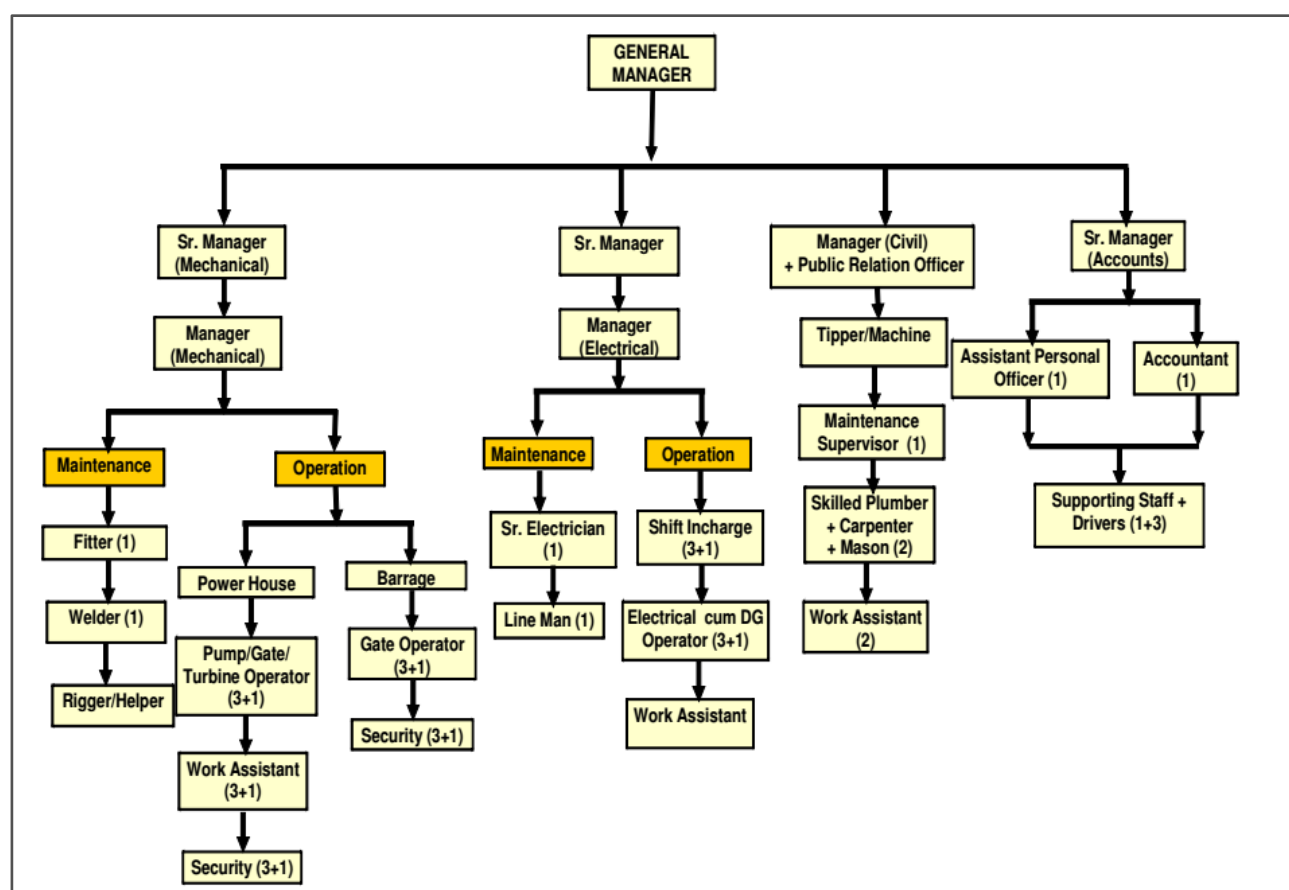
Training requirements:

The suppliers of the equipment have trained the staff in- charge during erection, to operate and maintain the equipment efficiently. Apart from this, the equipment supplier has provided complete manuals and documentation providing details for the maintenance schedule and the required activities associated with it.

Emergency Preparedness:

The project has employed highly skilled workers and periodic training of employees ensures that they are well equipped to handle emergency situations.

The following organization structure is used to monitor the project activity as per procedures:

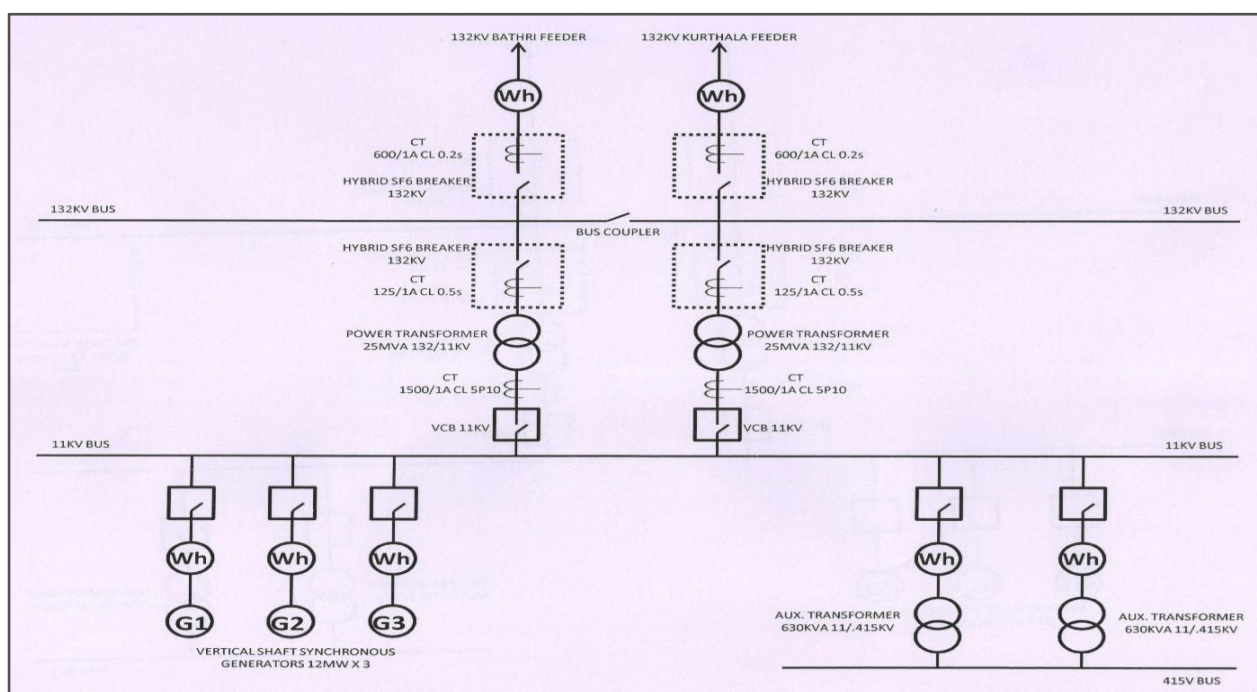


The monitored data is being reported on a monthly basis for the calculation and estimation of emission reductions. This data is checked against initial estimates and a summary report is provided quarterly. If the project is not performing as expected or if there are any negative impacts on the volume of emission reductions obtained, on the basis of the monthly data being monitored, a report is prepared outlining where the

project is deviating in its generation of emission reductions and the immediate measures which need to be undertaken to maintain the expected generation of emission reductions from the operation of this project. If there is significant changes to the set-up or operation of the plant, these is notified and amendments to the PDD has requested through a DOE.

For each verification period I. A. Energy is prepare a monitoring report that is submitted to a DOE for verification. I. A. Energy ensures that the procedures and monitoring plan are followed. All data is kept for a minimum of 2 years following issuance of certified emission reductions or the end of the crediting period, whichever is later, and the storage of this data is the responsibility of the project developers.

The single line diagram for the monitoring points is given below,



SECTION D. DATA AND PARAMETERS

D.1. Data and parameters fixed ex ante or at renewal of crediting period

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Relevant SDG Indicator	SDG 13: Climate Action (Indicators 13.2.1)
Data/parameter	EF_{grid,OM,y}
Unit	tCO ₂ e/MWh
Description	Operating Margin CO ₂ emission factor in year y

Source of data	Calculated from CEA database, Version 16, March 2021 ¹¹
Value(s) applied	0.9568
Choice of data or Measurement methods and procedures	Calculated as per "Tool to calculate the emission factor for an electricity system, version 07" as per the latest data available for the most three recent years 2017-18, 2018-19 and 2019-20. The data is obtained from "CO ₂ Baseline Database for Indian Power Sector" version 16, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of data	For the calculation of the Baseline Emission
Additional comment	This parameter is fixed ex-ante for the entire crediting period.

Relevant SDG Indicator	SDG 13: Climate Action (Indicators 13.2.1)
Data/parameter	EF _{grid,BM,y}
Unit	tCO ₂ e/MWh
Description	Build Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 16, Mar 2021
Value(s) applied	0.8682
Choice of data or Measurement methods and procedures	Calculated as per "Tool to calculate the emission factor for an electricity system, version 07" as per the latest data available for the most recent year 2019-20. The data is obtained from "CO ₂ Baseline Database for Indian Power Sector" version 16, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of data	For the calculation of the Baseline Emission
Additional comment	This parameter is fixed ex-ante for the entire crediting period.

Relevant SDG Indicator	SDG 13: Climate Action (Indicators 13.2.1)
Data/parameter	EF _{grid,CM,y}
Unit	tCO ₂ e/MWh

¹¹ https://cea.nic.in/wp-content/uploads/baseline/2021/06/2019_20_CO2_database.zip

Description	Combined Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 16, Mar 2021
Value(s) applied	0.9124
Choice of data or Measurement methods and procedures	The combined margin emissions factor is calculated as follows: $EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$ Where: $EF_{grid,BM,y}$ = Build margin CO₂ emission factor in year y (tCO₂e/MWh) $EF_{grid,OM,y}$ = Operating margin CO₂ emission factor in year y (tCO₂e/MWh) W_{OM} = Weighting of operating margin emissions factor (%) = 50% W_{BM} = Weighting of build margin emissions factor (%) = 50%
Purpose of data	For the calculation of the Baseline Emission
Additional comment	This parameter is fixed ex-ante for the entire crediting period.

D.2 Data and parameters monitored

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Relevant SDG Indicator	SDG 7 (Indicators 7.2.1)
Data / Parameter	EG_{facility,y} or EG_{PJ,y}
Unit	MWh/yr
Description	Net Quantity of Electricity supplied to grid
Source of data	Calculated from difference of Gross electricity generation and Auxiliary consumption by the project activity
Value(s) applied	72,072.76
Measurement methods and procedures	Net electricity generated is calculated from the readings of Gross electricity generation and Auxiliary consumption by the project activity.
Monitoring frequency	Continuous measurement and at least monthly recording
QA/QC procedures	This is cross-checked against the import/export meter installed by state electricity board and Quantity of net electricity supplied to the grid is being cross checked from the Invoices. The generation and auxiliary energy meter are calibrated annually by an independent accredited third party.
Purpose of data	The Data/Parameter is required to calculate the baseline emission

Additional comment	The data is kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.
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Relevant SDG Indicator	SDG 7 (Indicators 7.2.1)
Data / Parameter	EG_{Gross}
Unit	MWh
Description	Gross electricity generation by the project activity
Source of data	Energy meter readings from plant records
Value(s) applied	72,236.56
Measurement methods and procedures	The data is measured/metered continuously and a logbook is maintained on site to record hourly readings from the energy meter. The readings is taken by the shift Engineer. This hourly data is signed off at the end of every 8-hour shift by the engineer in charge of the shift and again at the end of each day by the power plant manager.
Monitoring frequency	Continuous measurement and Monthly recording
QA/QC procedures	The generation energy meters are calibrated annually by an independent accredited third party.
Purpose of data	The Data/Parameter is required to calculate the baseline emission
Additional comment	The data is kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.

Relevant SDG Indicator	SDG 7 (Indicators 7.2.1)
Data / Parameter	EG_{y Aux}
Unit	MWh
Description	Auxiliary consumption by the project activity
Source of data	Energy meter readings from Plant records
Value(s) applied	163.80
Measurement methods and procedures	The data is measured/metered continuously and a logbook is maintained on site to record on daily basis from the auxiliary meter. The readings is taken by the shift Engineer. This daily data is signed off by the engineer in charge of the shift and by the power plant manager.
Monitoring frequency	Continuous measurement and Monthly recording
QA/QC procedures	The auxiliary meter is calibrated annually by an independent accredited third party.
Purpose of data	The Data/Parameter is required to calculate the baseline emission
Additional comment	The data is kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.

Relevant SDG Indicator	SDG 13 (Indicators 13.2.1)
Data / Parameter	ER_y
Unit	tCO ₂ e/year
Description	Emission reductions achieved per year
Source of data	As per Estimated ER sheet. During the verification, the results is obtained from the Actual ER sheet.
Value(s) applied	65,759
Measurement methods and procedures	The baseline emissions are the product of electrical energy baseline EG _{PJ,y} expressed in MWh of electricity produced by the renewable generating unit multiplied by an emission factor.
Monitoring frequency	As per monitoring period
QA/QC procedures	Not Applicable
Purpose of data	To Monitor the SDG 13 Indicator
Additional comment	Data is archived in paper & electronic form for two years after the end of crediting period or of the last issuance of GS credits for this project activity, whichever occurs later

Relevant SDG Indicator	SDG 8 (Indicators 8.5.1)
Data / Parameter	Number of employment generation
Unit	Number
Description	Number of people employed directly due to the project activity
Source of data	Joining Letter for employment generation, Staff Register and Salary Slip
Value(s) applied	105 (Skilled: 74, Un-Skilled: 29, Semi-Skilled: 2)
Measurement methods and procedures	The total number of persons working in the plant is calculated based on the daily log available at site. This parameter also monitors number of men/women employed by the project activity. The project activity ensures that "equal pay for work of equal value" for both men and women and there is no any discrimination against women. This parameter also monitors the income generation of the staff and company policy benefits like health insurance/social security etc. "The employment covers number of men and number of women employed by the project activity. The job is of type temporary/permanent or skilled/unskilled, etc. Also, it is ensued that peoples get equal payment for equal work. The payment is based on work and no any gender inequality for payment for work of equal value.
Monitoring frequency	Monthly monitoring and annual compilation
QA/QC procedures	The number of persons employed is mentioned in the plant register, which is crossed checked with attendance register.

	The information required for this parameter is checked by VVB during site visit through interview with people or through relevant supporting documents.
Purpose of data	To Monitor the SDG 8 Indicator
Additional comment	-

Relevant SDG Indicator	SDG 8 (Indicators 8.6.1)
Data / Parameter	Quality of employment
Unit	Number
Description	Training of Staff
Source of data	The training records for all the employees
Value(s) applied	01
Measurement methods and procedures	Together with the technology supplier, the Project Owner organize training for the staff on the technology and the monitoring of the plant operation, and the emergency and safety procedures.
Monitoring frequency	Annual
QA/QC procedures	The training records for all the employees
Purpose of data	To Monitor the SDG 8 Indicator
Additional comment	-

D.3. Comparison of monitored parameters with last monitoring period

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Not Applicable (as this is non-Community Service Activities)

D.4. Implementation of sampling plan

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Not Applicable

SECTION E. CALCULATION OF SDG IMPACTS

E.1. Calculation of baseline value or estimation of baseline situation of each SDG Impact

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SDG 13 Climate Action

The baseline emissions are the product of electrical energy baseline $EG_{\text{facility},y}$ expressed in MWh of electricity produced by the renewable generating unit multiplied by an emission factor.

As per para 44 of methodology, being Greenfield project,

$$EG_{PJ,y} = EG_{\text{facility},y}$$

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

Where,

$EG_{\text{facility},y}$ = Total quantity of net electricity delivered to the grid

$EF_{\text{grid},CM,y}$ = Baseline emission factor
= 0.9124 tCO₂/MWh

BE_y = 72,072.76 * 0.9124
= 65,759 tCO₂

As per Section B.4 of Registered PDD: $PE_y = 0$

Thus

$ER_y = BE_y - PE_y^{12}$

$ER_y = BE_y - 0$

$ER_y = BE_y$

Therefore

$ER_y = BE_y = 65,759 \text{ tCO}_2$

SDG 7: Affordable and Clean Energy

The project leads to generation of affordable and clean energy which would not have been possible in the baseline scenario. So, baseline value for Affordable and Clean Energy is zero.

SDG 8: Decent Work and Economic Growth

The project leads to employment opportunities which would not have been possible in the baseline scenario. Also, no training was given if the project activity was not done. So, baseline value for employment opportunities and training is zero.

E.2. Calculation of project value or estimation of project situation of each SDG Impact

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SDG 7: Affordable and Clean Energy

¹² As per the consolidated methodology ACM0002 v20, no project emission through the renewable project electricity generation. (The reservoir area created by the diversion barrage is 0.017 km² i.e. 17,000 m² which gives a power density of 2117.6W/ m². Since this is greater than 10 W/ m² the project emissions are zero)

During the current monitoring period, the project activity generates 72,072.76 MWh of affordable and clean energy per year.

SDG 8: Decent Work and Economic Growth

The project leads to employment opportunities which would not have been possible in the baseline scenario. Currently 105 (Skilled: 74, Un-Skilled: 29, Semi-Skilled: 2) people are employed at the site. Project activity improves the quality of employment by giving training to employees. 01 trainings conducted during the current monitoring period.

SDG 13: Climate Action

SDG 13 is zero as no emission from the project activity in the project situation.

E.3. Calculation of leakage

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As per the consolidated methodology, no leakage emission through the renewable project electricity generation.

E.4. Calculation of net benefits or direct calculation for each SDG Impact

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
7	Affordable and Clean Energy	0 MWh	72,072.76 MWh	72,072.76 MWh
8	Decent Work and Economic Growth	0	105 (Skilled: 74, Un-Skilled: 29, Semi-Skilled: 2) people employed and 01 trainings Provided	105 (Skilled: 74, Un-Skilled: 29, Semi-Skilled: 2) people employed and 01 trainings Provided
13	Climate Action	65,759 tCO ₂ e	0 tCO ₂ e	65,759 tCO ₂ e

E.5. Comparison of actual SDG Impacts with estimates in approved PDD

SDG	Values estimated in ex ante calculation of approved PDD for this monitoring period	Actual values ¹³ achieved during this monitoring period
13	49,220 tCO ₂ e	65,759 tCO ₂ e
7	53,945.64 MWh	72,072.76 MWh
8	05 people employment and 1 training	Total 105 (Skilled: 74, Un-Skilled: 29, Semi-Skilled: 2) people employed and 01 trainings Provided

E.5.1. Explanation of calculation of value estimated ex ante calculation of approved PDD for this monitoring period

>>

SDG 13 Climate Action

As per GS PD, 142,582 tCO₂e is the amount of GS CER generated annually. Therefore, following unitary method, the amount of estimated ex ante for this monitoring period is identified. The total number of days in this monitoring period is 126.

$$= (142,582/365) * 126$$

$$= 49,220 \text{ tCO}_2\text{e}$$

SDG 7: Affordable and Clean Energy

As per the SDG 13 calculation above, 49,220 tCO₂e estimated. Correspond to that 53,945.64 MWh is estimated.

$$= 49,220 (\text{tCO}_2\text{e}) * 0.9124 (\text{MWh/tCO}_2\text{e})$$

$$= 53,945.64 \text{ MWh}$$

SDG 8: Decent Work and Economic Growth

¹³ Whenever emission reductions are capped, both the original and capped values used for calculations must be transparently reported. Use brackets to denote original values.

Annual estimate has been considered for SDG i.e. 05 persons employment and minimum 1 training per year.

E.6. Remarks on increase in achieved SDG Impacts from estimated value in approved PDD

>> The Annual (365 Days) Estimated value of electricity generation as per PDD is 156,272 MWh. During the current monitoring period, the actual emission reductions achieved were 65,759 tCO₂e, compared to the estimated 49,220 tCO₂e, reflecting a 33.60% increase. This variation is attributed to natural phenomena, which are beyond the control of the Project Proponent.

Despite the higher emission reductions observed during the current monitoring period (25/02/2019 to 30/06/2019), the additionality of the project remains unaffected. The Plant Load Factor (PLF) remains within the sensitivity analysis limits defined in the registered PDD and does not exceed the breaching benchmark values. Furthermore, as the current monitoring period does not cover a full year, the vintage-wise PLF variation remains within acceptable limits, thereby justifying the observed increase in emission reductions. Details are tabulated Below:

Month		Total days in a vintage	Total TG Generation (In MWh)	Total Auxiliary (In MWh)	Achieved Net Generation	Vintage wise achieved net generation	Estimated Electricity generation vintage wise
Start Date	End Date	Number	MWh	MWh	MWh	MWh	MWh
01/07/2018	31/07/2018	365	20,828.14	40.15	20,787.99	164,144.13	156,272.00
01/08/2018	31/08/2018		26,556.72	46.48	26,510.24		
01/09/2018	30/09/2018		18,236.41	41.64	18,194.77		
01/10/2018	31/10/2018		12,320.12	43.39	12,276.73		
01/11/2018	30/11/2018		7,604.74	38.27	7,566.47		
01/12/2018	31/12/2018		3,004.07	43.89	2,960.18		
01/01/2019	31/01/2019		2,821.81	45.24	2,776.57		
01/02/2019	28/02/2019		1,013.16	14.74	998.42		
01/03/2019	31/03/2019		9,151.15	38.03	9,113.12		
01/04/2019	30/04/2019		22,957.43	41.51	22,915.93		
01/05/2019	31/05/2019		20,194.88	43.22	20,151.66		
01/06/2019	30/06/2019		19,933.10	41.05	19,892.05		
Total			164,621.73	477.60	164,144.13		

Month		Observed PLF	PLF at the time of Validation	PLF Variations	PLF Additionality Variation Breaching Values as per sensitivity analysis	Additionality breached due to increased PLF
Start Date	End Date	%	%	%	%	%
01/07/2018	31/07/2018	52.05%	49.55%	5.04%	23.40%	No
01/08/2018	31/08/2018					
01/09/2018	30/09/2018					
01/10/2018	31/10/2018					
01/11/2018	30/11/2018					
01/12/2018	31/12/2018					
01/01/2019	31/01/2019					
01/02/2019	28/02/2019					
01/03/2019	31/03/2019					
01/04/2019	30/04/2019					
01/05/2019	31/05/2019					
01/06/2019	30/06/2019					
Total		-	-	-	-	-

SECTION F. SAFEGUARDS REPORTING

As per the safeguarding Principal Assessment in Appendix-1 of the Registered PDD, there are no safeguarding principles which are to be included in the monitoring plan or hold any relevance to the project activity. Also, there are no any impact (positive/negative/slightly) for any mitigation measures, being applicable to any of the safeguarding principles. Hence, this section is not relevant.

SECTION G. STAKEHOLDER INPUTS AND LEGAL DISPUTES

G.1. List all Inputs and Grievances which have been received via the Continuous Input and Grievance Mechanism together with their respective responses/mitigations.

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As a part of continuous feedback from stakeholders, the grievances register is placed at the site and is being continuously monitored and addressed through the grievances cell on regular basis and maintained in a register at the site office. A copy of the grievance Register has been provided separately. No grievances received during the current monitoring period.

G.2. Report on any stakeholder mitigations that were agreed to be monitored.

>>

Not Applicable as there were no negative feedback logged during the monitoring period.

G.3. Provide details of any legal contest that has arisen with the project during the monitoring period

>> Not Applicable as there were no negative feedback logged during the monitoring period.

Appendix 1: Training Details

Sr. No.	Topic	Date	Number of Participant	Duration
1.	Basic Fire Fighting Training	05/03/2019	9	1 hour

Appendix 2: Calibration details

Calibration Details:

The calibration details of meters involved in the project activity is as below:

Meter Location	MAKE OF METER	ACCURACY CLASS	Meter serial number	Calibration date	Due date
TG 1	SCHNEIDER	1.0	540180078685	30/05/2018	29/05/2019
TG 2	SCHNEIDER	1.0	540180079101	31/05/2018	30/05/2019
TG 3	SCHNEIDER	1.0	540180078676	30/05/2018	29/05/2019
AUX 1	SCHNEIDER	1.0	540180087883	06/07/2018	05/07/2019
AUX 2	SCHNEIDER	1.0	540180087890	06/07/2018	05/07/2019
Meter change date: 29/05/2019					
Meter Location	MAKE OF METER	ACCURACY CLASS	New Meter serial number	Calibration date	Due date
TG 1	SCHNEIDER	1.0	34140731734	17/05/2019	16/05/2020
TG 2	SCHNEIDER	1.0	34140731733	17/05/2019	16/05/2020
TG 3	SCHNEIDER	1.0	34140731738	17/05/2019	16/05/2020
AUX 1	SCHNEIDER	1.0	34153341596	17/05/2019	16/05/2020
AUX 2	SCHNEIDER	1.0	34153341597	17/05/2019	16/05/2020

- Kurthala-Chanju-1 HEP Circuit -II (Loop-In)

Main meter Serial no.	Check meter Serial no.	Calibration Date	Calibration due date	Meter Change date	Make	Class
HPU06240	HPU06109	03/10/2018	02/10/2019	19/06/2019	Secure	0.2s
HPU06250	HPU06251	15/05/2019	14/05/2020	NA	Secure	0.2s

- Chanju-1-HEP-Bathri Circuit II (Loop Out)

Main meter Serial no.	Check meter Serial no.	Calibration Date	Calibration valid till	Meter Change date	Make	Class
HPU06107	HPU06108	03/10/2018	02/10/2019	NA	Secure	0.2s

Appendix 3: Major Breakdown Details

Month	Operating days			Shut Down Days			Plant Shut down date	Reason for Plant shutdown
	TG-1	TG-2	TG-3	TG-1	TG-2	TG-3		
February-2019	7	0	2	21	28	26	TG-1: 08/02/2019 to 28/02/2019 TG-2: 1/02/2019 to 28/02/2019 TG-3: 1/02/2019 to 02/02/2019 & 05/02/2019 to 28/02/2019	Less inflow and Grid Failure (HPSEBL Tower collapsed)
March-2019	26	0	13	5	31	18	TG-1: 01/03/2019 to 05/03/2019 TG-2: 01/03/2019 to 31/03/2019 TG-3: 01/03/2019 to 18/03/2019	Less inflow and Grid Failure (HPSEBL Tower collapsed)
April-2019	29	27	29	1	3	1	TG-1: 29/04/2019 TG-2: 01/04/2019 to 02/04/2019 & 29/04/2019 TG-3: 29/04/2019	Less inflow and Grid Failure
May-2019	31	31	28	0	0	3	TG-3: 4/05/2019 to 06/05/2019	Less inflow
June-2019	30	30	21	0	0	9	TG-3: 08/06/2019, 16/06/2019 & 18/06/2019 to 24/06/2019	Less inflow
Total	123	88	93	27	62	57		

Revision History

Version	Date	Remarks
1.1	14 October 2020	Hyperlinked section summary to enable quick access to key sections Improved clarity on Key Project Information Section for POA monitoring Forward action request section Improved Clarity on SDG contribution/SDG Impact term used throughout Clarity on safeguard reporting Clarity on design changes Leakage section added for VER/CER projects Addition of Comparison of monitored parameters with last monitoring period Provision of an accompanying Guide to help the user understand detailed rules and requirements
1.0	10 July 2017	Initial adoption