

GOLD STANDARD FOR THE GLOBAL GOALS (GS4GG) REPORT

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DESIGN CERTIFICATION (VALIDATION)



Project Title: Chanju I Hydro Electric Project
GS project ID: GS 7154
Internal ID: 10818
Customer: IA Hydro Energy Private Limited (I.A Energy)
Date: 21/04/2022
Revision: 03

SUMMARY			
Reference No.	Date (first version)	Version No.	Date (last version)
A+SH_SYS_TQC 10818	24/08/2021	03	21/04/2022
Client	IA Hydro Energy Private Limited		
Project Title	Chanju I Hydro Electric Project		
Project Participants	IA Hydro Energy Private Limited		
Project Location	The Project activity is located in District: Chamba, State: Himachal Pradesh, India		
Contact Person	Mr. Shravan Kumar Goyal		
GS4GG Version: GS4GG, Ver. 1.2 GS4GG Activity Requirements: RE Activity Requirements Applied Methodology Version: ACM0002 Version 20.0 https://cdm.unfccc.int/methodologies/DB/XP2LKUSA61DKUQC0PIWPGWDN8ED5P The following tools and guidance's have been followed (References): - Tool to calculate the emission factor for an electricity system¹ - Version 07.0 (EB 100, Annex 04) - Tool for the demonstration and assessment of additionality- Version 07.0.0 Current Methodology Version: ACM 0002 Version 20.0			GS4GG Principles and Requirements V 1.2 UNFCCC CDM Sectoral Scope: 1 GS4GG Scope : 2 Technical Area: 1.2
GS4GG First PDD Version: 01 Date: 01/12/2018			GS4GG Final PDD Version: 02 Date: 23/07/2021
Estimated Annual Emission Reductions: 142,582 tCO ₂ e per year			
Selected Sustainable Development Goals (SDGs): 7; 8; 13 Estimated Sustainable Development Contributions			
Sustainable Development Goals Targeted	SDG Impact	Estimated Annual Average	Units or Products
SDG 7: Affordable and Clean Energy	MWh of renewable energy generated	156,272	MWh/Annum
SDG 8: Decent Work and Economic Growth	Trainings	01	No of Training
	Employees	05	No of Employees
SDG 13: Climate Action (mandatory)	Emission Reduction	142,582	tCO ₂ /Annum (GS CERs)
Design Certification Summary			
LGAI Technological Center, S.A. (hereafter referred to as Applus+ Certification) has been contracted by IA Hydro Energy Private Limited to perform the GS CER validation of "Chanju I Hydro Electric Project" applying the methodology ACM0002 version 20.0. The management of IA Hydro Energy Private Limited is responsible for the preparation of the GHG			

¹ <http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>

emissions data and the reported GHG emission reductions.

A desk review and on site visit have been conducted to verify the data submitted in the GS4GG PDD. Applus+ Certification confirms the following have been reviewed:

- The GS4GG PDD;
- The applied monitoring methodology;
- Relevant decisions, clarifications and guidance from the CMP and the CDM Executive Board;
- The Gold Standard for Global Goals "Principles and Requirements" Version 1.2
- All information and references relevant to the project activity's resulting in estimated emission reductions.

The scope of the validation is defined as an independent and objective review of the project design document, against the Kyoto Protocol requirements, UNFCCC rules, applicable CDM requirements and requirement of Gold Standard. The validation report is finalized based on the assessment of the Gold Standard GS4GG PDD, and applying standard auditing techniques including but not limited to document reviews, follow up actions (e.g. site visit, telephone or e-mail interviews) and also the review of the applicable approved methodology and underlying formulae and calculations.

The report and the annexed validation checklist describe a total of 06 findings which include:

- 06 Corrective Action Requests (CARs);
- 00 Clarification Requests (CLs/CRs);
- 00 Forward Action Requests (FARs).

The PP has responded these findings by modifying the Gold Standard GS4GG PDD and providing adequate additional explanations and evidences. Applus+ Certification confirm that all the findings have been "closed out" before submitting the request for registration to GS board.

As a summary of the validation, the review of the Gold Standard GS4GG PDD and the subsequent follow-up interviews have provided Applus+ Certification with sufficient evidence for the determination of the project's fulfillment with all stated criteria. In our opinion, the project meets all relevant UNFCCC requirements for the CDM and requirement of Gold Standard. Therefore, Applus+ Certification recommend the project for registration by the GS Registry as GS CERs project.

ASSESSMENT TEAM				
Team Members	Type of Resource ²			Organization <i>(for OEs)</i>
Lead Auditor: Mr. Sukanta Das ³ / Mr. Pankaj Kumar	☐ IR	☐ EI	☒ OE	M/s True Quality Certifications Private Limited
Technical Expert: Mr. Pankaj Kumar	☐ IR	☐ EI	☒ OE	M/s True Quality Certifications Private Limited
Technical Reviewer: Mr. Denny Xue	☐ IR	☒ EI	☐ OE	-

² IR (Internal Resource); EI (External Individual); OE (Outsourced Entity)

³ Mr. Sukanta Das was LA/TL for this Project till June 2021. Mr. Pankaj Kumar appointed as new TL/LA since July 2021

ABBREVIATIONS	
ACM	Approved Consolidated Methodology
Applus+ LGAI / Applus+	LGAI Technological Center, S.A. (Applus+ Certification)
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM EB	CDM Executive Board
CER	Certified Emission Reduction
CL / CR	Clarification Request
CM	Combined Margin
CMP	Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol
CTO	Consent To Operate
DNA	Designated National Authority
DOE	Designated Operational Entity
EF	Emission Factor
EIA	Environmental Impact Assessment
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
GS4GG (or GS)	Gold Standard for Global Goals
HPSCB	Himachal Pradesh State Pollution Control Board
IPCC	Intergovernmental Panel on Climate Change
KP	Kyoto Protocol
MP	Monitoring Plan
NGO	Non-Governmental Organization
SDG	Sustainable Development Goal
TAC	Gold Standard Technical Advisory Committee
OM	Operational Margin
PP	Project Participant
PS	Project Standard
UNFCCC	United Nations Framework Convention for Climate Change
VVB	Validation and Verification Body
VVS	Validation and Verification Standard

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Appendix:

Appendix 1: Corrective Action Request / Clarification Request / Forward Action Request resolution table.

Appendix 2: Audit Team CVs.

1. INTRODUCTION

IA Hydro Energy Private Limited has commissioned Applus+ Certification to perform a validation of "Chanju I Hydro Electric Project" (hereafter referred to as the project activity) in the District Chamba, State Himachal Pradesh, India. This validation report summarizes the findings of the validation of the project, performed on the basis of UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures and the subsequent decisions by the CDM/GS Executive Board as well as requirement of Gold Standard.

The project activity primarily aims at reducing Green House Gas (GHG) emissions through utilization of renewable energy technology for generation of electrical energy. The electricity generated from the project activity (approximately 156,272 MWh annually) will displace equivalent electricity generation in grid connected power plants. The project activity will reduce the anthropogenic GHG emissions (approximately 142,582 tCO₂ annually and 998,074 tCO₂ through the crediting period) associated with the equivalent amount of electricity generation from Indian grid connected power plants predominantly fossil fuel based.

The project activity involves installation and operation of 36 MW run-of-river hydropower project in the district Chamba, state of Himachal Pradesh in India. The electricity generated from the project activity will be exported to Indian Grid and third party.

The project activity is the installation of a new grid connected renewable power plant/unit and this is not a CPA that has been excluded from a registered CDM PoA as a result of erroneous inclusion of CPAs.

The total capacity of the project activity is 36 MW; which is located on Chanju nallah, a tributary of Baira nallah and sub-tributary of the River Ravi. The geographical co-ordinates of the hydro power plant site are:

Longitude : 76°12'06" E to 76°14'52" E
Latitude : 32°44'14" N to 32°45'43" N

The project is promoted by IA Hydro Energy Private Limited. The same is confirmed during remote audit through Letter of Award and copy of PPA shared by PD.

1.1 Objective

The purpose of a validation is to have an independent third-party assessment of the GS4GG PDD and compliance with the GS requirements as described in the Gold Standard documentation and supporting documents by the client. Validation is part of the GS CER project cycle and will finally result in a conclusion by Applus+ Certification whether a project activity is valid and should be submitted for registration of a proposed project activity rests at the GS and the Parties involved.

1.2 Scope

The validation scope is defined as an independent and objective review of the project PDD, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against all applicable CDM and GS requirements including the approved baseline and monitoring methodology ACM0002 Version 20.0. The validation was based on the requirements in the Validation and Verification Standard version 02 and Gold Standard GS4GG requirement.

The validation is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the PDD.

2. METHODOLOGY

The project assessment is based on the Clean Development Mechanism Validation and Verification Standard for PAs version 2.0, Gold Standard requirement for GS4GG and is conducted using standard auditing techniques to assess the correctness of the information provided by the project participants. Before the assessment begins, members of the team covering the technical scope(s), sectoral scope(s), and relevant host country experience for evaluating the project activity are appointed. Once the project is made available for Applus+ Certification, the members of the assessment team carried out:

1. A desk review of the PDD;
2. Follow-up interviews with project stakeholders;
3. The resolution of outstanding issues and the issuance of the final validation report and opinion.

The prepared validation report and other supporting documents then undergo an internal quality control before being submitted to the GS Registry.

The GS overview documents which is referred as DVR is as below

Validation Checklist Table 3: Resolution of Audit Findings			
Type:	☒ CAR	☐ CL/CR	☐ FAR
Number:			
Raised by:	Pankaj Kumar		
Description of the audit finding		Date:	
The description of the audit finding should be clearly included here.			
Project Participant's response		Date:	
The responses given by the project participants during the communications with the validation team should be included here.			
Documentation provided as evidence by Project Participant			
The evidences provided by the project participants should be included here.			
Auditor's assessment comment		Date:	
This section should include how the audit finding is assessed by the assessment team.			

The Complete List of CAR/CL/FAR is included as Appendix 1 of this report.

2.1 Appointment of the assessment team

According to the sectoral scope / technical area and experience in the sectoral or national business environment, LGAI Technological Center, S.A. (Applus+ Certification) has composed a project assessment team in accordance with the appointment rules in the internal Quality Management System of LGAI Technological Center, S.A. (Applus+ Certification).

The composition of audit team shall be approved by the LGAI Technological Center, S.A. (Applus+ Certification) ensuring that the required skills are covered by the team.

The four qualification levels for team members that are assigned by formal appointment rules are as presented below:

- Lead Auditor (LA).
- Auditor (A) / Auditor in Training (AiT).
- Technical Expert (TE).
- Technical Reviewer (TR).

The sectoral scope / technical area knowledge linked to the applied methodology/ies shall be covered by the assessment team.

Name	Role	SS Coverage	TA Coverage	Financial aspect	Host country experience
Mr. Pankaj Kumar	LA/TE	YES	YES	YES	YES
Mr. Denny Xue	TR	YES	YES	YES	NA

The complete list of CVs is included as Appendix 2 of this report.

2.2 Document review

The Gold Standard PDD submitted by the Client was reviewed against the approved methodology and other relevant criteria to verify the correctness, credibility, and interpretation of the presented information. Furthermore, a cross-check between information provided and information from other sources has been done. A complete list of all documents and evidence material reviewed is included in Section 4 of this report.

2.3 Follow up Interviews

Interviewed Personnel	Functions	Organization	Date	Subject
Mr. Shravan Kumar Goyal	PP representative	IA Hydro Energy Private Limited	24/02/2021	General aspects of the project, Quality management system, Monitoring data management, Data analysis, Implementation of the project, GHG emission reduction calculation,
Mr. Sachin Nagarkar	Consultant	EKI		
Mr. Shyam Lal	Villager	Local stakeholder		

Mr. Kuldeep Singh	Villager	Local stakeholder		Involved personnel and responsibilities, Training and practice of the operational personnel, Monitoring data management, Maintenance, Compliance to regulatory requirements, Environmental and social issues, Projects contribution to sustainable development
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Duration of on site inspection : 24/02/2021				
No.	Activity performed on site	Site Location	Date	Team Member
1.	Assessment team checked the implementation of the project, Baseline emission, Emission reduction calculation, technical description of the project and Monitoring. (Discussion with PP) Assessment team meet with the local stakeholder and confirmed that there is no grievance resulted from the project activity in and out of the project location. The stakeholder confirmed that the project resulted in employment and improves lifestyles of the personal/families in the nearby villages. (Discussion with Stakeholder)	Chamba, Himachal Pradesh, India	24/02/2021	Mr. Sukanta Das ⁴

2.4 Resolution of Clarification and Corrective Action requests

The objective of this phase of the validation was to resolve the requests for corrective actions and clarification and any other outstanding issues which needs to be clarified for Applus+ Certification positive conclusion on the PDD. The Corrective Action Requests and Clarification Requests raised by Applus+ Certification were resolved during communications between the Client and Applus+ Certification to guarantee the transparency of the validation process, the concerns raised and responses given are summarized in Appendix 1 below.

⁴ Mr. Sukanta Das was LA/TL for this Project till June 2021. Mr. Pankaj Kumar appointed as new TL/LA since July 2021

The Gold Standard GS4GG PDD version 02 submitted on 23/07/2021 serves as the basis for the final assessment presented.

2.5 Internal Quality Control

As final step of a validation the final documentation including the validation report and the protocol have to undergo an internal quality control by the technical review committee. Each report has to be finally approved either by the head of technical review committee or the deputy. In case one of these two persons is part of the audit team, approval can only be given by the other one.

After confirmation of the PP the validation opinion and relevant documents are submitted to the GS Registry.

3. PROJECT DESIGN CERTIFICATION ASSESSMENT

3.1 Approval

This section is not applicable as this is a GS CER project

3.2 Participation

IA Hydro Energy Private Limited is the project proponent from the host party India. The host country involved is parties to the Kyoto Protocol and meet and requirements to participate in the Gold Standard.

3.3 Scale of the project

The project activity is identified as a Large-scale project in section A.6 of the GS4GG PDD applying a large-scale methodology ACM0002 version 20. The total capacity of the power project is 36 MW as validated from the PPA and Letter of Award. Since the design capacity of the project activity is more than 15 MW, which is stipulated limit for small scale projects by GS/CDM, the project is correctly classified as large-scale project. Assessment team also checked the requirement of latest applicable methodology ACM0002 version 20.0 and confirms that the project qualifies the requirement of the latest methodology also (i.e. scale, applicability, baseline, additionality and monitoring)

a) Type of project: The project activity involves electricity generation using hydro power to reduce atmospheric CO₂ emission by replacing equivalent amount of electricity from the grid of India. The project type is identified as renewable energy project in section A.6 of the GS4GG PDD. The project activity complies with the requirement of 'the generation and delivery of energy services (e.g. electricity) from non-fossil and non-deployable energy sources' as defined in GS4GG. The project activity generates and supplies renewable electricity to the regional grid thereby displacing the electricity which would have generated in fossil fuel-based power plants connected to the grid.

3.4 Greenhouse Gases

The project activity leads to displacement of electricity generation from fossil fuel-based power plants connected to the regional grid by renewable energy generated using hydro power. The operation of the project activity will result in reduction of carbon-dioxide from the atmosphere due to displacement of electricity in grid by the renewable energy. Hence, the greenhouse gas identified in the PDD is carbon dioxide which is duly validated by the VVB.

The GHG emission sources considered for the project boundary and their explanations are as follows:

	Source	Gas	Included?	Justification/Explanation
Baseline	Grid connected electricity generation	CO ₂	Yes	Main emission source
		CH ₄	No	Minor emission source
		N ₂ O	No	Minor emission source
		Other	No	No other emissions are emitted from the project
Project	Greenfield Hydro Power Project Activity	CO ₂	No	No CO ₂ emissions are emitted from the project
		CH ₄	No	Project activity does not emit CH ₄
		N ₂ O	No	Project activity does not emit N ₂ O
		Other	No	Project activity does not emit other forms of GHG emissions

3.5 Project timeframe

Other certification scheme: The project activity has not applied, confirmed by project developer, for any other certification like Green or White certification. Therefore, the validation team concluded that the project activity meets the applicability criteria of Gold Standard. Assessment team checked the double counting clarification vide GS guideline on double counting in the context of Green Certificate Schemes, 22/01/2015. A declaration from PP confirms that the project activity is not taking any REC Benefits under REC mechanism. The project is applied for GS CER retroactive validation. Assessment team also checked the REC website⁵ and confirms that the project is not undertaking any REC benefits at present nor intended to take it in near future. During validation, PD confirmed that this Project is solely developed as standalone GS CER Project and submitted a declaration that there will not be double accounting of emission reduction for the project activity.

3.6 Project Boundary

As per ACM0002 version 20 i.e. latest methodologies applied as available on CDM website - "The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the GS project power plant is connected to". The project boundary includes the hydro power plant, sub-stations, grid and all power plants connected to grid. The proposed project activity will evacuate power to the INDIAN grid. Therefore, the entire INDIAN grid and all connected power plants have been

⁵ <https://recregistryindia.nic.in/>

considered in the project boundary for the proposed GS project activity. The same is checked by the assessment team during the remote validation audit and found correct.

3.7 Baseline Identification

Being a grid connected hydro energy generation project, PP developed the project based on the Methodology ACM0002 version 20.0. As per the methodology version 20.0: "If the project activity is the installation of a Greenfield power plant, the baseline scenario is electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system".

The project activity involves setting up of hydro power projects to harness the power of hydro energy to produce electricity and supply to the grid. In the absence of the project activity, the equivalent amount of power would have been supplied by the Indian grid, which is fed mainly by fossil fuel fired plants. In the absence of the project activity, the equivalent amount of power would have been drawn from the Indian grid. Hence, the baseline for the project activity is the equivalent amount of power from the Indian grid. As the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline and pre-project scenario is same.

The combined margin ($EF_{grid,CM,y}$) is the result of a weighted average of two emission factor pertaining to the electricity system: the operating margin (OM) and build margin (BM). Calculations for this combined margin must be based on data from an official source (where available) and made publicly available. The CEA database version 16 was the latest available data at the time of PDD submission to VVB for validation, hence same is considered for emission factor calculations.

The combined margin of the Indian grid used for the project activity is as follows:

Parameter	Value	Nomenclature	Source
$EF_{grid,CM,y}$	0.9124 tCO ₂ /MWh	Combined margin CO ₂ emission factor for the project electricity system in year y	Calculated as the weighted average of the operating margin (0.75) & build margin (0.25) values, sourced from Baseline CO ₂ Emission Database, Version 16.0, Mar 2021 published by Central Electricity Authority (CEA), Government of India
$EF_{grid,OM,y}$	0.9568 tCO ₂ /MWh	Operating margin CO ₂ emission factor for the project electricity system in year y	Calculated as the last 3 year (2017-18, 2018-19, 2019-20) generation-weighted average, sourced from Baseline CO ₂ Emission Database, Version 16.0, Mar 2021 published by Central Electricity Authority (CEA), Government of India

EF _{grid,BM,y}	0.8682 tCO ₂ /MWh	Build margin CO ₂ emission factor for the project electricity system in year y	Baseline CO ₂ Emission Database, Version 16.0, Mar 2021 published by Central Electricity Authority (CEA), Government of India
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3.8 Eligibility Principles Assessment

Principle 1. Contribution to Climate Security & Sustainable Development

The baseline scenario and the emission reduction calculations have been performed as per the PDD. The emission factor of grid, in the GS PDD, has been calculated in-line with the provisions of applied methodology ACM0002 version 20.0. The latest applicable version of "Tool to calculate the emission factor for an electricity system" is version 07.

The applicability criteria are now detailed out in the report as below:

Applicability 1: Assessment team checked that the project activity is installation of a new grid connected hydro power plant/ unit at a site where no renewable power plant was operated prior to the implementation of the project activity (Greenfield plant) and hence this criterion is applicable.

Applicability 2: Assessment team checked that the proposed project activity is an installation of a new grid connected hydro power plant/ unit and hence a criterion under point (a) is met. The project does not involve any capacity additions, retrofits or replacements and therefore this criterion under point (b) is not applicable.

Applicability 3: Assessment team checked that the proposed project activity is an installation of a new grid connected 36 MW run-of-river hydro power project and does not involve the construction of a dam. The reservoir area created by the diversion barrage is of the order of 0.017sq km and hence the power density comes out to be 2,117.64 W/m² which is greater than 4W/m², therefore this criterion is not applicable for this project activity.

Applicability 4: Assessment team checked that the proposed project activity is an installation of a new grid connected run-of-river hydro power plant/ unit, therefore this criterion is not applicable for this project activity.

Applicability 5: Assessment team checked that the project activity is installation of a new grid connected hydro power project/ unit and does not involve switching from fossil fuel to renewable energy, therefore criterion described in point (a) is not relevant to the project activity.

This is a hydro power plant/ unit and not a biomass fired plant, therefore criterion described in point (b) is not applicable to the project activity

Applicability 6: Assessment team checked that the project activity is a new grid connected hydro power plant/ unit and not a retrofits, replacement or capacity additions and therefore this criterion is not applicable to the project activity.

Applicability conditions of "Tool to calculate the emission factor for an electricity system"

- OM, BM and CM are estimated using the tool under section B.6.1 of the PDD for calculating baseline emissions.
- The project activity is grid connected and thus emission factor is calculated and thus OM, BM and CM are estimated using the tool under section B.6.1 of the PDD for calculating baseline emissions.
- The project activity is located in India, a non-Annex I country. Therefore, this criterion is not applicable for the project activity.
- The project activity is a grid connected run-of-river hydro power project. Therefore, this criterion is not applicable for the project activity.

Applus+ Certification confirms that the application of the baseline methodology is transparent and conservative and confirms that the chosen baseline and monitoring methodology i.e. ACM0002 version 20.0 is applicable to the project activity.

VVB also confirms that the project activity complies with the requirement of baseline determination in ACM0002 version 20.0, which is the latest applicable methodology available to the project participant. The project activity applies grid emission factor as per the latest available CEA database version 16 and the emission factor applied is 0.9124 tCO₂/MWh. This calculated emission factor is conservative as per tool.

PD has also demonstrated compliance with the applicable requirements of sec. 1.1 of Annex A under Renewable Energy Activity Requirements V1.3 which was verified by VVB as appropriate and VVB also checked EIA report and applicable approvals and confirms the compliance with the criteria of Renewable Energy Activity Requirements V1.3. VVB also verified the deviation request communication with the GS Board and found the submission is in line with the requirements.

The National CDM Authority (NCDMA), which is the Designated National Authority (DNA) for the Government of India (GOI) under the Ministry of Environment, Forests & Climate Change (MoEFCC), has mentioned four indicators for the sustainable development in the interim approval guidelines for Clean Development Mechanism (CDM) projects from India. Thus, the project's contribution towards sustainable development has been addressed based on the following sustainable development aspects:

I. Social well-being:

The project activity provided / provides job opportunity to local people during erection, commissioning and maintenance of the hydro power project. Frequency of visiting villages and nearby areas by skilled, technical and industrialist increased due to installation /site visit/operation and maintenance work. This directly and indirectly positively effects the economy of villages and nearby area.

II. Economic well-being:

The GS project activity generates permanent and temporary employment opportunity within the vicinity of the project. The electricity supply in the nearby area improves which directly and indirectly improves the economy and lifestyle of the area.

III. Environmental well-being:

The hydro power is one of the cleanest renewable energy powers and does not involve any fossil fuel. There are no GHG emissions. The impact on land, water, air and soil is negligible. Thus, the project activity contributes to environmental well-being without causing any negative impact on the surrounding environment.

IV. Technological well-being:

The project activity is step forward in harnessing the untapped hydro potential and further diffusion of the hydel energy technology in the region. The project activity leads to the promotion of hydro projects and demonstrates the success of hydro power in the region which further motivates more investors to invest in hydro power projects. Hence, the project activity leads to technological well-being.

Assessment team checked the technical parameters of the project equipment through plant technical specifications shared by client and confirmed during remote validation audit. PD confirms that the details as mentioned in the GS4GG PDD, Ver. 02 dated 23/07/2021 are correct. The details are as below:

The project activity aims to harness hydro energy through installation of 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). 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 per unit	5.62m ³ /sec
Type of switchgear	132kV air insulated switchgear
Speed of turbine	750 rpm
Generation voltage	11kV
Transmission voltage	132kV
GSU transformer	25/20 MVA 3 phase, 11/132 kV

The main components of the hydro-power project are:

- A 54m 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 5328 m pressure flow head race tunnel
- 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 will 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

Principle 2: Safeguarding Principles

The Safeguarding principles assessment is as below:

Assessment Questions/ Requirements	Assessment of relevance to the project (Yes/potentially/no)	Justification by the assessment team	Mitigation measure (if required)
Principle 1. Human Rights			
1. The Project Developer and the Project shall respect internationally proclaimed human rights and shall not be complicit in violence or human rights abuses of any kind as defined in the Universal Declaration of Human Rights 2. The Project shall not discriminate with regards to participation and inclusion	No	1. India ratified "International Convention on the Elimination of all Form of Racial Discrimination" on 03/12/1968 ⁶ ; "International Covenant on Civil and Political Rights" and "International Covenant on Economic, Social and Cultural Rights" on 24/09/1982 ⁷ ; "Convention on the Elimination of all Forms of Discrimination against Women" on 09/07/1993 ⁸ . Therefore, the project developer and the project do respect nationally and internationally proclaimed human rights and shall not be complicit in violence or human rights abuses of any kind. Also project will not discriminate with regards to participation and inclusion.	Not Required
Principle 2. Gender Equality			
1. The Project shall not directly or indirectly lead	No	1. The Project shall not directly or indirectly lead to/contribute to adverse impacts on	Not required

⁶ https://tbinternet.ohchr.org/_layouts/15/TreatyBodyExternal/Treaty.aspx?CountryID=79&Lang=EN

⁷ https://tbinternet.ohchr.org/_layouts/15/TreatyBodyExternal/Treaty.aspx?CountryID=79&Lang=EN

⁸ https://tbinternet.ohchr.org/_layouts/15/TreatyBodyExternal/Treaty.aspx?CountryID=79&Lang=EN

to/contribute to adverse impacts on gender equality and/or the situation of women. 2. Projects shall apply the principles of non-discrimination, equal treatment, and equal pay for equal work.		gender equality and/or the situation of women for a. Sexual harassment and/or any forms of violence against women – address the multiple risks of gender-based violence, including sexual exploitation or human trafficking. b. Slavery, imprisonment, physical and mental drudgery, punishment or coercion of women and girls. c. Restriction of women's rights or access to resources (natural or economic). d. Recognise women's ownership rights regardless of marital status – adopt project measures where possible to support to women's access to inherit and own land, homes, and other assets or natural resources. 2. The project has applied the principles of non-discrimination and equal treatment, pay & work as follows: a. Yes, the Project has equal opportunity for women and men to contribute both in volunteer and working positions. b. The project activity ensures the participation of women or men in	
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3. The Project shall refer to the country's national gender strategy or equivalent national commitment to aid in assessing gender risks 4. (where required) Summary of opinions and recommendations of an Expert Stakeholder(s)		Project activities and they are getting benefits based on pregnancy, maternity / paternity leave, or marital status c. These conditions does not limit the access of women or men, as the case may be, to Project participation and benefits. 3. The project activity follows country's national gender strategy or equivalent national commitment to aid in assessing gender risks.	
Principle 3. Community Health, Safety and Working Conditions			
The Project shall avoid community exposure to increased health risks and shall not adversely affect the health of the workers and the community	No	The project is renewable energy technology (Hydro Power) and does not have exposure to increased health risks and shall not adversely affect the health of the workers and the community. The project provides workers with a safe and healthy work environment and is not complicit in exposing workers to unsafe or unhealthy work environments" - PP ensures safe access and planned prevention to avoid any kind of accident.	Workplace Health & Safety trainings will be conducted regularly during the project operation.

		The HSE (Health and Safety Executive) states that best practice when installing and operation of Hydro Power project requires trained, dedicated working at height maintenance teams to access risks and select appropriate equipment before any work is carried out. All the safety and hygiene measures are being ensured in order maintain a safe and healthy environment for the workers at site. In case of any emergency, the site incharge will ensure to take adequate action and preventive measures to avoid any miss happening. Necessary health and safety measures will be taken during construction and operation phase, relevant staff will be trained to be able to work with safety. The project is in compliance with all relevant local and national laws also follows the National Policy on Safety, Health and Environment⁹ at work published by Ministry of Labour and Employment Government of India.	
Principle 4.1 Sites of Cultural and Historical Heritage			
Does the Project Area include sites, structures, or objects with historical, cultural, artistic, traditional or	No	No cultural heritage is observed on the project site, thus no harm observed. Compliance with India's	Not Required

⁹ <https://labour.gov.in/sites/default/files/SafetyHealthandEnvironmentatWorkPlace.pdf>

religious values or intangible forms of culture?		commitment to International Covenant on Economic, Social and Cultural Rights 10.04.79 will ensure no damage to critical cultural heritage. As per the list of cultural heritage sites in India ¹⁰ by UNESCO, it is clear that the project site is not a cultural heritage site.	
>>			
Principle 4.2 Forced Eviction and Displacement			
Does the Project require or cause the physical or economic relocation of peoples (temporary or permanent, full or partial)?	No	The project has received the necessary approvals from the local authorities and does not lead to any resettlement. India (the Ministry of Rural development have the "The National Rehabilitation and Resettlement Policy, 2007" ¹¹	Not required
>>			
Principle 4.3 Land Tenure and Other Rights			
Does the Project require any change, or have any uncertainties related to land tenure arrangements and/or access rights, usage rights or land ownership?	No	No Expropriation has been conducted on any private land involved in project activity. Land has been utilised by PP directly from the owner of the land through direct negotiation of commercial terms. There has not been involvement of any government agency in the acquiring the land. The land is acquired on mutual consent between private land owner and PP, thus there are no any issues of	Not Required
>>			

¹⁰ <http://whc.unesco.org/en/statesparties/in>

¹¹

<https://dolr.gov.in/sites/default/files/National%20Rehabilitation%20%26%20Resettlement%20Policy%2C%202007.pdf>

		dissatisfaction of private land owner. The Project Developer hold uncontested land title for the entire Project Boundary to complete Project Design Certification. The land rights are with project developers.	
Principle 4.4 - Indigenous people			
Are indigenous peoples present in or within the area of influence of the Project and/or is the Project located on land/territory claimed by indigenous peoples?	No	The project is located at site where there are no any peoples residing. The project is located at barren land.	Not Required
Principle 5. Corruption			
1. The Project shall not involve, be complicit in or inadvertently contribute to or reinforce corruption or corrupt Projects	No	The project is renewable energy technology and does not contribute to or reinforce corruption of any kind. India has ratified UN convention against Corruption in 2011 ¹² .	Not Required
Principle 6.1 Labour Rights			
1. The Project Developer shall ensure that all employment is in compliance with national labour occupational health and safety laws and with the principles and standards embodied in the ILO fundamental conventions.	No	1. The project proponent is committed to the employee's workplace health & safety during all phases of the project. All employees will attend health & safety trainings. This is issued in the Labour code on Occupational Safety, Health and Working Conditions and UN Agreement on Human Rights ¹³ .	Not required

¹² https://treaties.un.org/Pages/ViewDetails.aspx?src=IND&mtdsg_no=XVIII-14&chapter=18&clang=en#EndDec

¹³ <https://www.ohchr.org/EN/Countries/AsiaRegion/Pages/INIndex.aspx>

2. Workers shall be able to establish and join labour organisations 3. Working agreements with all individual workers shall be documented and implemented and include: a) Working hours (must not exceed 48 hours per week on a regular basis), AND b) Duties and tasks, AND c) Remuneration (must include provision for payment of overtime), AND d) Modalities on health insurance, AND e) Modalities on termination of the contract with provision for voluntary		2. The project respects fundamental right of employee. There is law in India since 1926 by The Trade Unions Act, 1926¹⁴ which protects rights of industrial trade unions and their members. PP and appointed contractors will not involve in any form of forced or compulsory labor. India has ratified ILO "C029 – Forced Labor Convention"¹⁵ 3. The working agreements with all individual workers are available which contains the guidelines that define how employees work, and the working environment to feel safe and free to learn, explore and discover.	
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¹⁴ <http://ncw.nic.in/acts/TheTradeUnionsAct1926.pdf>

¹⁵ https://www.ilo.org/dyn/normlex/en/f?p=1000:11200:0::NO:11200:P11200_COUNTRY_ID:102691

resignation by employee, AND f) Provision for annual leave of not less than 10 days per year, not including sick and casual leave. 4. No child labour is allowed (Exceptions for children working on their families' property requires an <u>Expert Stakeholder</u> opinion) 5. The Project Developer shall ensure the use of appropriate equipment, training of workers, documentation and reporting of accidents and incidents, and emergency preparedness and response measures.		4. The country has strict prohibition for child labour¹⁶. Thus project does not involve child labour during construction and operation of project activity. 5. The project follows the health, safety and environment guidelines at project site. The project ensure the use of appropriate equipment, training of workers, documentation and reporting of accidents and incidents, and emergency preparedness and response measures.	
Principle 6.2 Negative Economic Consequences			
1. Does the project cause negative economic consequences during and after project implementation?		No potential risks to the local economy. The financial sustainability of the Projects implemented, also including those that will occur beyond the Project Certification period.	
>>		The financial sustainability is demonstrated in registered PDD and these calculations are for entire lifetime of project activity.	

¹⁶ http://www.indianchild.com/child_labour_law_in_india.htm

		The project does not involve any negative impacts and no any potential risk to local economy.	
Principle 7.1 Emissions			
Will the Project increase greenhouse gas emissions over the Baseline Scenario?	No	The project is renewable energy technology and does not lead any increase in greenhouse gas emissions over the Baseline Scenario.	Not Required
>>			
Principle 7.2 Energy Supply			
Will the Project use energy from a local grid or power supply (i.e., not connected to a national or regional grid) or fuel resource (such as wood, biomass) that provides for other local users?	No	The project activity supplies energy to national grid and project activity displaces equivalent quantity of electricity which would have been generated by fossil fuel dominated grid connected power plants.	Not required
>>			
Principle 8.1 Impact on Natural Water Patterns/Flows			
Will the Project affect the natural or pre-existing pattern of watercourses, ground-water and/or the watershed(s) such as high seasonal flow variability, flooding potential, lack of aquatic connectivity or water scarcity?	No	The project is renewable energy technology and does not affect the natural or pre-existing pattern of water courses, ground-water and/or the watershed(s).	Not Required
>>			
Principle 8.2 Erosion and/or Water Body Instability			
Could the Project directly or indirectly cause additional erosion and/or water body instability or disrupt the	No	The project is renewable energy technology and does not affect Erosion and/or water body stability.	Not Required

natural pattern of erosion?			
>>			
Principle 9.1 Landscape Modification and Soil			
Does the Project involve the use of land and soil for production of crops or other products?	No	The project proponent has implemented Environment Health Safety and Social guideline which takes into account the same.	Not Required
>>		The project activity involves barren land and does not involve use of land and soil for production of crops or other products.	
Principle 9.2 Vulnerability to Natural Disaster			
Will the Project be susceptible to or lead to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions?	No	The project is not susceptible to or leads to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions.	Not Required
>>			
Principle 9.3 Genetic Resources			
Could the Project be negatively impacted by or involve genetically modified organisms or GMOs (e.g., contamination, collection and/or harvesting, commercial development, or take place in facilities or farms that include GMOs in their processes and production)?	No	Not Applicable for hydro power plants.	Not Required
>>			

Principle 9.4 Release of pollutants			
Could the Project potentially result in the release of pollutants to the environment?	No	The project has received environmental clearance from the State Pollution control Board. Further the EHSS guidelines takes into account the same.	Not Required
>>		The project does not lead to release of any hazardous substances that pose threat to the environment. Rather it aims at reducing the air pollution that is prevalent due to use of fossil fuel power plants. The project promotes environmental protection through the use of cleaner technology. The project abides by the stipulations of the Indian Environment Protection Act 1986 ¹⁷ .	
Principle 9.5 Hazardous and Non-hazardous Waste			
Will the Project involve the manufacture, trade, release, and/ or use of hazardous and non-hazardous chemicals and/or materials?	No	The project is renewable energy technology. The project does not involve generation of Hazardous and Non-hazardous Waste. Standard procedure is followed at site during operation and maintenance.	Not Required
>>			
Principle 9.6 Pesticides & Fertilisers			
Will the Project involve the application of pesticides and/or fertilisers?	No	Not applicable for hydro power plants.	Not Required
>>			

¹⁷ <http://envfor.nic.in/legis/env/env1.html>

Principle 9.7 Harvesting of Forests			
Will the Project involve the harvesting of forests?	No	No, the project does not involve harvesting of forest.	Not Required
>>			
Principle 9.8 Food			
Does the Project modify the quantity or nutritional quality of food available such as through crop regime alteration or export or economic incentives?	No	No. The project does not modify the quantity or nutritional quality of food available.	Not Required
>>			
Principle 9.9 Animal husbandry			
Will the Project involve animal husbandry?	No	No. Not applicable for hydro project.	Not required
>>			
Principle 9.10 High Conservation Value Areas and Critical Habitats			
Does the Project physically affect or alter largely intact or High Conservation Value (HCV) ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified?	No	The Project does not affect or alter largely intact or High Conservation Value (HCV) ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified ¹⁸ .	Not Required
>>			
Principle 9.11 Endangered Species			
Are there any endangered species identified as potentially being present within the Project boundary (including those that may route through the area)?	No	1. There are no endangered species identified as potentially being present within the Project boundary. 2. The Project does not impact other areas	Not required

¹⁸ <http://natureconservation.in/state-wise-list-of-conservation-reserves-of-india-updated/>

AND/OR		where endangered species may be present through transboundary affects.	
Does the Project potentially impact other areas where endangered species may be present through transboundary affects?			
>>			

The safeguarding principles relevant to the project activity are justified by PP based on supporting web links, references wherever applicable.

Also the report on “Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects” prepared by MNRE dated September 2013¹⁹ is submitted to VVB. This report clearly mentioned that hydro power project operations do not result in direct air pollution, noise pollution.

Furthermore, PP has submitted the requisite Consent to Operate dated 17/02/2018 under Water Act 1974 and Air Act 1981 issued by from Himachal Pradesh State Pollution Control Board (HPSCB) to comply with all prescribed norms and conditions laid out. The project has also obtained requisite clearances from MOEFCC: Forest clearance vide 9-HPC497/2009-CHA/5402 dated 15/06/2011 and Environmental Clearance dated 20/04/2011 vide F.No.-J-12011/7/2011-IA-I. All the consents and clearance are checked by the validation team and found appropriate.

These safeguarding principles assessment is validated through references given by PP, MNRE report as mentioned above and based on site visit observations and interview during the site visit.

The SDG goals are also described below:

SDG Goal	Assessment of Methodological choices/approaches for estimating the SDG outcome
SDG 7 – Affordable and Clean Energy: Ensure access to affordable, reliable, sustainable and modern energy for all	Measurement Method: Electricity produced and supplied to the grid is monitored through energy meter. Net electricity will be calculated by state electricity board and PP on monthly basis and provided in the share certificate/monthly report or equivalent. The other parameters used for net electricity supplied to grid are mentioned in monitoring plan. QA/QC Process: This parameter is monitored monthly and value of parameter will be cross checked with the invoices. The meters will be calibrated on regular frequency. Relevant SDG Target: 7.2 - By 2030, increase substantially the

¹⁹ <https://smartnet.niua.org/sites/default/files/resources/report-on-developmental-impacts-of-RE.pdf>

	share of renewable energy in the global energy mix. Corresponding indicator: Electricity produced and supplied to the grid. (7.2.1 Renewable energy share in the total final energy consumption)
SDG 8 – Decent Work and Economic Growth: Promote inclusive and sustainable economic growth, employment and decent work for all	1. Quantitative employment 2. Quality of employment Measurement Method: Training and employment generation is monitored through training records, staff register or letter from O&M contractor for training and employment details or HSE/HR records. QA/QC Process: The number of persons employed would be mentioned in the plant register, which can be crossed checked with daily attendance register, employee records, salary slips of employee or letter from O&M contractor for number of peoples employed. Relevant SDG Target: 8.5.1 - By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value Corresponding indicator: 1) No. of trainings provided to the employees and O&M staff: 01 training will be provided/year), and 2) No. of project employees with number of male/female, permanent/temporary, age and person with disabilities due to project activity: 05 persons/ year.
SDG 13 – Climate Action : Take urgent action to combat climate change and its impacts	Measurement Method: - The emission reduction parameter is calculated as product of net electricity supplied to grid and grid emission factor. The grid emission factor is ex-ante parameter and determined based on data obtained from "CO₂ Baseline Database for Indian Power Sector" version 16, published by the Central Electricity Authority, Ministry of Power, and Government of India. This is in line with "Tool to calculate the emission factor for an electricity system, version 7". The emission reductions are calculated as per registered PDD and as per methodology requirement. QA/QC Process: This parameter is calculated, and no any QA/QC procedure required. Relevant SDG Target: 13.2.1: Integrate climate change measures into national policies, strategies and planning Corresponding indicator: Emission reductions in tCO_{2e} from the project activity.

Principle 3: Stakeholder Inclusivity

As per the CDM/GS requirements, it is necessary to invite the relevant stakeholders, before the validation process starts. The stakeholder consultation meetings took place as follows:

All the stakeholders have been invited through public notice on 14/01/2009 published in in three local newspapers – Dainik Jagran, The Tribune and Dainik Tribune to attend the stakeholders meeting. The local stakeholders' consultation meeting was held on 17/01/2009 and attended by local persons including local villagers, local vendors and technology suppliers.

Other two stakeholder consultation meetings were held on 27/10/2010 and 18/05/2013 for EIA clearance and carbon credits (CDM).

The stakeholders identified by the project participant were local villagers who are the major population of the particular area, local communities and gram panchayat (Village head), Himachal Pradesh State Electricity Board (HPSEB), project proponent representatives, O&M Team and other people involved in the project. Validation team verified the list of participants who attended the stakeholder meeting and feedback questionnaire and confirms the stakeholders identified are relevant. Validation team verified the list of participants who attended the stakeholder meeting and feedback questionnaire and confirms the stakeholders identified are relevant. The validation team also verified the minutes of meeting to note that no negative comments were received and the same was cross checked with the information obtained during follow up interviews with the stakeholders.

Thus, Validation team is of the opinion that the stakeholder meeting was adequate and appropriate.

The project activity is a GS CER project and therefore PP was required to conduct a Stakeholder Feedback Round (SFR) covering the issues (if any) related to the project activity, which was conducted during 02/02/2019 to 01/04/2019. An email has been sent to the entire stakeholder for the mandatory 60 days stakeholder's commenting period with a call for public feedback on the project and comments. The sample of the emails is also submitted to the VVB. The email attachment is also checked by the assessment team and found correct. Following observations are made by the VVB:

- Different representative of stakeholders like local villagers, head of panchayat, NGOs, PP employees were invited for their comments via emails during stakeholder's feedback round.
- No negative comments were received during the period and local stakeholders were very satisfied with the project activity implementation and operation in their area.

Principle 4: Demonstration of real outcomes

The Sustainable monitoring plan is described below:

SDG Parameter	Indicator	Monitoring
SDG 7 : Affordable and Clean Energy	Quantity of net electricity delivered by the project plant/unit in year y in MWh	The available parameter to Project owner is net electricity supplied to grid and same is mentioned as monitoring parameter. The net electricity generation is calculated based on Export, import values from the meters

		connected at the sub-station. The Net electricity is thus calculated based on the values of export and import for the particular billing month. Quantity of net electricity supplied to the grid will be cross checked from the invoices raised by the project proponent. The energy meters used are tri-vector meters which are of accuracy class 0.2. The calculation of net electricity supplied to grid is under purview of state electricity board and Project owner do not have control on it. The onsite practice is thus acceptable to the assessment team as the same is as per the requirement of the approved methodology.
SDG 8 : Decent Work and Economic Growth	Quantitative employment and income generation	Project participant have documentation pertaining to employment, attendance register and documentary details of training/capacity building. Assessment team also checked the salary slips and confirms that due to project activity peoples are getting more than minimum wages as a salary and this salary is better than local level salary. Based on the roles and responsibility of employee, the salary will be higher than the minimum salary of the region and hence the parameter monitoring is acceptable to the assessment team.
SDG 8 : Decent Work and Economic Growth	Quality of employment	The training records are maintained on regular basis with annual consolidation. Assessment team checked that at least more than 05 people/ year are expected to be employed at site during crediting period. The employment opportunities generated are local or temporary or permanent as checked and confirmed by the assessment team. The training related to O&M, Safety, emergency procedure, fire safety etc. are provided to employees. Since local people are employed due to project activity, the training given to employees improves the quality of employment. Apart from these training to employees, the PP organizes few events which will be beneficial to society as a part corporate social responsibility (CSR) activities as per their policy. As the

		parameter is subjected to monitoring the same will be checked during the verification of the project activity.
SDG 13: Climate Action	Emission Reductions	The emission reduction calculation will be done as per the formula mentioned in the GS4GG PDD. As the parameter is subjected to monitoring the same will be checked during the verification of the project activity.

Transmission line effect: The project activity is exporting the generated electricity to grid. The EPC contractor and state electricity board is responsible for the construction of transmission line. They are following safety guidelines while construction of transmission lines. The project proponent does not have any role in the construction of transmission lines. The standard procedure are followed at site while commissioning the transmission lines

Principle 5: Financial Additionality & Ongoing Financial Need

As project activity is a CDM Registered project (UNFCCC ID: 10153²⁰), and is seeking retroactive registration in GS CER stream, additionality has been demonstrated by PP in the registered CDM PDD. The registered CDM PDD mentioned that the project would not be economically or financially feasible without the revenue from the sale of carbon revenue. The claim of the project developer has been assessed and validated by the Validation Team and is acceptable.

The Validation Team concludes that the additionality justification regarding the serious CDM consideration given by the project developer is in accordance with the requirements derived from CDM Validation and Verification Standard version 02.0 for the project activity.

3.9 Calculation algorithm and/or formula used to determine emission reductions

The GS4GG PDD of the project activity is checked by the assessment team and found that ACM0002 version 20.0 is used which is latest methodology by UNFCCC. As the GS tool kit recommends the application of the latest version of the applied methodology along with the conservative argument of the approach followed. The latest version is ACM0002 version 20 and VVB confirm that the project activity is in line with the latest methodology as well.

The formula used in the GS4GG PDD was used for the calculation of emission reduction and same is found to be correct. Hence emission reduction calculation at this time of validation is conservative and appropriate.

Assessment team checked that Formula used to calculate the net emission reduction for the project activity is

$$ER_Y = BE_Y - PE_Y$$

Where,

ER_Y = Emission Reduction in tCO₂/year

²⁰ <https://cdm.unfccc.int/Projects/DB/TUEV-SUED1431953233.8/view>

BE_Y = Baseline emission in tCO₂/year

PE_Y = Project emissions in tCO₂/year

Baseline Emission (BE_Y)

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.

$$BE_Y = EG_{PJ,Y} * EF_{grid,CM,Y}$$

Where,

$EG_{PJ,Y}$ = Total quantity of net electricity delivered to the recipient facility

$EF_{grid,CM,Y}$ = Baseline emission factor

$$= 0.9124 \text{ tCO}_2/\text{MWh}$$

$$BE_Y = EG_{PJ,Y} * EF_{grid,CM,Y}$$

$$BE_Y = 156,272 \text{ MWh} * 0.9346 = 142,582 \text{ tCO}_2/\text{year} \text{ (round down to nearest integer)}$$

Since $ER_Y = BE_Y$ (As $PE_Y=0$)

Therefore, $ER_Y = 142,582 \text{ tCO}_2/\text{year}$

SDG 13 Climate Actions

Year	Baseline estimate	Project estimate	Net benefit
Year 1	142,582 tCO ₂	0 tCO ₂	142,582 tCO ₂
Year 2	142,582 tCO ₂	0 tCO ₂	142,582 tCO ₂
Year 3	142,582 tCO ₂	0 tCO ₂	142,582 tCO ₂
Year 4	142,582 tCO ₂	0 tCO ₂	142,582 tCO ₂
Year 5	142,582 tCO ₂	0 tCO ₂	142,582 tCO ₂
Year 6	142,582 tCO ₂	0 tCO ₂	142,582 tCO ₂
Year 7	142,582 tCO ₂	0 tCO ₂	142,582 tCO ₂
Total	998,074 tCO₂	0 tCO₂	998,074 tCO₂
Total number of crediting years	7		
Annual average over the crediting period	142,582 tCO ₂	0 tCO ₂	142,582 tCO ₂

SDG 7: Affordable and Clean Energy

Year	Baseline estimate	Project estimate	Net benefit
Year 1	0 MWh	156,272 MWh	156,272 MWh
Year 2	0 MWh	156,272 MWh	156,272 MWh
Year 3	0 MWh	156,272 MWh	156,272 MWh

Year 4	0 MWh	156,272 MWh	156,272 MWh
Year 5	0 MWh	156,272 MWh	156,272 MWh
Year 6	0 MWh	156,272 MWh	156,272 MWh
Year 7	0 MWh	156,272 MWh	156,272 MWh
Total	0 MWh	1,093,904 MWh	1,093,904 MWh
Total no. of crediting years	7 years		
Annual average over the crediting period	0 MWh	156,272 MWh	156,272 MWh

SDG 8: Decent Work and Economic Growth

The project leads to employment opportunities which would not have been possible in the baseline scenario. The project intends to provide employment to at 05 persons. PP also intends to provide at least 01 training per year as confirmed during interview with PP representatives during remote validation audit.

4. REFERENCE

S. No.	Document/Evidence/Reference/Web link, Version, Date
1.	GS4GG PDD, version 01 dated 01/12/2018 Final GS4GG PDD, version 03 dated 18/04/2022 based on which the final opinion is provided.
2.	Minutes of Meeting for Local Stakeholders' Consultation
3.	Emission Reduction Sheet for the project activity
4.	Methodology: ACM0002 version 20.0
5.	Standard: CDM Project Standard Version 02
6.	Standard: CDM Validation & Verification Standard Version 02
7.	Procedure: CDM Project Cycle Procedure Version 02
8.	Tools: Tool to calculate the emission factor for an electricity system, Version 7.0
9.	GS4GG guideline
10.	Stakeholders consultation process in CDM-PDD
11.	Training Records of project staff at site
12.	Declaration for non-receiving of ODA for project
13.	Universal declaration of Human Rights: http://mha.nic.in/Human_Rights_Division
14.	Ministry of Labor: http://labour.gov.in/upload/uploadfiles/files/footergallery_pdf/List%20ofILO%20Conventions%20Ratified%20by%20India.pdf
15.	National Prevention of Corruption Act of Government of India: http://www.persmin.gov.in/DOPT/EmployeesCorner/Acts_Rules/PCAct/pcact.pdf
16.	Ministry of Environment, Forest & Climate Change: http://moef.nic.in/division/environment-
17.	Minutes of Meeting for Stakeholders' Feedback Meeting
18.	Emails sent to NGO, Stakeholders, villagers for stakeholder feedback round
19.	Commissioning certificates
20.	UNFCCC Website for CDM mechanism: http://cdm.unfccc.int/
21.	HR employment records of the project staff on site
22.	Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects, MNRE Report
23.	Declaration of not participating in REC mechanism
24.	Detailed Project Report
25.	Copies of EPC Contract
26.	Power Purchase Agreement
27.	Board resolutions
28.	Technical specifications
29.	CSR Policy of IA Hydro Energy Private Limited
30.	EHS Policy of IA Hydro Energy Private Limited
31.	GS Deviation ref. No. – COVID DEV 201

5. FINAL PROJECT DESIGN CERTIFICATION STATEMENT

Applus+ Certification have performed a validation of the "Chanju I Hydro Electric Project". The validation was performed on the basis of UNFCCC criteria CDM VVS for PAs, version 02, Gold Standard GS4GG guideline and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The review of the GS4GG PDD and the subsequent follow-up interviews has provided Applus+ Certification with sufficient evidence to determine the fulfillment of stated criteria. In our opinion, the project meets all relevant UNFCCC and Gold Standard requirements for the Gold Standard and all relevant host country criteria. The project will hence be recommended by Applus+ Certification for registration with the Gold Standard Registry.

By displacing fossil fuel-based electricity with electricity generated from a renewable source, the project results in reductions of CO₂ emissions that are real, measurable and give long-term benefits to the mitigation of climate change. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is implemented as designed, the project is likely to achieve the estimated amount of annual emission reductions of 142,582 tCO₂e per year.

The validation has been performed following the requirements of the latest version of the CDM VVS for PAs version 02, Gold Standard GS4GG guideline and on the basis of the contractual agreement.

In detail the conclusions can be summarized as follows:

- The project does not result in negative social, environmental and/or economic impacts.
- The project contribution to Environment, Social Development and Economic and technological development
- The project additionality is sufficiently justified in the Gold Standard PDD
- The project does not result in diversion of ODA.
- Conservative assumptions were applied in the project description.
- The monitoring plan of SDG parameters is transparent and adequate.
- The project meets the stakeholder consultation requirements.

The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation.

Date: 21/04/2022

Lead Auditor: Mr. Pankaj Kumar

Tech. Expert: Mr. Pankaj Kumar

Tech. Reviewer: Mr. Denny Xue

Approver (*Applus+ Certification VVB Technical Manager*)

Mr. Agustín Calle de Miguel

ASSESSMENT TEAM	
Lead Auditor: PANKAJ KUMAR	Technical Reviewer: DENNY XUE
Signature:	Signature:
Approver: Mr. Agustín Calle de Miguel	
Signature:	

Appendix 1: Corrective Action Request/Clarification Request/Forward Action Request resolution table

Table 1: CAR from this validation

Type:	☒ CAR ☐ CL/CR ☐ FAR	Number:	01
Raised by:	Mr. Sukanta Das	Ref. to checklist in GS4GG PDD:	A.3, A.4, A.5., A.7
Description of the audit finding		Date:	24/02/2021
During desk review, following discrepancies has been found: • PP is requested to prepare Project design document as per latest GS4GG template V1.2 for Project design document. As the new template is not used the whole PDD is reserved. • PP requested to submit Declaration confirming that there would not be double counting of credits for any particular monitoring period. • PP requested to submit commissioning certificates which demonstrates that the PP as the legal owner. • In section A.5 the technical details are mentioned however the supporting documents for technical details of the WTGs are not submitted to the assessment team. Corrective Action Sought.			
Project Participant's response		Date:	23/07/2021
• Project design document has been prepared as per latest GS4GG template V1.2 for Project design document. • Declaration confirming that there would not be double counting of credits for any particular monitoring period has been submitted by PP • Commissioning certificates has been submitted to demonstrates that the PP as the legal owner • Supporting documents for technical details has been submitted for verification			
Documentation provided as evidence by Project Participant			
GS PDD Ver 02 PP Declaration Commissioning certificates Technical Specification if the equipment			
Auditor's assessment comment		Date:	22/08/2021
• PP has now prepared Project design document as per latest GS4GG template V1.2 for Project design document. Hence, comment closed. • PP has now submitted Declaration for no double counting dated 01/07/2021 to the assessment team, the same is found appropriate. Hence, comment closed. • PP has now submitted commissioning certificates which are cross-checked and found appropriate by VVB. Hence, comment closed. • PP has now submitted the technical details of the hydro-electric power plant to the assessment team. The same is found appropriate, hence, comment closed.			

Type:	☒ CAR ☐ CL/CR ☐ FAR	Number:	02
Raised by:	Mr. Sukanta Das	Ref. to checklist in GS4GG PDD:	A.8
Description of the audit finding		Date:	24/02/2021
In section A.8 India is party to "Convention on the Elimination of All Forms of Discrimination against Women". The supporting company policies/CSR documents for the same is not submitted to the assessment team			
Project Participant's response		Date:	23/07/2021
Gender Equality policy regarding "Convention on the Elimination of All Forms of Discrimination against Women" has been submitted.			
Company CSR policies /CSR documents has been submitted to the assessment team			
Documentation provided as evidence by Project Participant			
Company CSR policies /CSR documents			
Auditor's assessment comment		Date:	22/08/2021
PP has submitted company's CSR Policy and Gender Equality Policy as supporting doc, which are found appropriate by VVB. Hence, comment closed .			

Type:	☒ CAR ☐ CL/CR ☐ FAR	Number:	03
Raised by:	Mr. Sukanta Das	Ref. to checklist in GS4GG PDD:	B.4
Description of the audit finding		Date:	24/02/2021
The project activity applies, application of latest version 15 of Baseline CO ₂ Emission Database of CEA, is missing in the PDD. PP requested to update the relevant sections of the PDD accordingly.			
Project Participant's response		Date:	23/07/2021
Latest version 16 of Baseline CO ₂ Emission Database of CEA has been updated in relevant sections of the PDD			
Documentation provided as evidence by Project Participant			
GS PDD Ver 02			
Auditor's assessment comment		Date:	22/08/2021
PP has updated the use of latest version 16 of Baseline CO ₂ Emission Database of CEA in relevant sections of the revised PDD Ver 02 dated 23/07/2021. Hence, comment closed .			

Type:	☒ CAR ☐ CL/CR ☐ FAR	Number:	04
Raised by:	Mr. Sukanta Das	Ref. to checklist in GS4GG PDD:	B.6.1, B.6.2 and B.6.5
Description of the audit finding		Date:	24/02/2021
1. The supporting's to the indicator mentioned relevant to SDG is missing. Corrective action is sought for the same.			

2. As per SDG 8: Decent Work and Economic Growth : The project leads to Trainings & workshops which are conducted for the O&M staff of Manufacturer as well as for the O&M staff of the PP, by their respective companies. Moreover, PDD claims equal pay for equal work, Person with Disability also get decent work. The statements are not backed by proper evidences. - No. of trainings provided to the employees – Supporting missing - Employment generated due to project activity - Supporting missing - The employment records/Salary slips- Supporting missing		
3. Supporting for SDG 7 and 13 is also missing. Both the parameters are thus reserved.		
4. As per Section A.7 of the PDD, no ODA fund is involved in the project activity. ODA declaration is missing.		
5. Assessment team could not confirm that project complies with Gender Sensitive requirement. The Supporting is not submitted to the assessment team. Corrective action is sought		
Project Participant's response		Date: 23/07/2021
1. The supporting's to the indicator mentioned relevant to SDG has been submitted to DOE for verification		
2. Supporting Documents related to SDG8: Decent Work and Economic Growth : has been submitted to DOE No. of trainings provided to the employees – Attached Employment generated due to project activity - Attached The employment records/Salary slips- Attached		
3. Supporting for SDG 7 and 13 i.e. ER sheet has been submitted to DOE for verification.		
4. ODA Declaration has been submitted to DOE for verification		
5. Gender Equality Policy has been submitted to DOE for verification		
Documentation provided as evidence by Project Participant		
GS PDD Ver 02		
Auditor's assessment comment		Date: 22/08/2021
1. PP has now submitted relevant supporting documents for SDG indicators to the assessment team. Hence, comment closed.		
2. PP has now submitted supporting documents for SDG8 including No. of employee trainings, employment generated and employment records/salary slips. The same is cross-checked and found correct by VVB. Hence, comment closed.		
3. PP has now submitted ER sheet for SDG 7 and 13. The same is checked and found correct by VVB. Hence, comment closed.		
4. PP has now submitted ODA Declaration dated 03/12/2018, which is found appropriate. Hence, comment closed.		

Type:	☒ CAR ☐ CL/CR ☐ FAR	Number:	05
Raised by:	Mr. Sukanta Das	Ref. to checklist in GS4GG PDD:	B.7.1
Description of the audit finding		Date:	24/02/2021
The supporting documents related to Data and parameters to be monitored are not submitted to assessment team. For example, CSR records, trainings & workshops that are given to the respective O&M staffs. Technical training			

Soft Skill Training Corrective action is sought for the same.		
Project Participant's response	Date:	23/07/2021
The supporting documents related to Data and parameters to be monitored have been submitted to assessment team.		
Documentation provided as evidence by Project Participant		
Training Register GS PDD Ver 02		
Auditor's assessment comment	Date:	22/08/2021
PP has now submitted supporting documents for SDG8 including No. of employee trainings, employment generated and employment records/salary slips. The same is cross-checked and found correct by VVB. Hence, comment closed.		

Type:	☒ CAR ☐ CL/CR ☐ FAR	Number:	06
Raised by:	Mr. Sukanta Das	Ref. to checklist in GS4GG PDD:	D (Safeguarding principle)
Description of the audit finding		Date:	24/02/2021
- Supporting documents related to Safeguarding principle is not submitted to the assessment team. PP is requested to detail out each supporting submitted for each and every Safeguarding principle. - PP does not involve in any form of discrimination in any kind. The supporting for the same is not submitted to the assessment team - The project proponent is committed to the employee's workplace health & safety during all phases of the project. All employees will attend health & safety trainings. The supporting is not submitted to the assessment team - The project is subjected to a variety of national and state laws and as per the prevailing laws the project activity requires the following consents: - Diversion of Forest clearance – Ministry of Environment and Forests File no. 9-HPC497/2009-CHA dated 17/02/2011. - Environmental clearance – The project requires environment clearance from the Ministry of Environment and Forest, Government of India, for this purpose EIA/EMP is prepared and submitted to MoEF. The project received the Environmental Clearance dated 20/04/2011, F.No.-J-12011/7/2011-IA-I) Both the documents are not submitted to the assessment team. - PP does not involved and is not complicit in any kind of corruption. The supporting for the same is not submitted to the assessment team - PP and their subcontractors complying with all Relevant national laws regarding child labor/ forced or compulsory labour. The supporting for the same is not submitted to the assessment team - As per the Environmental Clearance report- ECA the Project does not affect the natural or pre-existing pattern of watercourses, ground-water and/or the watershed(s) such as high seasonal flow variability, flooding potential, lack of aquatic connectivity or water scarcity, the risk of erosion. The supporting for the same is not submitted to the assessment team - The project owner's also follows necessary procedures for Environmental safety as per "Law of Environment protection and HPSEB clearance in the host country" at the project. The supporting for			

the same is not submitted to the assessment team		
9. ECA clearly mention way for disposal of Hazardous and non-Hazardous waste. The supporting for the same is not submitted to the assessment team		
10. International sources of information such as the World Database on protected planets (IUCN, UNEP), the Ramsar list of wetlands, and the United Nations list of protected areas were referred to confirm that the project is is not located in High Conservation Value (HCV) area. The supporting document or the link for the same is not submitted to the assessment team.		
11. Certain Safeguarding Principles require the opinion and recommendations of an Expert Stakeholder . These are identified throughout the Safeguarding Principles Assessment and/or in the Activity Requirements <100- GS4GGSafeguarding- Principles-Requirements-v1.2 >. The Project Developer shall demonstrate that the Expert Stakeholder has conducted a thorough review (and, if needed, an onsite visit) and that their recommendations have been incorporated into the Project design.		
12. PP is requested to include monitoring and reporting requirements/commitments from the following have been included in the monitoring plan: Safeguarding Principles Assessment (for example Mitigations) ; Stakeholder Engagement, feedback, grievances (including those recommended by any Expert Stakeholder contracted for the project)		
13. The PP shall notice that as retroactive project, the PP shall ensure that Stakeholder Consultation include at least one public in-person meeting and one Stakeholder Feedback Round of lasting a minimum of 2 months. The physical meeting conducted during the stakeholder feedback round must follow all requirements listed in GS4GG STAKEHOLDER CONSULTATION AND ENGAGEMENT REQUIREMENTS. PP shall report it using LSC template.		
Project Participant's response		Date: 23/07/2021
1. Supporting documents related to Safeguarding principle has been submitted to the assessment team. a. HR Policy b. Gender Equality Policy c. Health Safety & Environment Policy d. Anti Child labour-Undertaking e. Anti Corruption-undertaking f. CSR Policy g. Environment Clearance h. Forest Clearance		
2. PP does not involve in any form of discrimination in any kind. The Gender Equality Policy has been submitted for the same to the assessment team		
3. Health Safety & Environment Policy has been submitted by the project proponent for commitment to the employee's workplace health & safety during all phases of the project.		
4. The following consents has been obtained by project activity subjected to a variety of national and state laws and as per the prevailing laws: 1. Diversion of Forest clearance – Ministry of Environment and Forests File no. 9-HPC497/2009-CHA dated 15/06/2011 has been submitted to DOE for verification 2. Environmental clearance – The Environmental Clearance F.No.-J-12011/7/2011-IA-I, dated 20/04/2011 has been submitted to DOE for verification		

5. PP has submitted undertaking that PP does not involved and is not complicit in any kind of corruption. The Same has been submitted to DOE for verification.
6. PP has submitted undertaking that they are complying with all Relevant national laws regarding child labor/ forced or compulsory labour. The supporting for the same has been submitted to the assessment team
7. The project activity does not affect the pre-existing patter of water courses, ground water or any other aquatic resources. The EIA/EC of the project has been submitted to the validation team as a supporting evidence
8. The project owner's follows necessary procedures for Environmental safety as per "Law of Environment protection and HPSEB clearance in the host country" at the project. For that Consent to operate under Wáter Act has been submitted to the assessment team
9. ECA clearly mention way for disposal of Hazardous and non-Hazardous waste. For that Consent to operate under Wáter Act has been submitted to the assessment team
10. The project activity is not located in High Conservation Value (HCV) area. The link for the same has been provided to the assessment team.
<http://natureconservation.in/state-wise-list-of-conservation-reserves-of-india-updated/>
11. As per the safeguarding principles the expert opinion is not required for the parameters identified and has been transparently described in the GSPDD
12. The GSPDD has been updated with the latest requirements of safeguarding principles and their mitigation measures. Also as a measure of continuous stakeholder engagement a grievance register has been placed at project site to record the inputs or suggestions of the stakeholders and due consideration of the comments will be undertaken
13. The project developer has submitted a SCR covering all the guidelines of GS4GG. Also a physical stakeholder consultation had been carried out for the project activity and an online stakeholder feedback round had been initiated after the listing of the project at Sustaincert and the supporting evidence for the same has been submitted to the validation team

Documentation provided as evidence by Project Participant

Supporting documents as mentioned above

Auditor's assessment comment	Date:	22/08/2021
1. PP has submitted relevant company's policies related to Safeguarding principle to the assessment team. Hence, comment closed. 2. PP has submitted a copy of company's Gender Equality Policy to the assessment team. Hence, comment closed. 3. PP has submitted a copy of company's HSE Policy for commitment to the employee's workplace health & safety during all phases of the project. Hence, comment closed. 4. PP has submitted a copy of the CTOs, EC and forest clearance obtained by project activity. The same is checked by VVB and found correct. Hence, comment closed. 5. PP has submitted an undertaking for anti-corruption. The same is checked by VVB and found correct. Hence, comment closed. 6. PP has submitted an undertaking for anti-child labour. The same is checked by VVB and found correct. Hence, comment closed. 7. PP has submitted the EIA/EC of the project activity as a supporting evidence. The same is checked		

by VVB and found correct. Hence, comment closed.
8. PP has submitted the Consent to operate under the Wáter Act as a supporting evidence. The same is checked by VVB and found correct. Hence, comment closed.
9. PP has submitted the Consent to operate under the Wáter Act as a supporting evidence. The same is checked by VVB and found correct. Hence, comment closed.
10. The project activity is not located in High Conservation Value (HCV) area. The same is cross-checked by VVB and found correct. Hence, comment closed.
11. The justification provided by PP is acceptable. Hence, comment closed.
12. The justification provided by PP is acceptable and cross-checked by the VVB. Hence, comment closed.
13. PP has submitted requisite documents pertaining to the stakeholder consultation to the assessment team, which are found appropriate. Hence, comment closed.

Table 2: FAR from GS preliminary review

Type:	☐ CAR ☐ CL/CR ☐	Number:	
	FAR		
Raised by:		Ref. to checklist in GS4GG PDD:	
Description of the audit finding		Date:	
Documentation provided as evidence by Project Participant			
Auditor's assessment comment		Date:	

Appendix 2: Audit Team CVs

Name	SHORT CV. BACKGROUND INFORMATION
Mr. Pankaj Kumar	Mr. Pankaj Kumar has done M. Sc in Environment Management from Forest Research Institute, Dehradun and B. Sc. (Hons.) in Environment & Water Management from Magadh University, Bihar, India. He has also done Post Graduate Diploma in Environmental Law from NLSIU, Bangalore. He has more than 12 years of working experience in GHG Assessments and has participated during his career in Agencies and DOEs like MITCON, Agrinergy, Carbon Check and is empanelled with Applus+ Certification since 2015 for the performance of CDM/VCS/GS project assessments. He has extensive experience in the Renewable, Waste Management and Energy Demand Scopes of UNFCCC CDM and has done more than 100 Validations and Verifications of PAs and PoAs as Lead Auditor, Technical Expert and Technical Reviewer, mainly in Asia, Africa, USA, Asia Pacific and Americas under CDM, Verified Carbon Standard, Gold Standard & Social Carbon Standard, Brazil. He is an experienced, qualified and result oriented Environment and climate change professional having 16 yrs. of relevant experience in Climate Change (Mitigation & Adaptation), Environmental Due Diligence, Disaster Risk Reduction, Climate finance, adaptation planning, capacity building, validation and verification of GHG project. He can also provide technical support for environmental investigative, remedial projects involving air, water and soil, Waste management, EIA, Environmental Compliance, ISO 14001, OHSAS 18001, GHG accounting (ISO 14064) and Carbon foot printing.
Mr. Sukanta Das	Mr. Sukanta DAS, has done M. SC in (Electronics and Photonics) and M. Tech in (Energy technology) from Tezpur Central University/ Indian Institute of technology Bombay in India. He is a certified lead auditor for ISO 14001 EMS LA and ISO 9001 QMS LA from International registry for Certified Auditors (IRCA) and Certified Lean Management practitioner from Quality Council of India (QCI). He has more than (11) years of working experience at TUV NoRD/ Re-consult/CRA/APPLUS certifications under various categories of projects stating from Renewable to waste to supercritical projects. He was JI/ CDM Lead Assessor in TUV NoRD and was involved in more than 100 CDM validation and verifications activities in Gold Standard, VCS, CDM projects as a team leader/technical reviewer / validator / verifier covering the sectoral scope 1, 13 technical areas 1.2/1.1/13.1. Currently he is associated with True Quality Certifications Private Limited and is empanelled with APPLUS certification to carry out GHG audit.
Mr. Denny Xue	Mr. Denny Xue (Master's Degree in Environmental Engineering, Bachelor's Degree in Thermal Engineering) is an Auditor appointed by Applus+ LGAI for the GHG project assessment, auditing and technical review. He has more than 6 years of work experience in CDM/GS4GG/VCS project assessment and technical review with Applus+. Before he joined Applus+ LGAI, he has been working for Shanghai Chuanji Investment and Management which is a CDM consultancy company as a project manager for CDM project development.