



Monitoring Report

CARBON OFFSET UNIT (CoU) PROJECT



Title: 4.5MW Mini Hydel Power Project
by M/s Gokak Power and Energy Limited

Version 1.0

Date 16/06/2024

First CoU Issuance Period: 06 years, 09 months

Date: 01/04/2016 to 31/12/2022



Monitoring Report (MR) CARBON OFFSET UNIT (CoU) PROJECT

Monitoring Report	
Title of the project activity	4.5 MW Mini Hydel Power Project
UCR Project Registration Number	375
Version	1.0
Completion date of the MR	16/06/2024
Monitoring period number and duration of this monitoring period	Monitoring Period Number: 01 Duration of this monitoring Period: (first and last days included (01/04/2016 to 31/12/2022))
Project participants	NAME OF OWNER: Gokak Power and Energy Limited, #1, 2ndFloor, 12thCross, Ideal Homes, Near Jayanna Circle, Rajarajeshwari Nagar - 560098 AGGREGATOR: Energy Advisory Services Pvt. Ltd. Bangalore, Karnataka. Email: nikhil@easpl.co.in
Host Party	INDIA
Applied methodologies and standardized baselines	Applied Baseline Methodology: AMS-I. D: "Grid connected renewable electricity generation", version 18 Standardized Methodology: Not Applicable.
Sectoral scopes	01 Energy industries (Renewable/Non-Renewable Sources)
Date of commissioning	20.07.2013
Estimated amount of GHG emission reductions for this monitoring period in the registered PCN	
	2016: 9,919 CoUs (9,919 tCO ₂ eq)
	2017: 13,522 CoUs (13522 tCO ₂ eq)
	2018: 15,722 CoUs (15,722 tCO ₂ eq)
	2019: 7,908 CoUs (7,908 tCO ₂ eq)
	2020: 14,821 CoUs (14821 tCO ₂ eq)
	2021: 13,835 CoUs (13835 tCO ₂ eq)
	2022: 14,787 CoUs (14,787 tCO ₂ eq)
Total:	90,514 CoUs (90,514 tCO₂eq)

SECTION A. Description of project activity

A.1. Purpose and general description of project activity >>

The proposed project titled under UCR is “**4.5 MW Mini Hydel Power Project**” by M/s Gokak Power and Energy Limited, which is a hydroelectric power project located at Gokak falls, Gokak Taluk, Belagavi District, Karnataka – 591308 (India). The project is an operational activity with continuous reduction of GHG, currently being applied under “Universal Carbon Registry” (UCR).

a) Purpose of the project activity and the measures taken for GHG emission reductions >>

The main purpose of the project activity is to generate renewable electrical energy through sustainable means without causing any negative impact on the environment, and to contribute to climate change mitigation efforts.

Apart from the generation of electrical power, the project also contributes to the following.

- Sustainable development of the region.
- Rural development, as all the projects are in rural areas.
- Generation of additional employment for the local stakeholders.

The project activity is a renewable power generation activity that incorporates the installation and operation of single hydro turbine, having aggregated installed capacity of 4.5MW in the district of Belagavi in Karnataka, India. This project is promoted by M/s Gokak Power and Energy Limited.

The hydroelectric power plant was commissioned on **20.07.2013** and declared the Commercial Operation Date as 20.07.2013, by Hubli Electricity Supply Company Limited, with whom the Power Purchase Agreement was concluded.

The project activity aims to harness kinetic energy of water (renewable source) from Ghataprabha river to generate electricity. As the nature of the hydro project, no fossil fuel is involved for power generation in the project activity, the electricity produced by the project is directly contributing to climate change mitigation by reducing the anthropogenic emissions of greenhouse gases into the atmosphere by displacing an equivalent amount of power at the grid, which would otherwise have been generated from fossil fuel-based power plants which are connected to the Indian grid system.

The net generated electricity from the project activity is sold to state electricity board through the Power Purchase Agreement (PPA) signed between the project developer and the Hubli Electricity Supply Company.

In pre-project scenario, electricity delivered to the grid by the project activity would have otherwise been generated by the operation of fossil fuel-based grid-connected power plants and by the addition of new generation sources in the grid.

Hence, project activity is displacing the estimated annual net electricity generation i.e., 10,00,000 to 17,00,000 MWh/y from the regional grid, which otherwise would have been generated by the operation of fossil fuel-based grid-connected power plants. The estimated annual average and the total CO₂e emission reductions per year, by the project activity are expected to be around 9,500 to 16,000 tCO₂e/y, depending on the availability of water in the dam.

b) Brief description of the installed technology and equipment>>

The project activity involves one Horizontal Francis Turbine of 4.5MW (4500kW), with alternator, internal electrical lines connected to the 33/110kV substation at Ghataprabha. The generators generate

power at 11 kV, which is stepped up to 33kV using transformer at the generation station. The average life of the generator is around 35 to 40 years as per the equipment supplier specification.

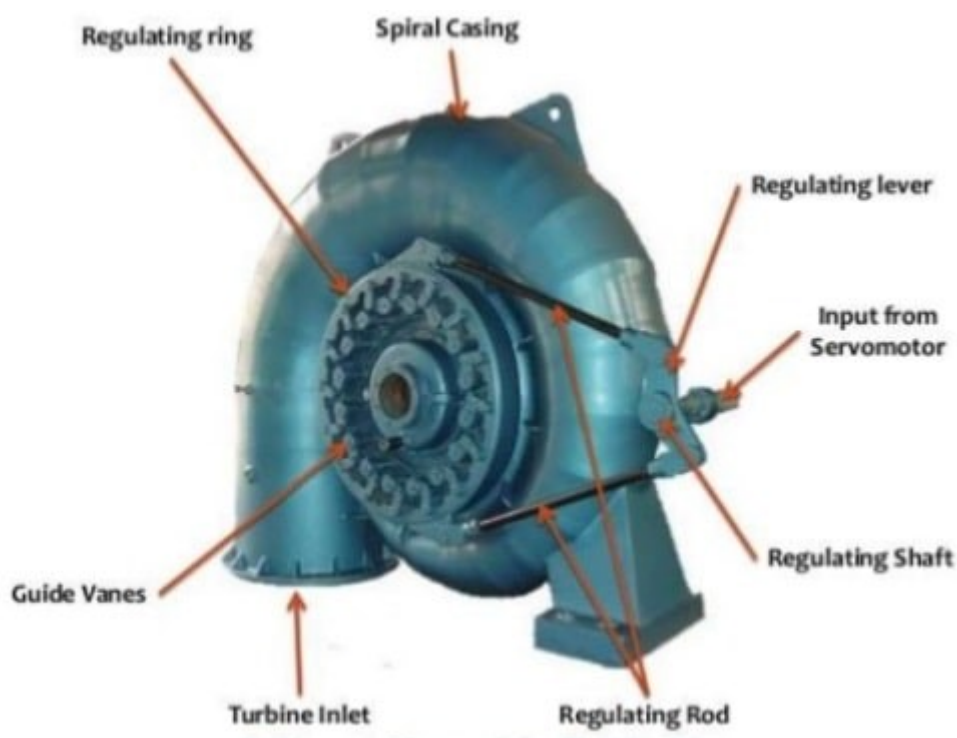


Figure 1 Horizontal Francis turbine

The other salient features of the technology are:

Table 1 Salient features of the hydel turbine

Particular	Value
Turbine	
Make	Boving Fouress Limited
Type	Horizontal Francis Turbine
Rated capacity	4500 kW
Serial number	VFK-244-01
Induction motor	
Make	CG Crompton Greaves
Rated capacity	4,500 kW
Serial number	2075789
Full load efficiency	95.50
Gear box	
Make	Triveni Engineering & Industries Limited
Rated power	4,500 kW
Input /output speed	360/1000 rpm

c) Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods, etc.)>>

	UCR Project ID or Date of Authorization:	
	Start Date of Crediting Period:	01/04/2016
	Project Commissioned:	20/07/2013

d) Total GHG emission reductions achieved or net anthropogenic GHG removals by sinks achieved in this monitoring period>>

The total GHG emission reductions achieved in this monitoring period is as follows:

Table 2 Summary of project activities

Summary of the Project Activity and ERs Generated for the Monitoring Period	
Start date of this Monitoring Period	01/04/2016
Carbon Credits Claimed up to	31/12/2022
Total ERs Generated (tCO ₂ eq)	90,514 tCO ₂ eq
Project Emissions	Nil
Leakage Emissions	Nil
Net ERs Generated (tCO ₂ eq)	90,514 tCO₂eq

e) Baseline Scenario>>

The baseline scenario identified at the PCN stage of the project activity is:

As per the approved consolidated methodology AMS-I.D. Version 18, if the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following: **“The baseline scenario is that the 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 into the grid”.**

Schematic diagram showing the baseline scenario is given below:

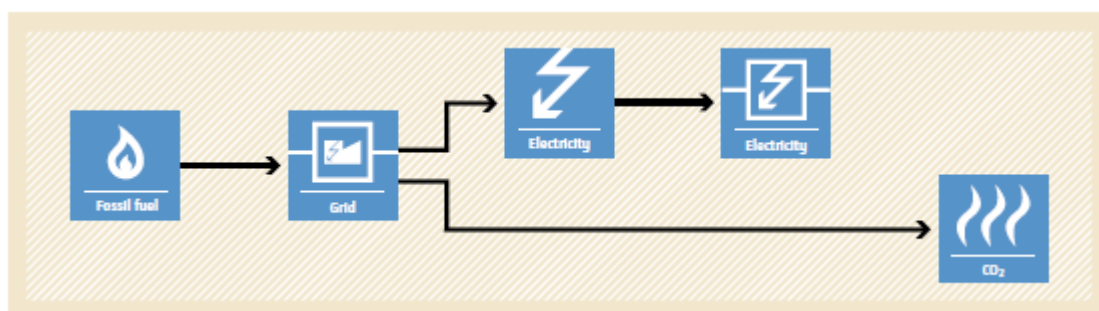


Figure -2 Baseline and project scenario

A.2. Location of project activity>>

Table 3 Location of project site

Country:	INDIA
Village:	Gokak Falls
Tehsil:	Gokak
District:	Belagavi
State:	Karnataka
Pin code	591308
Coordinates	16 ⁰ 11'29" N 74 ⁰ 46'42" E

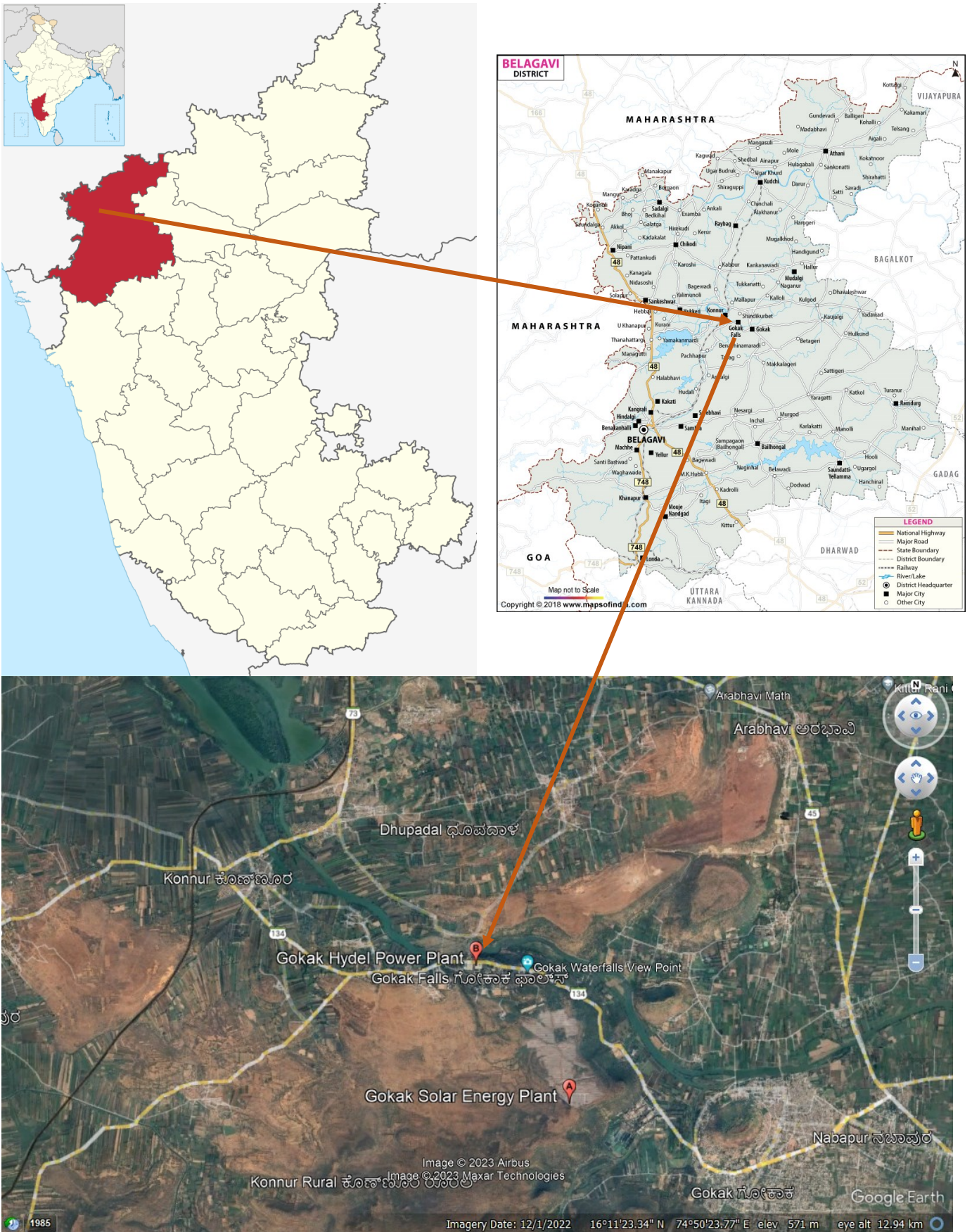


Figure 3 Location of project site

A.3. Parties and project participants >>

Party (Host)	Participants
INDIA	NAME OF OWNER: Gokak Power and Energy Limited, #1, 2ndFloor, 12thCross, Ideal Homes, Near Jayanna Circle, Rajarajeshwari Nagar - 560098 AGGREGATOR: Energy Advisory Services Pvt. Ltd. Bangalore, Karnataka. Email: nikhil@easpl.co.in

A.4. References to methodologies and standardized baselines >>

SECTORAL SCOPE	01, Energy Industries (Renewable/Non-renewable sources)
TYPE	I – Renewable Energy Projects
CATEGORY	AMS. I.D. (Title: “Grid connected renewable electricity generation”, version 18)

A.5. Crediting period of project activity >>

Start date of the crediting period: 01/04/2016

Length of the crediting period corresponding to this monitoring period: 06 years 09 months
01/04/2016 to 31/12/2022 (Both dates are inclusive)

A.6. Contact information of responsible persons/entities >>

Name	: Nikhil Vedprakash
Contact No	: +91 7303201778
E-Mail	: nikhil@easpl.co.in

SECTION B. Implementation of project activity

B.1. Description of implemented registered project activity >>

a) Provide information on the implementation status of the project activity during this monitoring period in accordance with UCR PCN>>

The project consists of one hydro turbine having an installed capacity of 4.5 MW (4500 kW) which was commissioned on 08/03/2013. The project is located at Gokak falls Village, Gokak Taluk, Belagavi District, Karnataka – 591308 (India). M/s GPEL is the owner of this project. The project generates clean energy by utilizing the kinetic energy of flowing water from Ghataprabha river.

b) For the description of the installed technology(ies), technical process and equipment, include diagrams, where appropriate>>

The project activity involves a one horizontal Francis Turbine (1*4500 kW) along with electrical generator, transformers, main inlet valve and related civil works. The generated electricity is evacuated through electrical transmission lines connecting the project activity with a local 33/110 kV electrical grid at Ghataprabha substation. The generators generate power at 11 kV, which is further stepped up to 33 kV. The average life of the generator is around 35 to 40 years as per the equipment supplier specification. The other salient features of the technology are:

The other salient features of the technology are:

Table 4 Salient features of the hydel turbine

Particular	Technical details	Value
Turbine	Horizontal shaft Francis type	Rated output – 4500 kW Design head – 58 m
Generator	Horizontal shaft alternator	Rated capacity @0.9 pf – 5625 kVA
Potential Transformer	Draw out type	3 phase
Main transformer	YNd1 type	

B.2. Do no harm or Impact of the project activity >>

There was no harm identified from the project and hence no mitigations measures are applicable.

Rational: as per ‘Central Pollution Control Board (Ministry of Environment & Forests, Govt. of India)’, final document on revised classification of Industrial Sectors under Red, Orange, Green and White Categories (07/03/2016), it has been declared that hydro project activity falls under the “White category”. White Category projects/industries do not require any Environmental Clearance such as ‘Consent to Operate’ from PCB as such project does not lead to any negative environmental impacts. Additionally, as per Indian Regulation, Environmental and Social Impact Assessment is not required for hydro Projects.

The Government of India has stipulated the following indicators for sustainable development in the interim approval guidelines for such projects which are contributing to GHG mitigations. The Ministry of Environment, Forests & Climate Change, has stipulated economic, social, environmental, and technological well-being as the four indicators of sustainable development. It has been envisaged that the project shall contribute to sustainable development using the following ways:

Social well-being: The project would help in generating direct and indirect employment benefits accruing out of ancillary units for project equipment's and hydro turbines and for maintenance during the operation of the project activity. It will lead to the development of infrastructure around the project area in terms of improved road network etc. and will also directly contribute to the development of renewable infrastructure in the region.

Economic well-being: The project is a clean technology investment decision based on carbon revenue support, which signifies the flow of clean energy investments into the host country. The project activity requires temporary and permanent, skilled and semi-skilled manpower at the project location; this will create additional employment opportunities in the region. The generated electricity will be displacing an equivalent amount of electricity that otherwise would have been generated by fossil fuel sources, thereby reducing grid emission. In addition, improvement in infrastructure will provide new opportunities for industries and economic activities to be set up in the area. Apart from getting better employment opportunities, the local people will get better prices for their land, thereby resulting in overall economic development.

Technological well-being: The project activity employs state of art technology hydro turbines which has high power generation potential. The successful operation of project activity would lead to the promotion of this technology and would further push R&D efforts by technology providers to develop more efficient and better machinery in the future. Hence, the project leads to technological well-being. P

Environmental well-being: The project activity will generate power using zero emissions hydro-based power generation facility which helps to reduce GHG emissions and specific pollutants like SO_x, NO_x, and SPM associated with the conventional thermal power generation facilities. The project utilizes the kinetic energy of flowing water for generating electricity which is a clean source of energy. The project activity will not generate any air pollution, water pollution, or solid waste to the environment which otherwise would have been generated through fossil fuels. Thus, the project causes no negative impact on the surrounding environment contributing to environmental well-being.

The project activity contributes to the following SDGs;

Table 5: Contribution to the SDGs

7 AFFORDABLE AND CLEAN ENERGY 	• The project activity has generated 1,00,574 MWh of clean energy from April 2016 to December 2022, which with increased share will increase the affordability of energy at a cheaper rate to the end user. • The project activity utilizes hydel energy (renewal resource) to generate power. The project activity will increase the share of renewable resource-based electricity in global mix of energy consumption.
8 DECENT WORK AND ECONOMIC GROWTH 	• The project activity generates additional employment for skilled and unskilled workers. The project is situated in a remote area and it will provide employment opportunities to unskilled people from nearby villages. • Training on various aspects including safety, operational issues, and developing skill sets will also be provided to employees. • This project will 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.

	• This hydel power project meets the SDG 13 goal by saving fossil fuel and producing clean energy. • This project has avoided 90,517 tons of CO₂ from April 2016 to December 2022 during this monitoring period. • In a greenfield project, electricity delivered to the grid by the project would reduce the dependence on fossil fuel-based generation units and as there are no associated emissions with this project it contributes to the reduction of greenhouse gases (GHG) emissions.
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B.3. Baseline Emissions>>

The baseline scenario identified at the PCN stage of the project activity is:

- Grid connected renewable energy generation (mini hydro power project)

In the absence of the project activity, the equivalent amount of electricity would have been imported from the grid (which is connected to the unified Indian Grid system), which is carbon intensive due to being predominantly sourced from fossil fuel-based power plants. Hence, the baseline scenario of the project activity is the grid-based electricity system, which is also the pre-project scenario.

Schematic diagram showing the baseline and project scenario are given below:

Baseline Scenario: Electricity would be produced by more GHG intensive means like coal, oil and gas.

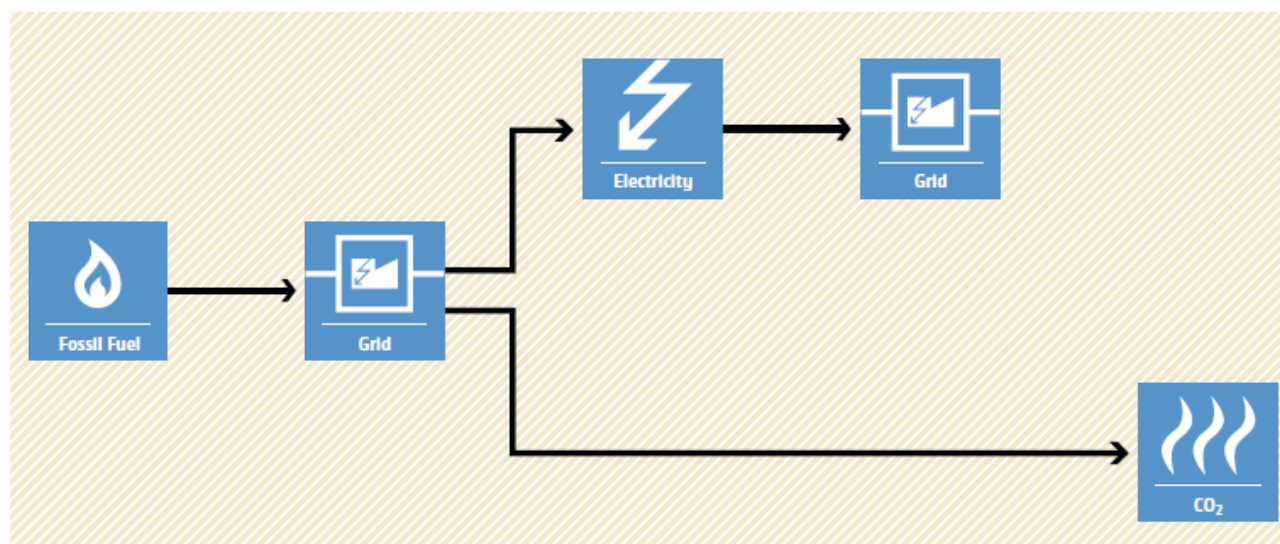


Figure 4-Baseline scenario

Project Scenario: Use of renewable energy technologies for electricity generation, displacing the non-renewable sources

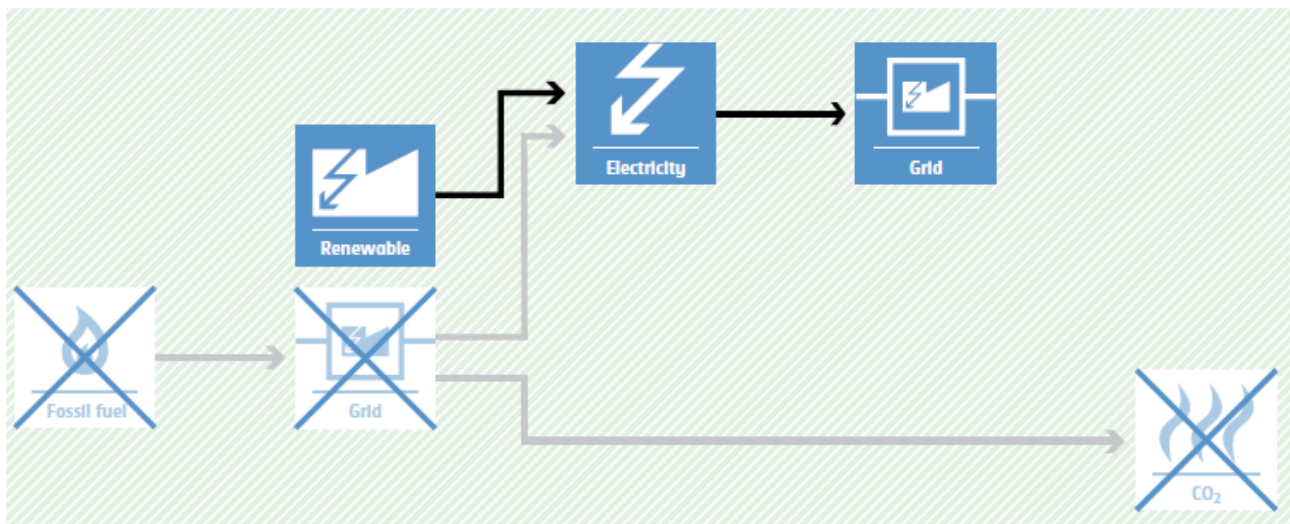


Figure 5-Project scenario

Thus, this project activity was a voluntary investment which replaced equivalent amount of electricity from grid connected power plants. The project proponent was not bound to incur this investment as it was not mandatory by national and sectoral policies. Thus, the continued operation of the project activity would continue to replace thermal energy from non-renewable fuel (coal/oil/gas) and fight the impacts of climate change. The Project Proponent hopes that carbon revenues from 2019-2022 accumulated because of carbon credits generated will help repay the loans and in the continued maintenance of this project activity

B.4. De-bundling>>

This project activity is not a de-bundled component of a larger project activity.

SECTION C. Application of methodologies and standardized baselines

C.1. References to methodologies and standardized baselines >>

SECTORAL SCOPE	01, Energy industries (Renewable/Non-renewable sources)
TYPE	I – Renewable Energy Projects
CATEGORY	AMS. I.D. (Title: “Grid connected renewable electricity generation”, version 18)

C.2. Applicability of methodologies and standardized baselines >>

The project activity involves generation of grid connected electricity from the construction and operation of a new hydro power-based power project. The project activity has installed capacity of 10 MW which will qualify for a small-scale project activity under Type-I of the Small-Scale methodology. The project status is corresponding to the methodology AMS-I.D., version 18 and applicability of methodology is discussed below:

Applicability Criterion	Project Case
1. This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass: (a) Supplying electricity to a national or a regional grid; or (b) Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling.	The project activity is a Renewable Energy Project i.e. Mini Hydel Power. The project activity is a Renewable Energy Project. The net generated electricity from the project activity is sold to state electricity board through the Power Purchase Agreement (PPA) signed between the project developer and the Hubli Electricity Supply Company. Hence it fulfils both the sub-points of criterion 1. Hence the project activity meets the given applicability criterion.
2. This methodology is applicable to project activities that: (a) Install a Greenfield plant; (b) Involve a capacity addition in (an) existing plant(s); (c) Involve a retrofit of (an) existing plant(s); (d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or (e) Involve a replacement of (an) existing plant(s).	The option (a) of applicability criteria 2 is applicable as project is a Greenfield plant/Unit. Hence the project activity meets the given applicability criterion.
3. Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology: (a) The project activity is implemented in existing reservoir, with no change in the volume of the reservoir; or (b) The project activity is implemented in existing reservoir, where the volume of the reservoir(s) is increased and the power	This Mini Hydel Power Project is implemented on an irrigation channel of an existing reservoir with no change in the volume of the reservoir. Thus, criteria 3(a) is applicable.

density as per definitions given in the project emissions section, is greater than 4 W/m². (c) The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the project emissions section, is greater than 4W/m².	
4. If the new unit has both renewable and non-renewable components (e.g., a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the new unit co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW.	The proposed project is 4.5MW Mini Hydel Power Project, i.e., only component is renewable power project below 15MW, thus this criterion is not applicable to this project activity.
5. Combined heat and power (co-generation) systems are not eligible under this category.	The project is Mini Hydel Power Project and thus, this criterion is not applicable to this project activity.
6. In the case of project activities that involve the capacity addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units.	The proposed project is a greenfield 4.5MW Mini-Hydel Power Project, and it does not involve capacity addition to an existing power plant. Thus, this criterion is not applicable to this project activity.
7. In the case of retrofit, rehabilitation or replacement, to qualify as a small-scale project, the total output of the retrofitted, rehabilitated or replacement power plant/unit shall not exceed the limit of 15 MW.	The proposed project is a greenfield 4.5MW Mini Hydel Power Project, i.e., no retrofit, rehabilitation or replacement was done to any existing power plant. Thus, this criterion is not applicable to this project activity.
8. In the case of landfill gas, waste gas, wastewater treatment and agro-industries projects, recovered methane emissions are eligible under a relevant Type III category. If the recovered methane is used for electricity generation for supply to a grid, then the baseline for the electricity component shall be in accordance with procedure prescribed under this methodology. If the recovered methane is used for heat generation or cogeneration other applicable Type-I methodologies such as “AMS- I.C.: Thermal energy production with or without electricity” shall be explored.	The proposed project is a greenfield 4.5MW Mini Hydel Power Project hence, this criterion is not applicable to this project activity.
9. In case biomass is sourced from dedicated plantations, the applicability criteria in the tool “Project emissions from cultivation of biomass” shall apply.	No biomass is involved, the project is only a Mini Hydel Power Project and thus this criterion is not applicable to this project activity.

C.3 Applicability of double counting emission reductions >>

The project was not applied under any other GHG mechanism. Hence project will not cause double accounting of carbon credits (i.e., COUs), due to the following reasons:

- Project is uniquely identifiable based on its location coordinates,
- Project has a dedicated commissioning certificate and connection point,
- Project is associated with energy meters which are dedicated to the consumption point for the project developer.

C.4. Project boundary, sources and greenhouse gases (GHGs)>>

As per applicable methodology AMS-I.D. Version 18, “The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the project power plant is connected to.”

Thus, the project boundary includes the hydropower plant and the transmission line including metering up to the substation.

	Source	GHG	Included?	Justification/Explanation
Baseline	Emissions from grid connected power plants using non-renewable energy sources as fuel	CO ₂	Included	Major source of emission
		CH ₄	Excluded	Negligible source of emission
		NO ₂	Excluded	Minor source of emissions
		Others	Excluded	No other GHG emissions were emitted from the project
Project Activity	Emissions from on-site electricity use	CO ₂	Excluded	Project activity does not emit CO ₂
		CH ₄	Excluded	Project activity does not emit CH ₄
		NO ₂	Excluded	Project activity does not emit NO ₂
		Others	Excluded	Project activity does not emit any other GHG gases

C.5. Establishment and description of baseline scenario (UCR Protocol) >>

As per the approved consolidated methodology AMS-I.D. Version 18, if the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following:

“The baseline scenario is that the 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 into the grid”.

The project activity involves setting up a new hydropower plant to harness the kinetic energy of flowing water. 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. Hence, the baseline for the project activity is the equivalent amount of power produced at the Indian grid.

A "grid emission factor" refers to a CO₂ emission factor (tCO₂/MWh) that will be associated with each unit

of electricity provided by an electricity system. The UCR recommends an emission factor of 0.9 tCO₂/MWh for the 2013 - 2020 years as a conservative estimate for Indian projects not previously verified under any GHG program. Also, for the vintage 2021-2022, the combined margin emission factor calculated from the CEA database in India results in higher emissions than the default value. Hence, the same emission factor has been considered to calculate the emission reduction under a conservative approach.

C.5.1 Net GHG Emission Reductions and Removals >>

Thus, $ER_y = BE_y - PE_y - LE_y$

Where: ER_y = Emission reductions in year y (tCO₂/y)
 BE_y = Baseline Emissions in year y (t CO₂/y)
 PE_y = Project emissions in year y (tCO₂/y)
 LE_y = Leakage emissions in year y (tCO₂/y)

• Baseline Emissions

Baseline emissions include only CO₂ emissions from electricity generation in power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants.

The baseline emissions are to be calculated as follows:

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

BE_y = Baseline emissions in year y (t CO₂)

$EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh)

$EF_{grid,y}$ = UCR recommended emission factor of 0.9 tCO₂/MWh has been considered. (Reference: General Project Eligibility Criteria and Guidance, UCR Standard, page 4)

• Baseline Emissions Calculation

Sr No	Year	$EG_{PJ,y}$ (MWh)	$EF_{grid,y}$	BE_y
1	2016	11,021.11	0.9	9,919
2	2017	15,024.44	0.9	13,522
3	2018	17,468.88	0.9	15,722
4	2019	8,786.66	0.9	7,908
5	2020	16,467.77	0.9	14,821
6	2021	15,372.22	0.9	13,835
7	2022	16,430	0.9	14,787
	tCO₂ for the period April 2016 to December 2022			90,514

• Project Emissions Calculation

As per Paragraph 39 of AMS-I.D. version-18, only emissions associated with fossil fuel combustion, emissions from the operation of geothermal power plants due to the release of non-condensable gases, and emissions from a water reservoir of hydro should be accounted for the project emission. Since the project activity is a hydroelectric power project, project emission for renewable energy plants is nil.

Thus, PE = 0

• Leakage Emission Calculation

As per paragraph 42 of AMS-I.D. version-18, 'If the energy generating equipment is transferred from another activity, leakage is to be considered.' In the project activity, there is no transfer of energy generating equipment and therefore the leakage from the project activity is considered zero.

Hence, LE = 0

• Net Emission

The actual emission reduction achieved during the first CoU period shall be submitted as a part of the first monitoring and verification. However, for the purpose of an ex-ante estimation, the following calculation has been submitted:

Hence,

Net GHG emission reduction,

$$= 90,514 - 0 - 0$$

$$= 90,514 \text{ tCO}_2 \text{ (i.e., 90,514 CoUs) (from April 2016 to December 2022)}$$

C.6. Prior History>>

The project activity is a small-scale hydro project and had registered and submitted the project design document to clean development mechanism (CDM) executive board in November 2013. However, PP have not undertaken any activities to avail the benefits under this scheme. Also, project owner shall not be interested to avail any benefit from CDM program. <https://cdm.unfccc.int/Projects/Validation/DB/RPFQU7F8W7UMER44SYW9C2XH3O2F9H/view.html>

Hence the project will not cause double accounting of carbon credits (i.e., CoUs).

C.7. Monitoring period number and duration>>

First Issuance Period: 06 years, 09 months – 01/04/2016 to 31/12/2022

C.8. Changes to start date of crediting period >>

There is no change in start date of crediting period.

The crediting period under UCR has been considered from April 2016.

C.9. Permanent changes from PCN monitoring plan, applied methodology or applied standardized baseline >>

Not applicable.

C.10. Monitoring plan>>

Data and Parameters available (ex-post values):

Parameter	<i>EG_{PJ,y}</i>
Data unit	MWh
Description	Quantity of net electricity generation that is produced and fed into the grid because of the implementation of this project activity in year y.
Source of data Value(s) applied	Monthly Electricity Logbook maintained at each Power Plant
Procedures	The Net electricity generation by the hydro power plant is recorded at the sub-station. At the end of every month Electricity generation report is generated based on the total monthly electricity exported to the grid or consumed by the nearby local community.
Monitoring frequency	Monthly
Purpose of data	To calculate the baseline emission

Parameter	<i>EF_{grid,y}</i>
Data and Parameters available at validation (ex-ante values)	UCR recommended emission factor
Data unit	tCO ₂ /MWh
Description	A "grid emission factor" refers to a CO ₂ emission factor (tCO ₂ /MWh) which will be associated with each unit of electricity provided by an electricity system. The UCR recommends an emission factor of 0.9 tCO ₂ /MWh for the 2013 - 2021 years as a conservative estimate for Indian projects not previously verified under any GHG program. Hence, the same emission factor has been considered to calculate the emission reduction under conservative approach.
Source of data	https://cea.nic.in/wp-content/uploads/baseline/2023/01/Approved_report_emission_2021_22.pdf and UCR Document
Value applied	0.9
Measurement methods and procedures	-
Monitoring frequency	Ex-ante fixed parameter
Purpose of Data	For the calculation of Emission Factor of the grid

Additional Comment	The combined margin emission factor as per CEA database (current version 18, Year 2022) results into higher emission factor. Hence for 2022 vintage UCR default emission factor remains conservative.
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Data/Parameter	Date of commissioning of the units
Data unit	Date
Description	Actual date of commissioning of the project unit
Source of data Value(s) applied	Commissioning report issued by State grid transmission corporation or State electricity board
Measurement methods and procedures	The construction processes are maintained from its initiation to completion dates for the biogas unit. Thus, the start date of each of the unit installed is recorded in the monitoring report.
Monitoring frequency	As and when commissioned and fixed and recorded in the monitoring report
Purpose of data	To estimate baseline emissions