Monitoring Report

CARBON OFFSET UNIT (CoU) PROJECT

Title: 11.998 MW bundle of Small Scale Hydro Power project by Government of Arunachal Pradesh

Version 1.0

Date: 16-10-2023

Second CoU Issuance Period: 1 year

Monitoring Period: 01/01/2022 to 31/12/2022

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

Monitoring Report	
Title of the project activity	11.998 MW bundle of Small Scale Hydro Power project by Government of Arunachal Pradesh
UCR Project Registration Number	090
Version	1.0
Completion date of the MR	16/10/2023
Monitoring period number and duration of this monitoring period	Monitoring Period Number: 02 Duration of this monitoring Period: 1 year (first and last days included (01/01/2022 to 31/12/2022)
Project participants	Creduce Technologies Private Limited (Representator) Government of Arunachal Pradesh (Project Proponent)
Host Party	India
Applied methodologies and standardized baselines	Applied Baseline Methodology: AMS-I.D.: "Grid connected renewable electricity generation", Version 18
Sectoral scopes	01 Energy industries (Renewable/Non-Renewable Sources)
Estimated amount of GHG emission reductions for this monitoring period in the registered PCN	8,308 CoUs (8,308 tCO_2eq)

SECTION A. Description of project activity

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

The proposed project activity with title under UCR "11.998 MW bundle of Small Scale Hydro Power project by Government of Arunachal Pradesh", comprises of 19 Micro and Small Scale hydel projects in the state of Arunachal Pradesh in India. The project is an operational activity with continuous reduction of GHG, currently being applied under "Universal Carbon Registry" (UCR). These projects are run-of river projects.

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

The project activity aims to harness kinetic energy of water (renewable source) to generate electricity. The net generated electricity from the project activity is delivered to the villages in the vicinity, through a mix of National and Regional transmission networks and will also supply power to different commercial customers in the region. In the 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 fossil fuel-based generation sources in the grid. Currently, NEWNE grid is connected to large numbers of fossil fuel-based power plants. Hence, project activity is displacing the gross electricity generation i.e., 9,232 MWh from the NEWNE grid. The project activity doesn't involve any GHG emission sources. The annual and the total CO_2e emission reduction by the project activity over the defined monitoring period is as per **Annexure I.**

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

The project activity involves various technologies of hydro turbine generators with internal electrical lines connecting the project activity with local evacuation facility. The aggregated installed capacity of the bundle of power plants sums up to 11.998 MW (i.e., 11,998 kW).

The Project activity comprises of the following different civil structures, combinedly known as hydro power plant. The kinetic energy of water flowing from river is converted into mechanical energy using hydraulic turbine, which is then converted into electrical energy using generator. The water used in this process is again diverted to the river stream through proper arrangements.
Below is the description of different components of a hydro power plant.

1. **Diversion structure (trench weir):** A diversion structure is required across the Nallah for diverting its water for power generation. The Nallah bed consists of pebbles, gravels and boulders.
2. **Intake/Power Channel:** The water fed from Desilting tank is led to tunnel inlet portal through a Rectangular R.C.C channel also known as Intake or Power Channel.
3. **Desilting Tank:** A Desilting chamber is considered necessary to remove silt particles to minimize the abrasion effects on the turbine runners.
4. **Penstock:** Water from Forebay is being taken to the Powerhouse to run hydraulic turbine through pressurized penstock pipe running from Forebay tank.
5. **Power House Building:** Power house building is a simple structure housing the generating units, auxiliary equipment, control panels and suitable outlet for tail water discharge.
6. **Tail Race Channel:** Turbine discharge shall be disposed to river through the separate tailrace channel.

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

The duration of the crediting period corresponding to the monitoring period is covered in this monitoring report.

UCR Project ID	:	090
Start Date of Crediting Period	:	01/01/2022
The project was commissioned on	:	As per Table below

Sr. No	Project Name	Capacity (in kW)	C.O.Y
1.	Tato MHS (2 x 50 kW + 2 x 20 kW)	50	2004-05
2.	Mechuka MHS (6 x 25 kW)	250	2005-06
3.	Yapak Nallah MHS (2 x 100 kW)	200	2005-06
4.	Liromoba MHS (2 x 1000 kW)	2000	2008-09
5.	Kamba SHP (3 x 2000 kW)	6000	2008-09
6.	Yingko Sikong MHS at Rapum (1 x 50 kW)	50	2009-10
7.	Krawti Nallah MHS (2 x 50 kW)	100	2009-10
8.	Teepani MHS (2 x 250 kW)	500	2009-10
9.	Tinning MHS (2 x 25 kW)	60	2010-11
10.	Solegamang MHS (1 x 50 kW)	50	2011-12
11.	Jongkey Nallah MHS (1 x 50 kW)	25	2011-12
12.	Chicklong MHS (2 x 75 kW)	150	2011-12
13.	Sirikorang MHS (2 x 250 kW)	500	2013-14
14.	Kachopani MHS (2 x 100 kW)	200	2014-15
15.	Namchik MHS Ph-II (2 x 150 KW)	300	2019-20
16.	Tissue MHS Ph-II (2 x 250 kW)	500	2020-21
17.	Sisir Nallah MHS (8 kW)	8	2021
18.	Namchik Phase - I MHS (2 x 250 kW)	500	2021
19.	MATINALLAH MHS (500 + 50 kW)	550	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:

Summary of the Project Activity and ERs Generated for the Monitoring Period	
Start date of this Monitoring Period	01/01/2022
Carbon credits claimed up to	31/12/2022
Total ERs generated (tCO_2eq)	8,308 tCO_2eq
Leakage	0

e) Baseline Scenario>>

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".**

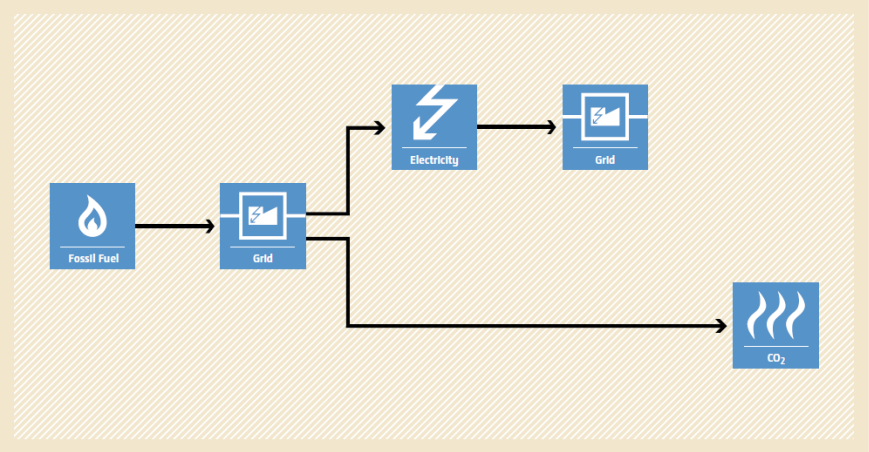


Figure 1 Baseline Scenario

A.2. Location of project activity>>

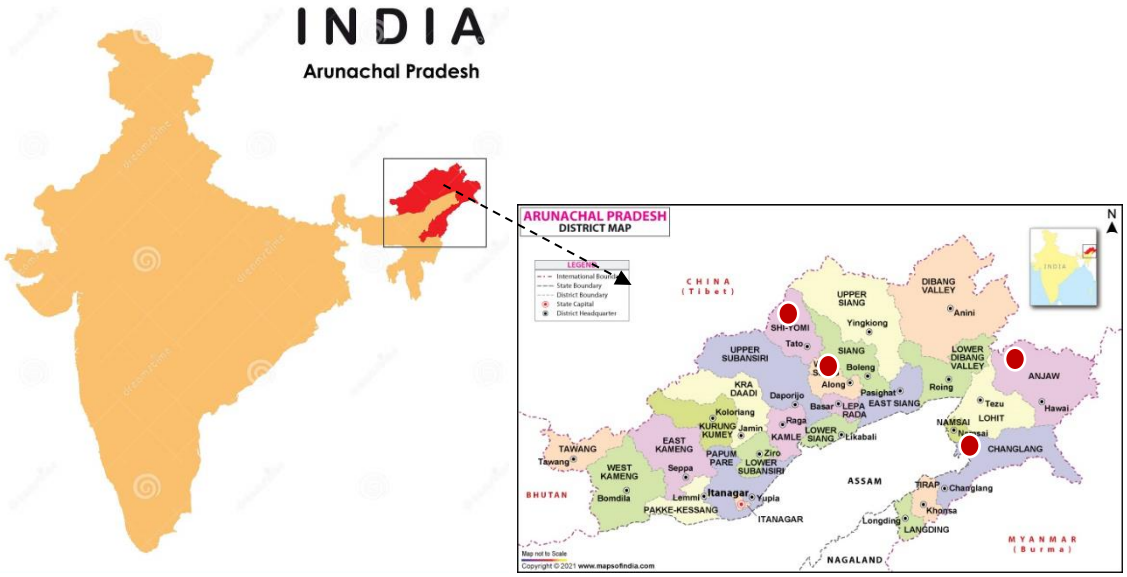
Country : India

State : Arunachal Pradesh

District : West Siang, Shi Yomi, Changlang, Anjaw

Below table contains location details of the projects.

Sr. No.	Project Name	Latitude and Longitude	Village	Town/City	District
1	Kamba SHEP	28.296175 N, 94.655766 E	Goli Balek Village	Kamba	West Siang
2	Liromoba MHS	28°5'48.84" N, 94°28'52.70" E	Ligo Village	Liromoba	West Siang
3	Mechuka MHS	28°35'9.32"N, 94°7'39.11"E	Mechuka	Mechuka	Shi Yomi
4	Tato MHS	28°30'50.1"N, 94°21'35.44"E	Tato	Tato	Shi Yomi
5	Solegamang MHS	28°33'38.44"N, 94°10'59.96"E	Lingdungloti	Mechuka	Shi Yomi
6	Yingko Sikong MHS	28°32'11.22"N, 94°15'36.1"E	Rapum	Mechuka	Shi Yomi
7	Sisir Nallah MHS	28°29'57.48"N, 94°25'2.5"E	Tadogitu	Tato	Shi Yomi
8	Sirikorang MHS	28°38'38.3"N, 94°4'43.5"E	Lhallung	Mechuka	Shi Yomi
9	Namchik Phase - I MHS	27°24' 03"N, 96°11' 10" E	Renuk	Manmao	Changlang
10	Namchik Phase - II MHS	27°17' 01"N, 96°07' 14" E	Renuk	Manmao	Changlang
11	Tissue Ph-II MHS	27°60'20.63"N, 95°44'14.95"E	Jungsam	Changlang	Changlang
12	Tinning MHS	27°9'23.24"N, 95°47'2.28"E	Lunglung	Changlang	Changlang
13	Jongkey Nallah MHS	27°7'N, 95°41'E	Sumlam	Changlang	Changlang
14	Chicklong MHS	27°0'30.97"N, 95°44'54.31"E	Hanalthung	Changlang	Changlang
15	Matinallah MHS	27°53'33"N, 96°49'55"E	Chequenty	Hawai	Anjaw
16	Yapak Nallah MHS	28°06'22"N, 97°00'02"E	Yapak	Walong	Anjaw
17	Krawti Nallah MHS	28°13'50"N, 97°01'20"E	Krawti	Kibithoo	Anjaw
18	Kachopani MHS	25º 35’ N, 96º 20’ E	Taflagam	Chaglagam	Anjaw
19	Teepani MHS	28º 30' N, 95º 20' E	Chipro	Hayuliang	Anjaw



Project Site

A.3. Parties and project participants >>

Party (Host)	Participants
India	**Creduce Technologies Private Limited (Representator)** Contact person: Shailendra Singh Rao Mobile: +91 9016850742, 9601378723 Address: 2-O-13,14 Housing Board Colony, Banswara, Rajasthan - 327001, India. **Government of Arunachal Pradesh (Developer)** Address: Vidyut Bhawan, Itanagar, Arunachal Pradesh 791111, India.

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

SECTORAL SCOPE - 01 Energy industries (Renewable/Non-Renewable Sources)

TYPE - Renewable Energy Projects

CATEGORY - AMS-I. D: "Grid connected renewable electricity generation", Version 18

A.5. Crediting period of project activity >>

Start date : 01/01/2022
Crediting period corresponding to this monitoring period : 1 year
01/01/2014 to 31/12/2021 (Both the dates are inclusive)

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

Name : Shailendra Singh Rao
Contact No : +91 9016850742, +91 9601378723
E-Mail : shailendra@creduce.tech

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 technical details of the project activity can be found out in **Annexure-II** attached with the document.

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

The technical details of the project activity can be found out in **Annexure-II** attached with the document.

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

Indian economy is highly dependent on "Coal" as fuel to generate energy and for production processes. Thermal power plants are the major consumers of coal in India and yet the basic electricity needs of a large section of population are not being met. This results in excessive demands for electricity and places immense stress on the environment.
Changing coal consumption patterns will require a multi-pronged strategy focusing on demand, reducing wastage of energy and the optimum use of renewable energy (RE) sources. This project is a greenfield activity where grid power is the baseline. The renewable power generation is gradually contributing to the share of clean & green power in the grid; however, grid emission factor is still on higher side which defines grid as distinct baseline.
The Government of India has stipulated following indicators for sustainable development in the interim approval guide lines for such projects which are contributing to GHG mitigations. The Ministry of Environment, Forests & Climate Change, has stipulated economic, social, environment 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 implementation of the Hydro Turbine Generator and for maintenance during operation of the project activity. It will lead to 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.

Environmental well-being: The project utilizes Hydro energy 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. Also, it will contribute to reduction GHG emissions. Thus, the project causes no negative impact on the surrounding environment contributing to environmental well-being.

Economic well-being: Being a renewable resource, using Hydro energy to generate electricity contributes to conservation precious natural resources. The project contributes to the economic sustainability through promotion of decentralization of economic power, leading to diversification of the national energy supply, which is dominated by conventional fuel based generating units. Locally, improvement in infrastructure will provide new opportunities for industries and economic activities

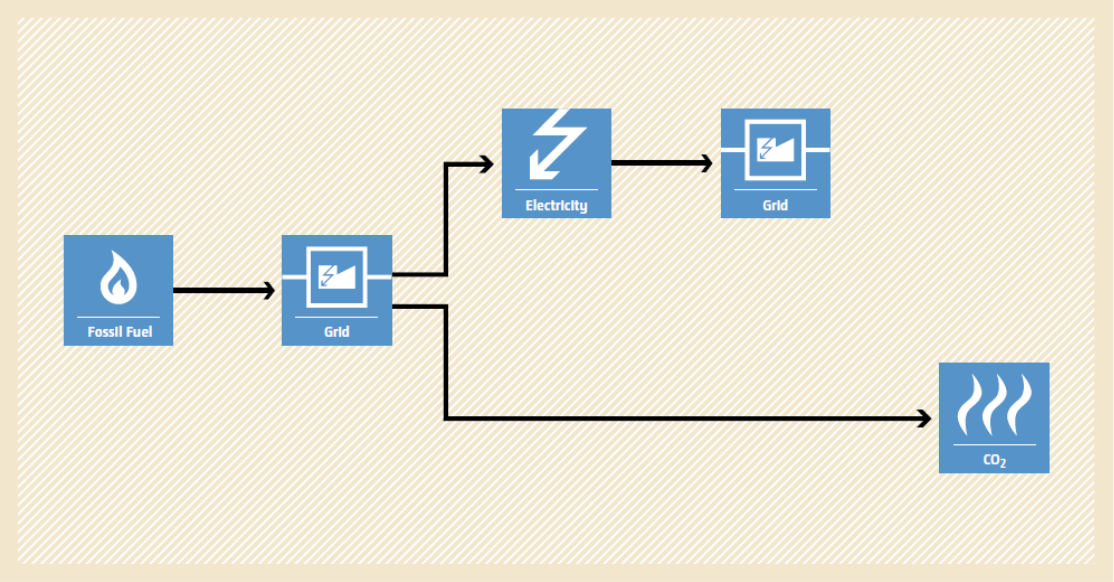
to be setup in the area. Apart from getting better employment opportunities, the local people will get better prices for their land, thereby resulting in overall economic development.

Technological well-being: The project activity leads to the promotion of Hydro Turbine Generator into the region and will promote practice for small scale industries to reduce the dependence on carbon intensive grid supply to meet the captive requirement of electrical energy and also increasing energy availability and improving quality of power under the service area. Hence, the project leads to technological well-being.

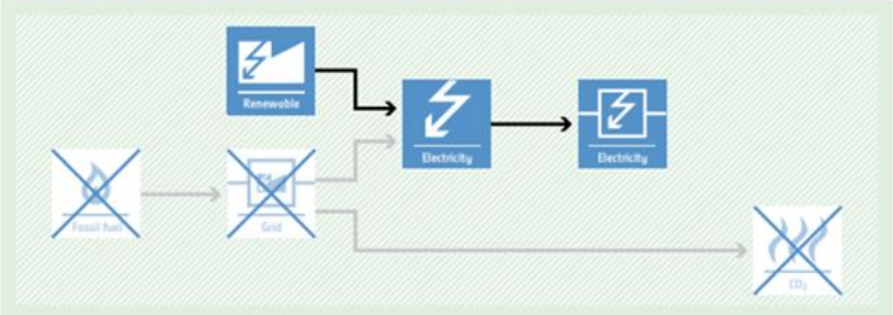
B.3. Baseline Emissions>>

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

Baseline Scenario:



Project Scenario:



Thus, this project activity was a voluntary investment which replaced equivalent amount of electricity from the Indian grid. 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 fossil fuel-based power plants and fight against the impacts of climate

change. The Project Proponent hopes that carbon revenues from 2022 as a result of carbon credits generated will help repay the loans and help in the continued maintenance of this project activity.

B.4. Debundling>>

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.

Applied Baseline Methodology: AMS-I.D**.** "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 project for selling it to National and Regional grid. The project activity has installed aggregated capacity of 11.998 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 which falls under applicability criteria option 1 (a) i.e., "Supplying electricity to a national or a regional grid". 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 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 4 W/m2.	It is run of river type of project; hence, this criterion is not applicable.
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 11.998 MW Hydro Power Projects, 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 Hydro Power Project and thus, the 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 11.998 MW Hydro Power Projects, i.e., no capacity addition was done to any 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 11.998 MW Hydro Power Projects, 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	The proposed project is a greenfield 11.998 MW hydro power projects hence, this criterion is not applicable to this project activity.

electricity" shall be explored.	
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 Hydro Power Project and thus the 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).

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."**

Thus, the project boundary includes the Hydro Turbine Generator and the Indian grid system.

Source		**Gas**	**Included?**	**Justification/Explanation**
Baseline	Grid connected electricity generation	**CO_2**	**Yes**	**CO2 emissions from electricity generation in fossil fuel fired power plants**
		CH_4	No	Minor emission source
		N_2O	No	Minor emission source
		Other	No	No other GHG emissions were 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_2O	No	Project activity does not emit N_2O
		Other	No	No other emissions are emitted from the project

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

As per para 19 of 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 of a new hydro power plant to harness the green power from hydro energy and to use for sale to national grid i.e., India grid system through PPA arrangement. In the absence of the project activity, the equivalent amount of power would have been generated by the operation of grid-connected fossil fuel-based power plants and by the addition of new fossil fuel-

based generation sources into the grid. The power produced at grid from the other conventional sources which are predominantly fossil fuel based. 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 CO_2 emission factor (tCO_2/MWh) which will be associated with unit of electricity provided by an electricity system. For the vintage 2022, the combined margin emission factor calculated from CEA database in India results into higher emission factors. The UCR recommends an emission factor of 0.9 tCO_2/MWh for the year 2022 as a fairly conservative estimate.

Net GHG Emission Reductions and Removals

$ER_y = BE_y - PE_y - LE_y$

Where:

ER_y = Emission reductions in year y (tCO_2/y)
BE_y = Baseline emissions in year y ($t CO_2/y$)
PE_y = Project emissions in year y (tCO_2/y)
LE_y = Leakage emissions in year y (tCO_2/y)

Baseline Emissions

Baseline emissions include only CO_2 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:

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

Where:

BE_y	=	Baseline emissions in year y (tCO_2)
$EG_{PJ,y}$	=	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of this project activity in year y (MWh)
$EF_{grid,y}$	=	UCR recommended emission factor of 0.9 tCO_2/MWh has been considered, this is conservative as compared to the combined margin grid emission factor which can be derived from Database of Central Electricity Authority (CEA), India. (Reference: General Project Eligibility Criteria and Guidance, UCR Standard, page 4)

Hence,

BEy = 9,232 x 0.9 = 8,308 tCO2eq (as per ANNEXURE I (Emission Reduction Calculation))

Project Emissions

As per paragraph 39 of AMS-I.D., for most renewable energy project activities emission is zero. Since the project activity is run of river type Hydro Power Plant Installation, project emission for this plant is nil.

Hence,

PEy = 0

Leakage Emissions

As per paragraph 42 of AMS-I.D. Version-18, all projects other than Biomass projects have zero leakage.

Hence,

LEy = 0

Total Emission reduction by the project for the current monitoring period is calculated as below:

Hence,

ERy = 8,308 – 0 – 0 = 8,308 CoUs

C.6. Prior History>>

The project activity is a small-scale hydro project and was not applied under any other GHG mechanism prior to this registration with UCR. Also, project has not been applied for any other environmental crediting or certification mechanism. Hence project will not cause double accounting of carbon credits (i.e., COUs).

C.7. Monitoring period number and duration>>

First Monitoring Period : 1 year
01/01/2022 to 31/12/2022 (inclusive of both dates)

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

Crediting period start date is 01/01/2022.

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

There are no permanent changes from registered PCN monitoring plan and applied methodology.

C.10. Monitoring plan>>

The project activity essentially involves generation of electricity from water, the employed Hydro Power Plant can only convert Hydro energy into electrical energy and cannot use any other input fuel for electricity generation, thus no special ways and means are required to monitor leakage from the project activity. The recording of the electricity fed to the state utility grid is carried out jointly at the incoming feeder of the state power utility (DHPD).

Parameter	$EG_{PJ,y}$
Data unit	MWh
Description	Quantity of net electricity generation that is produced and fed into the grid as a result 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 nearby local community.
Monitoring frequency	Monthly
Purpose of data	To Calculate Baseline Emission

Data / Parameter	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 unit of electricity provided by an electricity system. The UCR recommends an emission factor of 0.9 tCO_2/MWh for the year 2022 as a fairly conservative estimate Hence, the same emission factor has been considered to calculate the emission reduction under a conservative approach.
Source of data	https://a23e347601d72166dcd6-16da518ed3035d35cf0439f1cdf449c9.ssl.cf2.rackcdn.com//Documents/UCRStandardJan2022updatedVer3_180222035328721166.pdf
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.

ANNEXURE I (Emission Reduction Calculation)

11.998 MW bundle of Small Scale Hydro Power project by Government of Arunachal Pradesh

Month - Wise Energy Delivered to Grid (in kWh)

Month	Tato MHS	Mechuka MHS	Yapak Nallah MHS	Liromoba MHS	Kamba SHP	Yingko Sikong MHS	Krawti Nallah MHS	Teepani MHS	Tinning MHS	Solegaang MHS	Jongkey Nallah MHS	Chicklong MHS	Sirikorang MHS	Kachopani MHS	Namchik MHS Ph-II	Tissue MHS Ph-II	Sisir Nallah MHS	Namchik Phase - I MHS	MATINALLAH MHS
Jan-22	10931	10356	80088	0	218600	3465	19888	45997	3073	2689	0	0	90468	28526	1905	4234	2356	3498	126974
Feb-22	0	10125	84506	0	200600	2987	21931	69704	232	2793	0	0	78345	17797	0	0	1978	10587	114722
Mar-22	0	11653	81652	0	227100	3162	23678	75046	0	2936	0	0	125783	26972	0	0	2036	294	102368
Apr-22	2164	0	68486	0	192000	2983	20130	36011	1294	3135	986	4185	149878	0	0	31470	1984	11805	116396
May-22	34566	28756	55656	0	174150	3142	24429	65905	2226	3026	1435	7483	152364	0	0	11158	2130	10372	81089
Jun-22	33639	33463	54796	0	207000	2974	20648	91085	1216	2936	2328	12201	153684	15905	0	56122	2038	1370	83494
Jul-22	34312	33463	33194	0	316300	2983	16780	109674	1631	2975	1051	7994	142362	25501	0	134493	2136	0	77950
Aug-22	32865	33463	51471	0	366855	2876	17352	103516	3490	2749	3595	12026	144261	24879	0	138370	2036	0	88178
Sep-22	9423	33463	46830	0	306140	2743	22298	123215	4361	2835	2205	13875	126452	26064	0	135618	2036	0	87639
Oct-22	0	33463	51603	0	155654	2894	19325	74904	3480	2896	1768	14404	128232	22589	0	116710	2135	0	88389
Nov-22	0	33463	80183	0	220900	2967	21708	68450	504	2569	3453	17021	112632	22836	0	84926	2246	0	93790
Dec-22	0	1436	80478	0	287380	3126	22429	47817	0	2732	557	16720	113695	21760	0	93996	2164	0	108116
Total	**157900**	**263104**	**768943**	**0**	**2872679**	**36302**	**250596**	**911324**	**21507**	**34271**	**17378**	**105909**	**1518156**	**232829**	**1905**	**807097**	**25275**	**37926**	**1169105**

Year-Wise Emission reduction calculation for the project activity

Year	Total No. of Electricity delivered in kWh	Recommended emission factor tCO2/MWh	Total CoUs generated
2022	9232206	0.9	8,308
Total CoUs to be issued for the Second monitoring period (Year: 2022)			8,308

ANNEXURE-II (Technical Specification and Commissioning Details of each unit of the projects)

Project Name	Kamba SHEP			Liromoba MHS		Mechuka MHS					
Unit No.	1	2	3	1	2	1	2	3	4	5	6
Capacity (in kW)	2000	2000	2000	1000	1000	25	25	25	25	25	25
Type of Turbine	Francis Turbine			Francis Turbine		Propeller Type (Kaplan)					
Date of Comission	10-04-2010			08-06-2009		12-05-2015					
Main Meter Serial No.	2318695	2318693	2318694	CE-03031M	-	NF29	NF30	NF31	NF32	NF33	NF34
Main Meter Make	ABB	ABB	ABB	CABS Electra	-	Trinity	Trinity	Trinity	Trinity	Trinity	Trinity

Project Name	Tato MHS				Solegamang MHS	Yingko Sikong MHS	Sisir Nallah MHS	Sirikorang MHS		Namchik Phase - I MHS	
Unit No.	1	2	3	4	1	1	1	1	2	1	2
Capacity (in kW)	50	50	20	20	50	50	8	250	250	250	250
Type of Turbine	Propeller Type (Kaplan)				Crossflow	Crossflow	Pelton Wheel	Horizontal Francis		Horizontal Francis	
Date of Comission	12-04-2014				23-07-2013	25-07-2013	28-04-2021	14-08-2013		2021	
Main Meter Serial No.	DT-108	DT-109	DT-110	DT-111	NH2331	BEM-34	MFM383A	EM6436	EM6438	-	-
Main Meter Make	Nippen	Nippen	Nippen	Nippen	Trinity	Bentex RK	Selec	Schneider	Schneider	-	-

Project Name	Namchik Phase - II MHS		Tissue Ph-II MHS		Tinning MHS		Jongkey Nallah MHS	Chicklong MHS	
Unit No.	1	2	1	2	1	2	1	1	2
Capacity (in kW)	150	150	250	250	25	25	50	75	75
Type of Turbine	Crossflow	Crossflow	Horizontal Francis		Crossflow	Crossflow	Crossflow	Crossflow	Crossflow
Date of Comission	2019		07-09-2020		22-07-2014		26-09-2012	26-09-2012	26-09-2012

Project Name	MATINALLAH MHS			YAPAK NALLAH MHS		KRAWTI NALLAH MHS		KACHOPANI MHS		TEEPANI MHS	
Unit No.	1	2	3	1	2	1	2	1	2	1	2
Capacity (in kW)	250	250	50	100	100	50	50	100	100	250	250
Type of Turbine	Turgo Jet	Pelton	Axial	Horizontal Francis		Crossflow	Crossflow	Horizontal Francis		Horizontal Francis	
Date of Comission	2005	2018	2018	2006		2011	2011	01-08-2014		01-07-2009	