



Monitoring Report

CARBON OFFSET UNIT (CoU) PROJECT



1.50 MW bundled Solar PV projects in Dhar Tatoh, Distt. Bilaspur, Himachal Pradesh, India

Version 2.0

Date 26/05/2022

First CoU Issuance Period: 1 Year, 7 Months and 13 Days

Monitoring Period: 18/09/2020 to 30/04/2022



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

Monitoring Report	
Title of the project activity	1.50 MW bundled Solar PV project in Dhar Tatoh, Distt. Bilaspur, Himachal Pradesh, India
UCR Project Registration Number	139
Version	2.0
Completion date of the MR	26/05/2022
Monitoring period number and duration of this monitoring period	Monitoring Period Number: 01 Duration of this monitoring Period: (first and last days included (18/09/2020 to 30/04/2022))
Project participants	1. Dhar Solar Plant: Prop. M/s Ankit Singh, V.P.O Dhar Tatoh, Tehsil Sadar, Distt. Bilaspur (H.P.)-174001 (Developer) 2. Bhandari Ram Solar Plant: Prop. M/s Narendra Devi, VPO Dhar Tatoh, Tehsil Sadar, Distt. Bilaspur, (H.P.) -174001 (Developer) 3. Sankhyan Solar Plant: Prop. M/s Abhishek Sankhyan, VPO Dhar Tatoh, Tehsil Sadar, Distt. Bilaspur (H.P.)-174001 (Developer)
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	2020: 791 CoUs (791 tCO ₂ eq)
	2021: 2373 CoUs (2373 tCO ₂ eq)
	2022: 791 CoUs (791 tCO ₂ eq)
	Total: 3955 CoUs (3955 tCO₂eq)

SECTION A. Description of project activity

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

This project activity with title under UCR “1.50 MW bundled Solar PV project in Dhar Tatoh, Distt. Bilaspur, Himachal Pradesh, India”, is a grid connected bundled activity of three solar projects, which is a renewable power generation activity incorporates installation and operation of Solar Photovoltaic power generation project in district Bilaspur, Himachal Pradesh, India. Each project has 0.50 MW capacity, aggregated to 1.50 MW installed capacity of this bundled activity. 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 project activity aims to harness Solar radiation of sun which is a renewable source, to generate electricity. The net generated electricity from the project activity is sold to state electricity board i.e., Himachal Pradesh State Electricity Board Limited (HPSEBL) under the Power Purchase Agreement (PPA) signed between the Project Proponent (PP) and the utility. 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 fossil fuel-based generation sources in the grid. Currently, Indian grid is connected to large numbers of fossil fuel-based power plants. Hence, instead of fossil fuel based plants, this project activity has provided clean electricity i.e., 1539.934 MWh to the Indian grid since commissioning till 30.04.2022. The project activity doesn't involve any GHG emission sources. The annual and the total CO₂e 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 three Ground Mounted PV Plant having capacity of 0.50 MW each. The average life time of the Photovoltaic Panel is around twenty-five years as per the equipment supplier specification. Solar radiation is converted directly into electricity by solar cells (photovoltaic cells). In such cells, a small electric voltage is generated when light strikes the junction between a metal and a semiconductor (such as silicon) or the junction between two different semiconductors. Photovoltaic module consists of several photovoltaic cells connected by circuits and sealed in an environmentally protective laminate, which forms the fundamental building blocks of the complete PV generating unit. Several PV panels mounted on a frame are termed as PV Array.

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

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

Name of the Entity	DC Capacity of each entity	Started Generation
1. Dhar Solar Plant: Prop. M/s Ankit Singh, V.P.O Dhar Tatoh, Tehsil Sadar, Distt. Bilaspur (H.P.)-174001 (Developer)	0.50 MW	18.09.2020
2. Bhandari Ram Solar Plant: Prop. M/s Narendra Devi, VPO Dhar Tatoh, Tehsil Sadar, Distt. Bilaspur, (H.P.) -174001 (Developer)	0.50 MW	16.12.2021
3. Sankhyan Solar Plant: Prop. M/s Abhishek Sankhyan, VPO Dhar Tatoh, Tehsil Sadar, Distt. Bilaspur (H.P.)-174001 (Developer)	0.50 MW	19.03.2022

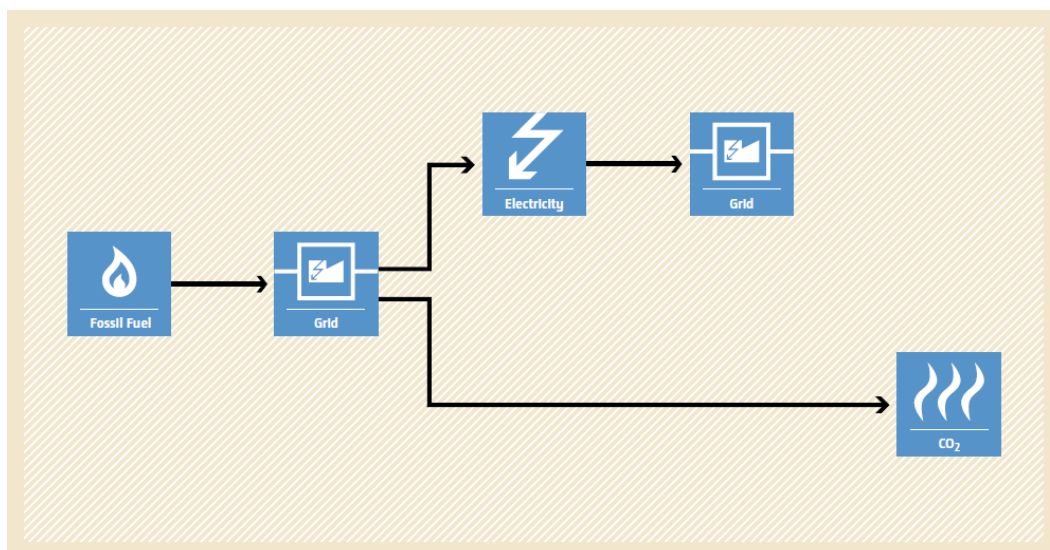
d) Total GHG emission reductions achieved or net anthropogenic GHG removals by sinks achieved in this monitoring period>>

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	18/09/2020
Carbon credits claimed up to	30/04/2022
Total ERs generated (tCO _{2eq})	1385.941 tCO _{2eq}
Leakage	Nil

e) Baseline Scenario>>

The project activity is installation of a new grid-connected renewable power plants, 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”.

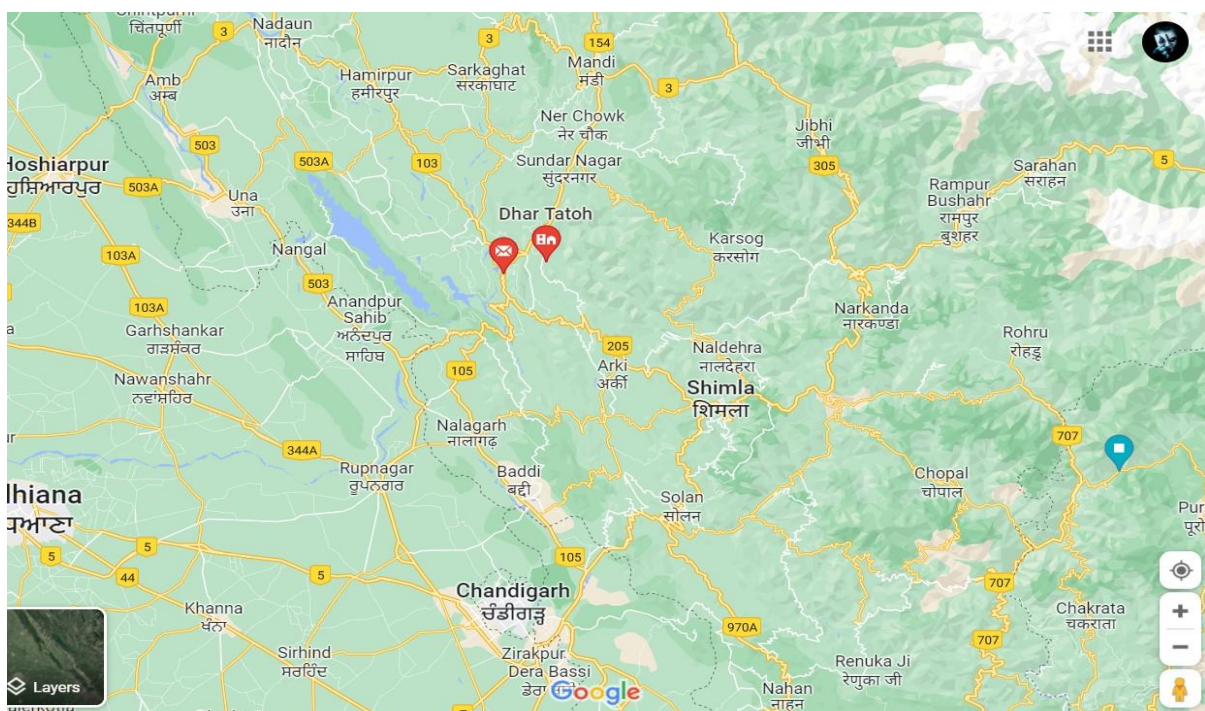
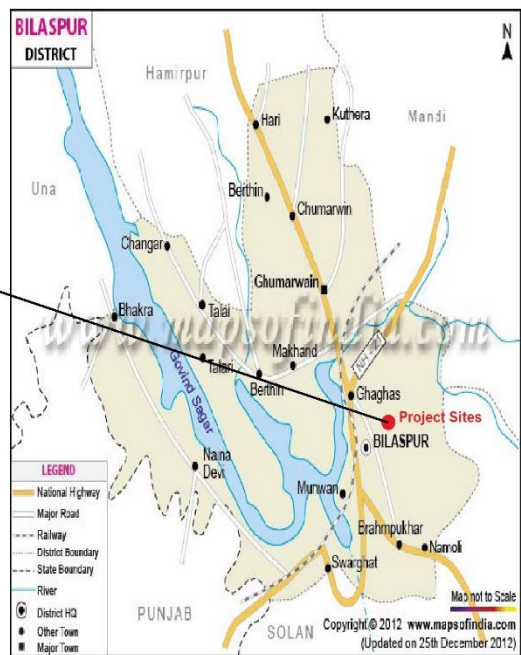
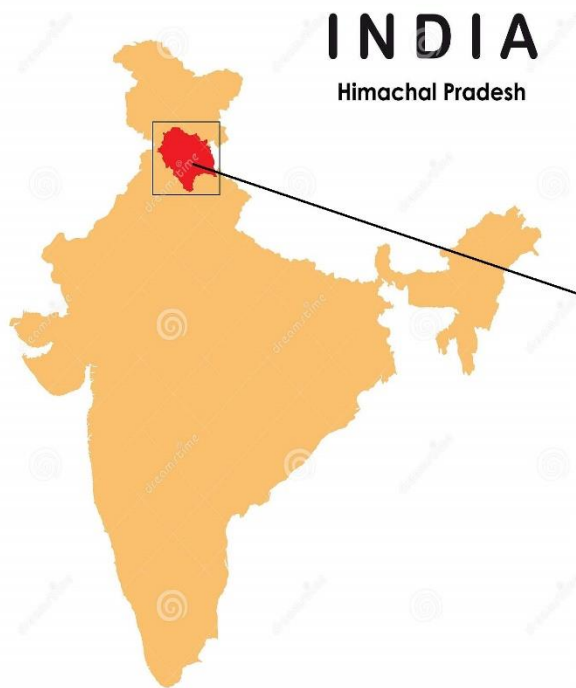


A.2. Location of project activity>>

Country: India, State: Himachal Pradesh, District- Bilaspur

These project sites are in village Dhar, Tehsil Sadar, District Bilaspur, Himachal Pradesh, India. Nearest international airport is Chandigarh, located 150 km from the site. The road network in Dhar is well linked with District Headquarters Bilaspur (H.P.) which is connected with NH-21 and have a wide establish road network in the district. The nearest railway station is Kiratpur (Punjab) which is 83 km from site. Below Table indicates the location details of each Project with the geographic co-ordinates of the project location.

Name of project	Village	Tehsil	District	Longitude and Latitude
Dhar Solar Plant	Dhar Tatoh	Sadar	Distt. Bilaspur (HP)	Latitude: 31 ⁰ 22'19.17'' N Longitude: 76 ⁰ 49'57.96'' E
Bhandari Ram Solar Plant	Dhar Tatoh	Sadar	Distt. Bilaspur (HP)	Latitude: 31 ⁰ 22'19.17'' N Longitude: 76 ⁰ 49'57.96'' E
Sankhyan Solar Plant	Dhar Tatoh	Sadar	Distt. Bilaspur (HP)	Latitude: 31 ⁰ 22'19.17'' N Longitude: 76 ⁰ 49'57.96'' E



A.3. Parties and project participants >>

Party (Host)	Participants
India	1. Dhar Solar Plant: Prop. M/s Ankit Singh, V.P.O Dhar Tatoh, Tehsil Sadar, Distt. Bilaspur (H.P.)-174001 (Developer), Contact number: +919015093413, +918219131127 Email: rajpotpawan@gmail.com 2. Bhandari Ram Solar Plant: Prop. M/s Narendra Devi, VPO Dhar Tatoh, Tehsil Sadar, Distt. Bilaspur, (H.P.) -174001 (Developer) Contact number: +919015093413, +918219131127 Email: rajpotpawan@gmail.com 3. Sankhyan Solar Plant: Prop. M/s Abhishek Sankhyan, VPO Dhar Tatoh, Tehsil Sadar, Distt. Bilaspur (H.P.)-174001 (Developer) Contact number: +919015093413, +918219131127 Email: rajpotpawan@gmail.com

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 >>

Length of the crediting period corresponding to monitoring period for Dhar Solar Plant: 1 year, 7 months, 13 days – 18/09/2020-30/04/2022

Length of the crediting period corresponding to monitoring period for Bhandari Ram Solar Plant: 4 months and 16 days – 16/12/2021-30/04/2022

Length of the crediting period corresponding to monitoring period for Sankhyan Solar Plant: 1 month, 13 days - 19/03/2022-30/04/2022

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

Name: Carbon Private Entity-Attn Mr.Pawan Kumar

Address: 374, Ward No -03 Diwana (190), Fatehabad, Haryana (India)

Contact detail: +919015093413, +918219131127

Email: rajpotpawan@gmail.com

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>>

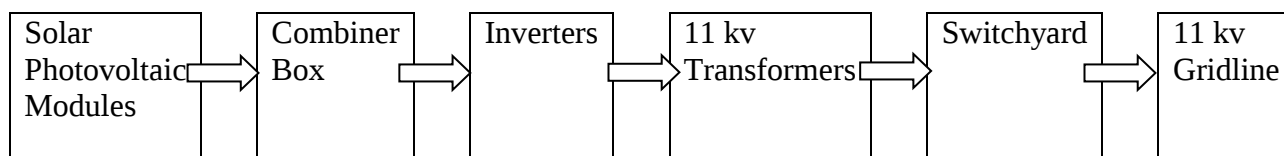
This 1.50 MW bundled project activity consists of three Photo Voltaic Solar Power Plants with capacity of 0.50 MW each. 0.50 MW Dhar Solar Power Project, 0.50 MW Bhandari Ram Solar Project and 0.50 MW Sankhyan Solar Power Project started generation on 18.09.2020, 16.12.2021 and 19.03.2022 respectively and is being sold to state electricity utility of Government of Himachal Pradesh. The project generates clean energy by utilizing the Solar Radiations.

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

The project activity is using clean renewable solar energy to produce electricity. The applied technology is considered to be one of the most environment friendly technologies available as the operation of the Solar photovoltaic does not emit any GHGs or any other harmful gases unlike the operation of conventional fossil fuel based power plants.

Photovoltaic module consists of several photovoltaic cells connected by circuits and sealed in an environmentally protective laminate, which forms the fundamental building blocks of the complete PV generating unit. Several PV panels mounted on a frame are termed as PV Array. The project activity has used the reliable and proven technology to ensure that an environmentally safe and sound technology is only being implemented in the proposed project activity leading to the GHG reduction.

The technical arrangement of the project activity is as provided below:



The others salient features of the technology are:

Specification	Dhar Solar Plant	Bhandari Ram Solar Plant	Sankhyan Solar Plant
PV module technology	Monocrystalline Trina 405 W	Monocrystalline Trina 405 W	Monocrystalline Trina 405 W
Inverter technology	String inverters	String inverters	String inverters
Installed DC peak capacity	500 kWp	500 kWp	500 kWp

Mounting Structure Type	Fixed type	Fixed type	Fixed type
Tilt angle	26 °	26 °	26 °
Pitch	6 m	6 m	6 m
PV Module	1250 nos.	1250 nos.	1250 nos.
PV module manufacturer	Trina Solar	Trina Solar	Trina Solar
Wattage	405 W	400 W	400 W
Inverter manufacturer/ model	Goodwee/ six no., 80 kw cap.	Goodwee/ five no., 80 kw cap. and one no. 100 kw	Goodwee/ five no., 80 kw cap. and one no. 100 kw
Typical nominal AC output	92000 at 400 V	92000 at 400 V	92000 at 400 V
Mounting structure details	M.S. Galvanized	M.S. Galvanized	M.S. Galvanized
Orientation of modules	Landscape	Landscape	Landscape

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:** There has been good employment opportunities created for the local workforce during the project’s construction phase. Thereafter during commercial operation of these projects, employment opportunities for the local populace is also available and the same would be continued over the project life time. The employment opportunities created will contribute towards alleviation of poverty in the surrounding area.
- **Economic well-being:** This bundled project activity is clean technology investment decided based on carbon revenue support, which signifies flows of clean energy investments to host country. The electricity generated will be available for nearby area which directly and indirectly improves the economy and life style of the region. In addition, success of these kind of projects 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 successful operation of project activity would lead to promotion of solar based power generation and would encourage other entrepreneurs to participate in similar projects. Increased interest in solar energy projects will further push R&D efforts by technology providers to develop more efficient and better machinery in future. The project activity leads to the promotion and demonstrates the success of solar projects in the region which further motivate more investors to invest in solar power projects. Hence, the project activity leads to technological well- being.

- **Environmental well-being:** The bundled project activity generates power using zero emissions solar based power generation facility which helps in mitigation of GHG emissions and specific pollutants like SO_x, NO_x, and SPM associated with the conventional thermal power generation facilities. The project utilizes solar energy for generating electricity which is a clean source of energy. It reduces the dependence on fossil fuels and conserves natural resources which are on the verge of depletion. The impact on land, water, air and soil is negligible. Thus, the project causes no negative impact on the surrounding environment contributing to environmental well-being.

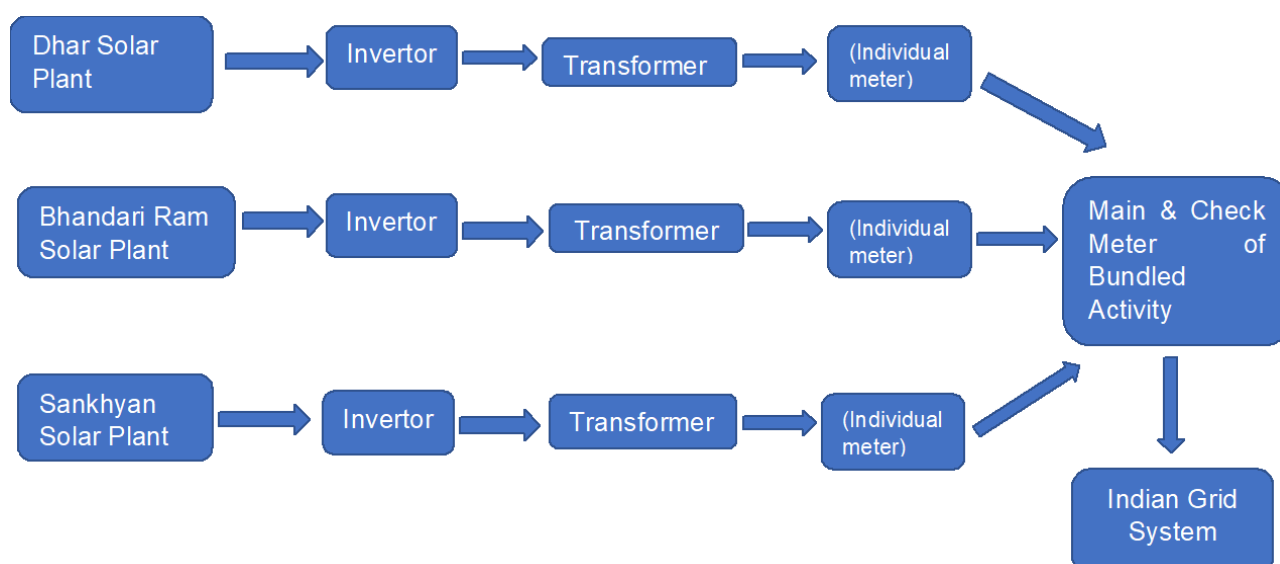
B.3. Baseline Emissions>>

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

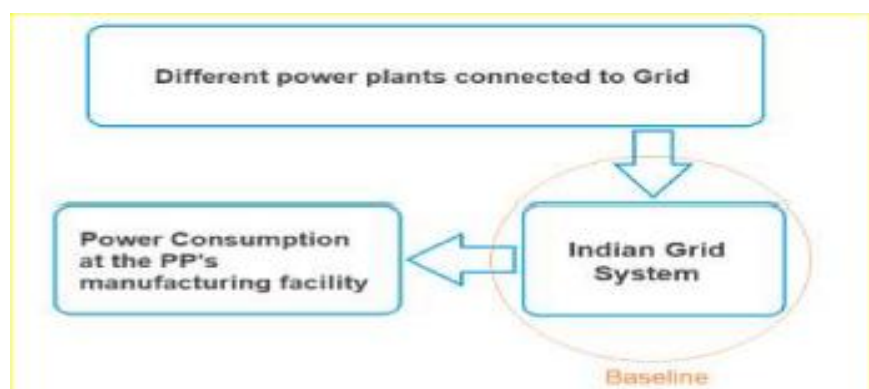
- Grid

In the absence of the project activity, the equivalent amount of electricity would have been obtained from the national grid, which is carbon intensive due to predominantly sourced from fossil fuel-based power plants. Hence, baseline scenario of the project activity is the grid-based electricity system, which is also the pre-project scenario.

Project Scenario:



Baseline Scenario:



B.4. Debundling>>

This bundled project activity is not a 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 >>

This project activity involves generation of grid connected electricity from the construction and operation of new solar power-based power projects. The projects activity has total installed capacity of 1.5 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 involves grid connected renewable energy (solar) generation plants. This has replaced equivalent amount of electricity that would otherwise been imported from fossil fuel dominated electricity grid (Indian Grid system). Thus, the project activity meets this applicability conditions.
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/m^2. (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/m^2.	The project activity involves installation of Solar PV (SPV). 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.	This 1.5 MW bundled activity consists of solar power plants, i.e., only component is renewable power which is below 15 MW, thus the criterion is not applicable to this project activity.
5. Combined heat and power (co-generation) systems are not eligible under this category	This is not relevant to the project activity as the project involves only solar power generating units.
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.	There is no other existing renewable energy power generation facility at the project site. Therefore, this criterion is not applicable.
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 project activity is a new installation, it does not involve any retrofit measures nor any replacement and hence is not applicable for the 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	This is not relevant to the project activity as the project involves only solar power generating units.

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.	
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 source is involved, the project is only a solar 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 power plants and all power plants connected physically to the electricity grid system that the power plant is connected to.”

Thus, the project boundary includes the Solar PV systems and the National grid system.

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 GHG emissions were emitted from the project
Project	Greenfield Solar 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	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 projects activity involves grid connected solar power plants to harness the green power from solar energy. In the absence of the project activity, the equivalent amount of power would have been supplied to Indian grid by conventional projects, which is fed mainly by fossil fuel fired plants. The power produced 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 CO₂ emission factor (tCO₂/MWh) which 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 2014-2020 years as a fairly conservative estimate for Indian projects not previously verified under any GHG program. Also, for the vintage 2021, the combined margin emission factor calculated from CEA database in India results into same emission factor. Hence, the same emission factor has been considered to calculate the emission reduction.

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 (tCO₂/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:

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

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 the CDM project activity in year y (MWh)
$EF_{grid,y}$	UCR recommended emission factor of 0.9 tCO ₂ /MWh has been considered. (Reference: General Project Eligibility Criteria and Guidance, UCR Standard, page 4)

Project Emissions

As per AMS-I.D. version-18, only emission associated with the fossil fuel combustion, emission from operation of geo-thermal power plants due to release of non-condensable gases, emission from water reservoir of Hydro should be accounted for the project emission. Since the projects activity is a solar power project, project emission for renewable energy plant is nil.

Thus, P_{Ey} = 0.

Leakage

As per paragraph 22 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 as zero.

Hence, L_{Ey} = 0

The actual emission reduction achieved during the first CoU period is being submitted as a part of first monitoring and verification and is as under:

Total Emission reduction by the project for the current monitoring period is calculated as below:
(B_{Ey}) = 1539.934 MWh × 0.9 tCO₂/MWh = 1385.941 tCO₂e (i.e., 1385.941 CoUs).

Details placed at **Annexure-I**.

C.6. Prior History>>

The project activity is a bundle of small-scale three solar plants and these plants were never applied under any other GHG mechanism prior to this registration with UCR. Also, the capacities or the total project as a whole 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 Issuance Period: 1 Year, 7 Months and 13 days –
18/09/2020 to 30/04/2022

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

No change.

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

As per the PCN ex-ante estimate for emission reduction for the current monitoring period from 18/09/2020 to 30/04/2022 is 3955 CoU based on the design energy of this bundled activity.

Actual emission reductions achieved for the monitoring period is 1385.941 CoU for the monitoring period from 18/09/2020 to 30/04/2022.

The emission reduction achieved is only 35% of that estimated which is due to non availability of adequate sunlight for power generation and different start date of generation of these projects.

C.10. Monitoring plan>>

Data and Parameters available at validation:

Data/Parameter	$EF_{grid,y}$
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 2014-2020 years as a fairly 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.
Source of data	Joint meter reading issued by State electricity board for project proponent
Value(s) applied	0.9
Measurement methods and procedures	-
Monitoring frequency	Monthly
Purpose of data	For the calculation of emission factor of the grid
Additional Comment	The UCR recommended emission factor is only till 2020. For the subsequent years also the same factor has been adopted as the latest data from CEA version 17 is also the same that is 0.9 tCO ₂ /MWh.

Data and Parameters to be monitored (ex-post monitoring values):

Data / Parameter:	$EG_{PJ,y}$
Data unit:	MWh
Description:	Net electricity supplied to the grid by the project activity
Source of data:	As per Energy Meter records and/or monthly generation statement, verified energy generated is 1539.934 MWh
Measurement procedures (if any):	Data Type: Measured

Monitoring equipment: Energy Meter is used for monitoring. It is a Three Phase Energy Meter, Make- Larsen & Toubro Ltd., Modal-ER300P, 3 Ph 4 Wire, Accuracy Class- 0.2 S.

Main Meter	Check Meter
Sr.No 20000477	Sr.No 20000471
Make L&T	Make L&T
Accuracy Class 0.2S	Accuracy Class 0.2S

Meter details of individual projects

Dhar Solar Plant	Bhandari Ram Solar Plant	Sankhyan Solar Plant
Sr.No 20099882	Sr. 20099881	Sr. 20099903
Make L&T	Make L&T	Make L&T
Accuracy Class 0.2S	Accuracy Class 0.2S	Accuracy Class 0.2S

Calibration frequency: As per CEA India provision – once in 5 Years.

Meter Name	Serial No	Calibrated on	Calibration due on
Main	20000477	29/07/2020, 05/05/2022	13/03/2024
Check	20000471	29/07/2020, 05/05/2022	13/03/2024
Dhar Solar Plant	20099882	19/03/2022	18/03/2027
Bhandari Ram Solar Plant	20099881	19/03/2022	18/03/2027
Sankhyan Solar Plant	20099903	19/03/2022	18/03/2027

Energy meters is providing the net supply or consumption units. The net electricity units supplied to grid is used for calculation.

Cross Checking:

Quantity of net electricity supplied by or consumed at PP's facility is cross checked from Check Meter readings of the monthly JMR issued by HPSEBL.

Monitoring frequency:	Monthly					
Value applied:			Net Electricity exported to grid in MWh			
	S.N.	Project	Year 2020	Year 2021	Year 2022	Total
	1	Dhar	210.700	726.763	249.875	1187.338
	2	Bhandari	0	22.092	237.274	259.366
	3	Sankhyan	0	0	93.230	93.230
		Total	210.700	748.855	580.380	1539.934
QA/QC procedures applied:	There is check meter provided to cross check the energy exported to the grid.					
	Further the energy exported from each project activity is monitored by individual meters					
Purpose of data:	To calculate the baseline emission.					
Any comment:	Data will be archived electronically for a period of 36 months beyond the end of crediting period.					

ANNEXURE I (Emission Reduction Calculation)													
1.50 MW bundled Solar PV projects in Dhar Tatoh, Distt. Bilaspur, Himachal Pradesh, India													
Month-Wise Aggregated Energy Delivered to Grid (in kWh)													
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1. Dhar Solar Plant													
2020									31225	72300	51525	55650	210700
2021	54150	59150	67100	64350	67275	63425	55350	60950	51000	60725	61200	63817	728492
2022	40724	66043	77382	66478									250627
Sub-Total (1)													1189819
2. Bhandari Ram Solar Plant													
2021												22158	22158
2022	34551	56032	80763	66642									237988
Sub-Total (2)													260146
3. Sankhyan Solar Plant													
2022			29280	64231									93511
Sub-Total (3)													93511
Total for all three plants (1+2+3)													1543476

Yearwise emission reduction calculation for project activity				
Year	Total Electricity delivered to grid in MWh	Verified Electricity delivered in MWh	Recommended emissionfactor tCO2/ MWh	Total CoUs generated
2020	210.700	210.700	0.9	189.630
2021	750.650	748.855	0.9	673.969
2022	582.126	580.380	0.9	522.342
Total	1543.476	1539.934	0.9	1385.941

Total CoUs to be issued for first monitoring period (Year: 2020 to 2022)- 1385 rounded down