

KEY PROJECT INFORMATION & PROJECT DESIGN DOCUMENT (PDD)

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VERSION **v.1.5**

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KEY PROJECT INFORMATION

GS ID of Project	GS 7572
Title of Project	120 MW Solar PV Plant by Juniper Green Sigma Private Ltd. in Gujarat
Time of First Submission Date	12/05/2025
Date of Design Certification	09/11/2020
Version number of the PDD	04
Completion date of version	20/11/2025
Project Developer	Juniper Green Sigma Private Limited
Project Representative	Infinite Solutions Private Limited
Project Participants and any communities involved	Juniper Green Sigma Private Limited
Host Country (ies)	India
Activity Requirements applied	☐ Community Service Activity ☒ Renewable Energy ☐ Land-Use and Forests Activity Requirements /Risks & Capacities ☐ N/A
Scale of the project activity	☐ Micro scale ☐ Small Scale ☒ Large Scale
Other Requirements applied	Not Applicable
Methodology (ies) applied and version number	ACM0002 Grid-Connected Electricity generation from Renewable Sources Version 22.0 ¹
Product Requirements applied	☒ GHG Emissions Reduction & Sequestration ☐ Renewable Energy Label ☐ N/A
Project Cycle:	☐ Regular

¹ <https://cdm.unfccc.int/methodologies/view?ref=ACM0002>

☒ Retroactive

Table 1 – Estimated Sustainable Development Contributions

SUSTAINABLE DEVELOPMENT GOALS TARGETED	SDG IMPACT (DEFINED IN B.6)	ESTIMATED ANNUAL AVERAGE	UNITS OR PRODUCTS
13 Climate Action (mandatory)	Emissions Reductions	244,434	GSVERs
7 Affordable and Clean Energy	MWh of renewable energy	283,829.64	MWh/year
8 Decent Work and Economic Growth	Total number of jobs	15	Number of jobs

SECTION A. DESCRIPTION OF PROJECT

A.1 Purpose and general description of project

The main purpose of the project activity is to generate electrical energy through sustainable means using solar power resources, the generated green electricity will contribute to climate change mitigation efforts. This activity is a large-scale project activity. Juniper Green Sigma Private Limited is the project investor for this project activity. The project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 244,434 tCO₂e per annum, thereon displacing 283,829.64 MWh/year² amount of electricity from the generation-mix of power plants connected to the Indian electricity grid, which is mainly dominated by thermal/ fossil fuel-based power plant.

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

The details of the project are mentioned below:

Project Investors Name	Juniper Green Sigma Private Limited
State	Gujarat
Capacity in MW _{AC}	120 MW
PPA	21/05/2019

Currently the project activity has been commissioned and is operational. The phase wise commissioning dates in chronological order along with locations and capacities for the project activity is as follows:

Sr.No.	Organization name	Capacity (MW _{AC})	Date of phase wise commissioning in chronological order	Location
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² The calculation of 244,434 tCO₂e per annum, thereon displacing 283,829.64 MWh/year are provided in the ER sheet.

1	Juniper Green Sigma Private Limited	25 MW	17/10/2020	Village - Bilvania and Vantda Suka
2		25 MW	19/10/2020	Village - Babsar
3		10 MW	28/11/2020	
4		20 MW	28/11/2020	Village - Bilvania and Vantda suka
5		25 MW	09/12/2020	Village - Bhordu
6		15 MW	17/12/2020	

The summarized locations of the projects are mentioned in the table below:

Project Investor's name	Capacity in MW	Village/Taluka	District
Juniper Green Sigma Private Limited	35 MW	Village- Babsar, Taluka- Vadali	Sabarkanatha, Gujarat
	40 MW	Village- Bhordu, Taluka- Tharad	Banaskanatha, Gujarat
	45 MW	Village- Bilvania and Vantda Suka. Taluka- Dhansura	Aravali, Gujarat

Scenario existing prior to the implementation of the project activity.

As the project activity is the installation of a new grid-connected renewable power plant. The scenario existing prior to the implementation of project activity is Electricity delivered to the grid by the solar project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the TOOL 7 (Tool to calculate the emission factor for an electricity system Version 7.0³, EB 100 annex 4).

³ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>

Baseline Scenario of the project

Baseline Scenario and the scenario existing prior to the implementation of the project activities both are same.

As the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following as per applied methodology: Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system" version 7.0. Hence, pre-project scenario and baseline scenario are the same. The estimation of GHG reductions by this project is limited to carbon dioxide (CO₂) only. Thus, the project activity leads to an emission reduction of 1,222,170 tCO₂e for the chosen crediting period of 5 years renewable for period 17/10/2025 to 16/10/2030⁴ with the annual average emission reduction of 244,434 tCO₂e.

Sustainable Development Goals:

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

Social well-being:

⁴ As per GHG EMISSIONS REDUCTION & SEQUESTRATION PRODUCT REQUIREMENTS, version 3.1.

The start date of Crediting Period is the date of start of operation which is 17/10/2020 or a maximum of two years prior to the date of Project Design Certification, whichever occurs later.

In this case, the Design Certification date is 09/11/2020, making the earliest eligible start date 09/11/2018.

Thus, the CP start date for CP 1 is 17/10/2020 and for the CP 2 is 17/10/2025 and inline as per the guideline however there was typo error in the last approved MR.

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

Environmental Well-being

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

Economic Well-being

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

Technological well-being

The project activity is step forward in harnessing the untapped solar potential and further diffusion of the solar technology in the region. 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.

A.1.1. Eligibility of the project under Gold Standard

The project is a 120 MW large scale Power Plant which generates power using the solar energy. The project activity belongs to the type of renewable energy that generate and deliver the power to the Indian Grid. The project applies methodology ACM0002 Version

22.0, which is an approved methodology under Gold Standard as per gold standard eligible impact quantification methodologies⁵.

The project was submitted to GS4GG for preliminary review before 24/01/2020 and hence meets the eligibility criteria published in latest version 1.4 of Renewable Energy Activity Requirement⁶. The project activity meets the eligibility criteria as per requirement of section A.1.1 of GS4GG Template Guide of PDD⁷ document is described below:

Sr. No.	Eligibility Criteria Category	Justification
1	Demonstrate if project is pre identified as eligible by being referenced in Gold Standard Activity Requirements, Impact Quantification Methodologies or Product Requirements	The Project activity is already registered in GS4GG, and it meets all eligibility criteria as mentioned below.
2	If not pre identified as eligible, provide evidence of Gold Standard approval	Not applicable
3	Demonstrate how the project meets the General Eligibility criteria of the applicable Activity Requirements	General Eligibility criteria are justified above.
4	Confirm that the project is not registered with any other voluntary or compliance schemes.	The project activity is not registered with any other voluntary or compliance schemes. Declaration for no double counting is provided by the Project Developer.
5	Demonstrate the activity is NOT located in a host country, region, locality or state that has an emission reduction cap enforced OR has the possibility to trade emissions that include the scope of the proposed project	The host country for project activity is India which is a non-annex I Country. Hence, no emission reduction cap enforced as well as no emission trading system implemented in the host country
6	Demonstrate that no potential for double counting of impacts if the Project Area overlaps with that of another Gold Standard	The Project is not registered in any other mechanism. Also, self-

⁵ <https://globalgoals.goldstandard.org/427-list-of-eligible-cdm-gs-methodologies/>

⁶ https://globalgoals.goldstandard.org/standards/202_V1.4_AR-Renewable-Energy-Activity-Requirements.pdf

⁷ https://globalgoals.goldstandard.org/standards/TGuide-PreReview_V1.5-Project-Design-Document.pdf

	or other voluntary or compliance standard program of a similar nature.	declaration for no double counting has been provided by the Project Developer.
7	Demonstrate that the project is in compliance with applicable Host Country's legal, environmental, ecological and social regulation.	The project activity has obtained all the authorities' approvals to comply with legal, environmental, ecological and social regulations before begin the implementation ⁸ .

General Eligibility Criteria under PRINCIPLES & REQUIREMENTS⁹

Eligibility Criteria Category	Description	Justification	Criterion Met?
Types of Projects	The project type is a large-scale Solar Power Plants which generates power using Solar Energy. The project activity belongs to the type of Renewable energy that generate and deliver power to the Indian grid. The project applies methodology ACM0002 Version 22, which is an approved methodology under Gold Standard.	The Solar Power Plant Project is conceived as a grid connected large solar power plant within the category of renewable energy supply. See section A.1.	Yes
Location of the Project	The project activity is located in the in Sabarkantha, Banaskantha and Aravalli district of Gujarat with a capacity of 120 MW. Further details have been provided in section A.4 of this report.	The Power purchase agreement between Juniper Green Sigma Private Ltd & Gujarat Urja Vikas Nigam Ltd. (GUVNL). It has been submitted to the VVB.	Yes
Project Area, Boundary, Project and scale	Project Area and Boundary are defined in line with the applicable Methodologies ACM0002. The project activity	The Project is located at Villages of Sabarkantha, Banaskantha and	Yes

⁸ The project is under the renewal of crediting period and at the time of the commissioning the project obtained all the authorities and got all the approvals.

⁹ <https://globalgoals.goldstandard.org/101-par-principles-requirements/>

	includes 120 MW installed capacity and is greenfield large solar power plants with an installed capacity above or equal to 15 MW to be qualified as a large-scale solar plant (in accordance with UNFCCC rules).	Aravalli district of Gujarat. The ESIA and the land documents has been submitted to the VVB. The project has an installed capacity of 120 MW which is more than 15 MW, therefore applies as a Small-Scale project. See section A.1	
Host Country Requirements	The project activity follows the social well-being, Environmental well-being, Economic well-being and Technological well-being.	Projects is in compliance with India's legal, environmental, ecological and social regulations. The Third-Party Environment and Social Impact Assessment Report has been submitted to the VVB	Yes
Contact Details	Project Developer: Juniper Green Sigma Private Limited Name of the contact person: Mr. Ankush Malik Email: ankush.malik@junipergreenenergy.com	GS4GG Cover Letter	Yes
Legal Ownership and Other Rights	The project activity is being developed by Juniper Green Sigma Private Limited.	The PPA (Power Purchase Agreement) is in the name of the Juniper Green Sigma Private Limited and has been submitted to the VVB.	Yes
Official Development Assistance (ODA) Declaration:	The project had private funding and funding from bank. The PD hereby confirms that there is no public funding from Annex 1 countries and no diversion of Official Development Assistance (ODA) involved in the project activity.	The Project Developer declares that the project has not directly or indirectly received or benefited from official development assistance. An ODA declaration (i.e. GS Annex D) has been submitted to VVB.	Yes

As discussed above the project type is eligible. The project is located in the villages of Babsar, Bhordu, Bilvania and Vantda Suka in the states of Gujarat. The project activity is a 120 MW Solar Power Project thus eligible under Large Scale Project.

As per section 2.1.2 of Renewable Energy Activity Requirement version 1.4¹⁰, in order to be eligible for Gold Standard certification, all Renewable Energy Projects, shall meet the following Eligibility Criteria:

The project meets the eligibility criteria as per section 2.1.2 of Renewable Activity Requirement of as described below:

Sr No	Description	Justification
1	Projects shall generate and deliver energy services (e.g., mechanical work/electricity/heat) from non-fossil fuel and renewable energy sources.	The project activity is Solar Plant Project is conceived as a grid connected power plant which means generate electricity from renewable energy sources.
2	Projects shall comprise of renewable energy generation units, such as solar photovoltaic, tidal/wave, wind, hydro, geothermal, waste to energy and renewable biomass, that are: • Supplying energy to a national or a regional grid; OR • Supplying energy to an identified consumer facility via national/regional grid through a contractual agreement such as wheeling. • Any Project supplying electricity to a mini-grid shall refer to Community Services Activity Requirements.	The project activity is Solar Photovoltaic hence, comprises the following points: • The project is supplying energy to a national grid hence, applicable. • The project is supplying energy to a national grid via long term contractual agreement which is PPA hence, applicable. • The project is supplying energy to a national grid there is no involvement of mini grid hence, the point is not relevant to the project activity.

¹⁰ https://globalgoals.goldstandard.org/standards/202_V1.4_AR-Renewable-Energy-Activity-Requirements.pdf

	Projects generating on-site energy for captive consumption at an industrial facility shall refer to the requirements in this document.	The project is supplying energy to a national grid via PPA and there is no captive consumption hence, the point is not relevant to the project activity
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The project activity is only registered in GS4GG. Further the project is not registered with any other voluntary credit mechanism/schemes.

The start date for the project activity with capacity 120 MW is 17/10/2020.

However, the project developer hereby confirms that there would not be double counting of credits for any particular monitoring period. The project activity is not availing any benefits other mechanism. A declaration mentioning the same has been submitted regarding same.

A.1.2. Legal ownership of products generated by the project and legal rights to alter use of resources required to service the project

Project Developer (PD) refers to any organization or individual that is formally involved in the design, implementation, and financing of a project, thus the project participants Juniper Green Sigma Private Limited who is totally responsible for the implementation and financing of the project thus the legal owners of the project and have the legal rights for the credits that shall be generated by this project activity.

A.2 Location of project

The location of the project is in the villages of Vantda Suka, Bilvaniya, Babsar and Bhordu districts of Sabarkantha, Banaskantha and Aravalli in the State of Gujarat in the host Country India.

The physical geographical location of the project is mentioned below:

S. No	Location	From		To	
		Latitude	Longitude	Latitude	Longitude
1.	Village - Babsar, Tal - Vadali, Dist. - Sabarkantha	23°58'32.67"N	72°54'26.79"E	23°58'35.60"N	72°54'41.21"E

2	Village- Bhordu, Tal- Tharad, District- Banaskantha	24°25'33.88"N	71°44'21.61"E	24°25'36.10"N	71°44'07.59"E
3.	Village - Bilvaniya, Vantdasuka, Tal- Dhansura, Dist. -Aravalli	23°19'36.21"N	73°17'00.03"E	23°19'27.63"N	73°16'52.46"E

A pictorial representation of the location of the project activity on the map of India is provided as follows:





Figure 1: Map & Images showing locations of Project

A.3 Technologies and/or measures

The project activity involves installation of 120 MW grid connected solar photovoltaic power plant. The start date of the project activity is 04/03/2020 i.e. first purchase order. The PV system will mainly consist of PV modules, module mounting structures, inverters, regulators, monitoring devices etc.

Electrical characteristics are as below

- 3-phase alternating current
- Nominal frequency is 50 Hz
- Final Voltage at Delivery Point is 66kV.

Site	Final Delivery Points	Final Voltage
Babsar	66 kV Babsar S/s	66 kV
Bhordu	66 kV Bhordu S/s	66 kV
Khadol	66 kV Khadol S/s	66 kV

The project activity will result in an average annual reduction of 244,434 tCO₂ per year. The project activity is expected to operate at a plant load factor of 28.36% which has been referred from the registered PDD and it is fixed for the entire 25-year project duration. The project activity does not involve any technology transfer.

Purpose of the project:

The purpose of the project activity is to generate electrical power using solar energy, there by displacing nonrenewable fossil resources resulting to sustainable, economic and environmental development. In the absence of the project activity equivalent amount of power generation would have taken place through fossil fuel dominated power generating stations. Thus, the renewable energy generation from project activity will result in reduction of the greenhouse gas emissions.

Age and Technical Life Time:

Designed technical life time of project activity as per the technical specification and registered PDD is 25 years from commissioning. This confirms project activity continues to displace electricity for the life time comparable to the baseline scenario noted.

The project activity is expected to generate 283,829.64 MWh annually of electrical energy, throughout its entire life span of 25 years. This results in an average annual reduction of 244,434 tCO₂ per annum from the project activity SDG 13. Also, during the operation phase the project activity provides employment to contribute SDG 8. The project activity does not involve any technology transfer.

Technical Specifications of the Equipment¹¹:

For Village Bilvaniya, Vantda Suka, Tal. - Dhansura, Dist.-Aravalli

Capacity	25 MW (AC) / 36.247 MW (DC)
SPV Modules – Type/make	Monocrystalline / Trina Solar ¹²
No. of Photovoltaic Modules / Rating	72,492 / 405 Wp, 16,800 / 410 Wp
Inverters – Type/make	String/Sungrow
No. of Inverter / Rating	125 /200 KW
ABT Meter – Make / Serial No.	Secure / GJ-4608 - A
Name of Substation	66 kV GETCO Substation, Khadol

For Village Babsar, Tal-Vadali, Dist. -Sabarkantha

Capacity	25 MW (AC) / 36.41 MW (DC)
SPV Modules – Type/make	Monocrystalline / JA Solar ¹³ & Trina Solar
No. of Photovoltaic Modules / Rating	52,192 / 405 Wp, 19,656 / 410 Wp & 3,640 / 405 Wp, 14,000 / 410 Wp
Inverters – Type/make	String/Sungrow
No. of Inverter / Rating	125 /200 KW
ABT Meter – Make / Serial No.	Secure / GJ-4585 - A
Name of Substation	66 kV GETCO Substation, Babsar

For Village Babsar, Tal-Vadali, Dist. -Sabarkantha

Capacity	10 MW (AC) / 14.696 MW (DC)
SPV Modules – Type/make	Mono PERC / JA Solar & Trina Solar
No. of Photovoltaic Modules / Rating	36,288 / 405 Wp

¹¹ In the registered PDD, the technical specifications for all sites, do not fully reflect the actual site conditions. Therefore, the specifications have been aligned with the previously approved Monitoring Report (MR) from the performance review, as these are appropriate and consistent with the current site conditions.

¹² https://static.trinasolar.com/sites/default/files/EN_Datasheet_VertexS_DE09.08_2021B.pdf

¹³ <https://www.jasolar.com/uploadfile/2019/0529/20190529105240378.pdf>

Inverters – Type/make	String/ Sungrow
No. of Inverter / Rating	50 /200 KW
ABT Meter – Make / Serial No.	Secure / GJ-4585 - A
Name of Substation	66 kV GETCO Substation, Babsar

For Village Bilvaniya, Vantda Suka, Tal–Dhansura, Dist. - Aravalli

Capacity	20 MW (AC) / 29.459 MW (DC)
SPV Modules – Type/make	Mono PERC / Trina Solar
No. of Photovoltaic Modules / Rating	50,064 / 405 Wp, 22,400 / 410 Wp
Inverters – Type/make	String/ Sungrow
No. of Inverter / Rating	100 /200 KW
ABT Meter – Make / Serial No.	Secure / GJ-4608 - A
Name of Substation	66 kV GETCO Substation, Khadol

For Village-Bhordu, Tal-Tharad, Dist.- Banas kantha

Capacity	25 MW (AC) / 36.541 MW (DC)
SPV Modules – Type/make	Mono PERC / JA Solar
No. of Photovoltaic Modules / Rating	71,092 / 405 Wp, 18,900 / 410 Wp
Inverters – Type/make	String/ Sungrow
No. of Inverter / Rating	125 /200 KW
ABT Meter – Make / Serial No.	Secure / GJ-4605 - A
Name of Substation	66 kV GETCO Substation, Bhordu

For Village-Bhordu, Tal-Tharad, Dist.- Banas kantha

Capacity	15 MW (AC) / 21.86 MW (DC)
SPV Modules – Type/make	Mono PERC / JA Solar
No. of Photovoltaic Modules / Rating	36,260 / 405 Wp, 17,500 / 410 Wp
Inverters – Type/make	String/ Sungrow
No. of Inverter / Rating	75 /200 KW
ABT Meter – Make / Serial No.	Secure / GJ-4605 - A
Name of Substation	66 kV GETCO Substation, Bhordu

Positive contribution of the project to the following Sustainable Development Goals:

- **SDG13: Climate Action:** The project would lead to reduction of approx. 244,434 tCO₂ per annum due to implementation of project activity.
- **SDG 7: Affordable and Clean Energy:** The project is expected to generate 283,829.64 MWh of clean energy per annum.
- **SDG 8: Decent Work and Economic Growth:** The project is expected to provide direct employment to around 15 persons per year.

A.4 Scale of the project

As per renewable energy activity requirement version 1.4¹⁴ Renewable energy project activities with a maximum output capacity of 15 megawatts (or an appropriate equivalent) are small-scale project activity and project activities of capacity more than 15 MW are considered as large-scale project activity.

Since the project activity has a capacity of 120 MW which is more than 15 MW and thus considered as large scale project activity.

A.5 Funding sources of project

The Project Developer confirms that there is no public funding from Annex 1 countries and no diversion of Official Development Assistance (ODA) involved in the project activity. The project is funded by the bank.

SECTION B. APPLICATION OF APPROVED GOLD STANDARD METHODOLOGY (IES) AND/OR DEMONSTRATION OF SDG CONTRIBUTIONS

B.1. Reference of approved methodology ies)

Reference: The project activity meets the eligibility criteria of large-scale project as it is more than 15 MW.

Type I: Energy industries (renewable / non-renewable sources).

¹⁴ https://globalgoals.goldstandard.org/standards/202_V1.4_AR-Renewable-Energy-Activity-Requirements.pdf

Methodology: ACM0002: Approved Large Scale Consolidated Methodology: “Grid-connected electricity generation from renewable sources” Version 22.0¹⁵

Applicable Methodological tools:

Tool 1-Tool for demonstration and assessment of additionality Version 07.0¹⁶.

Tool 7-Tool to calculate the emission factor for an electricity system version 07.0¹⁷.

Tool 11- Assessment of the validity of the original/current baseline and updated of the baseline at the renewal of the crediting period version 3.0.1¹⁸.

B.2. Applicability of methodology (ies)

As per ACM0002 this methodology applies to project activities that include new greenfield, retrofitting, rehabilitation (or refurbishment), replacement or capacity addition of an existing power plant or construction and operation of a Greenfield power plant”. The project activity meets the applicability conditions of the approved consolidated baseline and monitoring methodology ACM0002, Version 22.0¹⁹, Sectoral Scope 1 for Greenfield projects as described below:

Applicability	Project Activity
This methodology is applicable to grid-connected renewable energy power generation project activities that: 1) This methodology is applicable to grid connected renewable energy power generation project activities that: a) Install a Greenfield power plant b) Involve a capacity addition to (an) existing plant(s); c) Involve a retrofit of (an) existing operating plants/units;	This project activity is installation of a new grid connected solar power plant/ unit at a site where no renewable power plant was operated prior to the implementation of the project activity (Greenfield plant) and hence this criterion is applicable. a) The project activity is installation of a new grid connected solar power plant/ unit at a site where no renewable power plant was operated prior to the

¹⁵ <https://cdm.unfccc.int/methodologies/view?ref=ACM0002>

¹⁶ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf>

¹⁷ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>

¹⁸ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-11-v3.0.1.pdf>

¹⁹ <https://cdm.unfccc.int/UserManagement/FileStorage/R0IJ1X9LQ7W2GOYHSMBFCPE3VKZ685>

d) Involve a rehabilitation of (an) existing plant(s)/unit(s); e) Involve a replacement of (an) existing plant(s)/unit(s) f) Install a Greenfield power plant together with a grid-connected Greenfield pumped storage power plant. The greenfield power plant may be directly connected to the PSP or connected to the PSP through the grid.	implementation of the project activity (Greenfield plant) and hence this criterion is applicable
2) In case the project activity involves the integration of a BESS, the methodology is applicable to grid-connected renewable energy power generation project activities that: (a) Integrate BESS with a Greenfield power plant; (b) Integrate a BESS together with implementing a capacity addition to (an) existing solar photovoltaic or wind power plant(s)/unit(s); (c) Integrate a BESS to (an) existing solar photovoltaic or wind power plant(s)/unit(s) without implementing any other changes to the existing plant(s); (d) Integrate a BESS together with implementing a retrofit of (an) existing solar photovoltaic or wind power plant(s)/unit(s); (e) Integrate a BESS together with a Greenfield power plant that is operating in coordination with a PSP. The BESS is located at site of the greenfield renewable power plant	The project activity does not have a battery energy storage system (BESS). Thus, this criterion is not applicable.
3) The methodology is applicable under the following conditions: (a) Hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power	The project activity is not a Hydro power project, and it does not have BESS. Hence this criterion is not applicable.

plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit; (b) In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects) the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity; (c) In case of Greenfield project activities applicable under paragraph 5 (a) above, the project participants shall demonstrate that the BESS was an integral part of the design of the renewable energy project activity (e.g. by referring to feasibility studies or investment decision documents); (d) The BESS should be charged with electricity generated from the associated renewable energy power plant(s). Only during exigencies 2 may the BESS be charged with electricity from the grid or a fossil fuel electricity generator. In such cases, the corresponding GHG emissions shall be accounted for as project emissions following the requirements under section 5.4.4	
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below. The charging using the grid or using fossil fuel electricity generator should not amount to more than 2 per cent of the electricity generated by the project renewable energy plant during a monitoring period. During the time periods (e.g. week(s), months(s)) when the BESS consumes more than 2 per cent of the electricity for charging, the project participant shall not be entitled to issuance of the certified emission reductions for the concerned periods of the monitoring period. (e) In case the project activity involves PSP, the PSP shall utilize the electricity generated from the renewable energy power plant(s) that is operating in coordination with the PSP during pumping mode.	
4) In case of hydro power plants, one of the following conditions shall apply: (a) The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; (b) The project activity is implemented in existing single or multiple reservoirs (s) is increased and the power density, calculated using equation (7), is greater than 4 W/m²; or (c) The project activity results in new single or multiple reservoirs and the power density, calculated using equation (7), is greater than 4 W/m²; or (d) The project activity is an integrated hydro power project	The project is not a hydro power project. Hence, this criterion is not applicable.

involving multiple reservoirs, where the power density for any of the reservoirs, calculated using equation (7), is lower than or equal to 4 W/m², and all of the following conditions shall apply: I. The power density calculated using the total installed capacity of the integrated project, as per equation (8), is greater than 4 W/m²; II. Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity; III. Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m² are: a) Lower than or equal to 15 MW; and b) Less than 10 per cent of the total installed capacity of integrated hydro power project.	
5) In the case of integrated hydro power projects, project participants shall: a) Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or b) Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project	The project is not the hydro power project hence the criterion is not applicable

activity for the optimization of power output. This demonstration has to be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore, this water balance will take into account seasonal flows from river, tributaries (if any), and rainfall for minimum of five years prior to the implementation of the CDM project activity	
6) In the case of PSP, the project participants shall demonstrate in the PDD that the project is not using water which would have been used to generate electricity in the baseline.	The project is not a hydro power project. Hence, this criterion is not applicable.
7) The methodology is not applicable to: a) Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site; b) Biomass fired power plants/units.	a) The proposed project activity is a Solar Project Activity and does not involve any fuel-switching at the site thus this criterion is not applicable. b) There is no existing fossil fuel-based power generation unit at the site that is being replaced hence this criterion is not applicable.
8) In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance".	As the proposed project activity involves the installation of a new solar photovoltaic (PV) power generation system and does not involve the modification or upgrade of any existing power generation equipment. Since there is no existing facility being replaced or rehabilitated, and the project is not a capacity addition to an existing plant, the condition requiring the baseline to be the continuation of the current situation hence the criterion is not applied.

In addition, the applicability conditions included in the tools referred to below apply. Applicability of referred tool is given below

Tool 07: Tool to calculate the emission factor for an electricity system - Version 07.0 (EB 100 annex 4)

Applicability Criterion	Project Case
This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects).	The project is a grid connected Greenfield solar power project. Therefore, the tool is applicable.
Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants. In the latter case, two sub-options under the step 2 of the tool are available to the project participants, i.e. option II a and option IIb. If option II a is chosen, the conditions specified in "Appendix 1: Procedures related to off-grid power generation" should be met. Namely, the total capacity of off-grid power plants (in MW) should be at least 10 per cent of the total capacity of grid power plants in the electricity system; or the total electricity generation by off-grid power plants (in MWh) should be at least 10 per cent of the total electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity.	Steps involved in calculation of Combined Margin Emission Factor is included in PDD (Project Design Document) as per the requirement of the tool.
In case of CDM projects the tool is not applicable if the project electricity system	The project activity is located in India, a non-Annex I country. Therefore, this

is located partially or totally in an Annex I country.	criterion is not applicable for the project activity.
Under this tool, the value applied to the CO ₂ emission factor of biofuels is zero.	The project activity is a grid connected solar power project/ unit and does not involve emission from biofuels. Therefore, this criterion is not applicable

Tool 01: Tool for the demonstration and assessment of additionality- Version 07.0.0 (EB 70, Annex 08)

Applicability Criterion	Project Case
The use of the "Tool for the demonstration and assessment of additionality" is not mandatory for project participants when proposing new methodologies. Project participants may propose alternative methods to demonstrate additionality for consideration by the Executive Board. They may also submit revisions to approved methodologies using the additionality tool.	Project developer is not proposing any new methodology hence, this criterion is not applicable for the project activity
Once the additionally tool is included in an approved methodology, its application by project participants using this methodology is mandatory.	The additionality tool is included in the applied methodology ACM0002. Hence, this criterion is applicable for the project activity.

Tool 11: Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period- Version 03.0.1 (EB 66, Annex 47)

Applicability Criterion	Project Case
This tool provides a stepwise procedure to assess the continued validity of the baseline and to update the baseline at the renewal of a crediting period, as required by paragraph 49 (a) of the modalities and procedures of the clean development mechanism.	The project activity has renewable crediting period of 15 years and now performing renewable of crediting period for next 5 years that is for 2 nd crediting period.

The tool consists of two steps. The first step provides an approach to evaluate whether the current baseline is still valid for the next crediting period. The second step provides an approach to update the baseline in case that the current baseline is not valid anymore for the next crediting period.	The baseline scenario remains unchanged. Only the approach used to calculate the baseline emission factor is updated as per the latest version (Version 20.0 of CEA data base) of database available at the time of PDD submission for renewal of crediting period.
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The project activity qualifies as Type I during every year of the crediting period in accordance with applicable provisions for project activity eligibility as discussed above. Also, the total installed capacity of project activity is 120 MW which is applicable as per large scale project activities methodology ACM0002: Grid-connected electricity generation from renewable sources Version 22.0. The project capacity will always remain the same and hence the project activity will always be a large-scale project activity throughout the crediting period.

B.3. Project boundary

As per the section 5.1 of paragraph 25 of approved methodology ACM0002 version 22.0 - "The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to".

The project boundary includes the solar project, sub-stations, grid and all power plants connected to grid. The project activity will evacuate power to the Indian grid. Therefore, the entire Indian grid and all connected power plants have been considered in the project boundary for the given project activity.

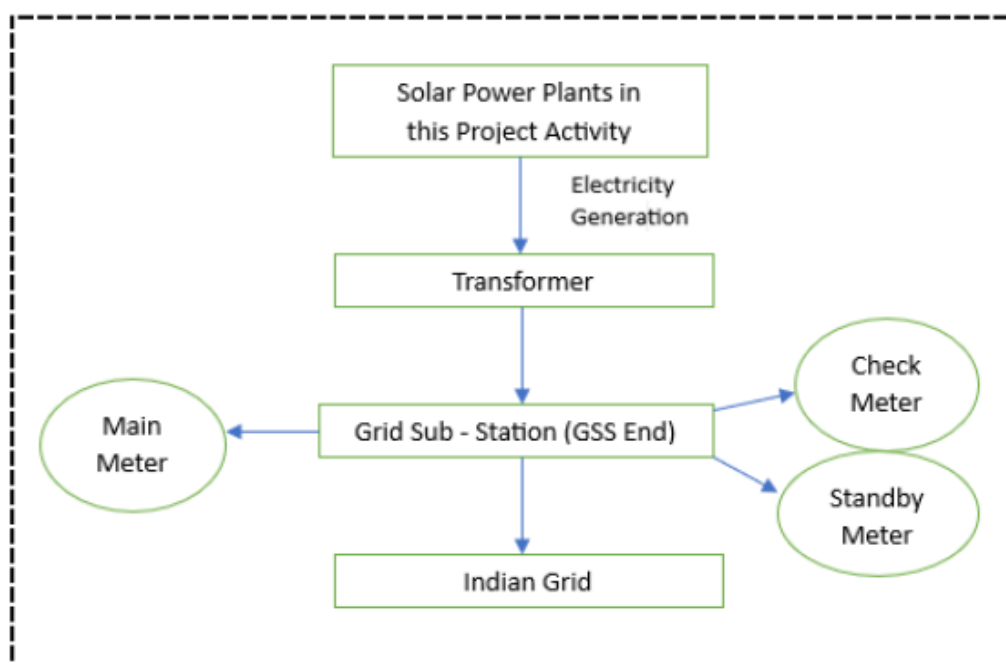


Figure 2: Project Boundary

Source		GHGs	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
Project	Greenfield Solar Power Project Activity	CO ₂	No	No, CO ₂ emissions are emitted from the project activity.
		CH ₄	No	No, CH ₄ are emitted from the Project Activity.
		N ₂ O	No	No, N ₂ O are emitted from the Project Activity

B.4. Establishment and description of baseline scenario

The baseline scenario for the project activity at the time of renewal of crediting period is established in accordance to Tool 11 version 3.0.1 "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period".

Step 1: Assess the validity of the current baseline for the next crediting period.

Step 1.1 Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies

As per step 1.1 of tool 11, version 3.1, "if the current baseline complies with all relevant mandatory national and/or sectoral policies which have come into effect after the

submission of the project activity for validation or the submission of the previous request for renewal of the crediting period and are applicable at the time of requesting renewal of the crediting period, go to Step 1.2.” The project activity is not registered with any other compliance or voluntary market and the project is not claiming any carbon benefits in any other mechanism like Clean Development Mechanism (CDM)²⁰, Voluntary Carbon Standard (VCS)²¹, Global Carbon Council (GCC)²², I-REC²³ and Indian REC²⁴ and not a part of compliance with NDC target. There are no new relevant national and/or sectoral policies and/or circumstances in the electricity sector applicable to the Project Activity, in comparison to the time of the submission of the project activity for validation, which could impact the validity of the current baseline for the next crediting period. Therefore, the current baseline scenario does not need to be updated for this crediting period. The current baseline scenario remains unchanged and complies with all relevant mandatory national and/or sectoral policies. Therefore, the baseline remains unchanged and we can go to Step 1.2.

Step 1.2 Assess the impact of circumstances

The baseline scenario identified at the validation of the project activity was 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. Thus, this project activity was a voluntary investment which intends to replace equivalent amount of electricity at grid from renewable source. Project Developer was not bound to incur this investment; hence absence of project activity (i.e., the investment) does not lead to any continued baseline practice for Project Developer within their scope whereas the continued operation of the project activity would continue to replace equivalent amount of electricity at grid. Hence, the same baseline as identified in the previous crediting period is still valid for the project. Therefore, the assessment of the changes in market characteristics is not required for the renewal of the project's crediting period.

Step 1.3: Assess whether the continuation of use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which renewal is requested.

As explained in step 1.2, the baseline scenario was the electricity import/generation from the fossil fuels power plants connected to the Indian grid. The project activity is

²⁰ <https://cdm.unfccc.int/Projects/projsearch.html>

²¹ <https://registry.verra.org/app/search/VCS>

²² <https://projects.globalcarboncouncil.com/>

²³ <https://www.ecohz.com/i-recs>

²⁴ https://www.recregistryindia.nic.in/index.php/publics/registered_regens

greenfield project and there is continuation of use of the current equipment without any investment in the project activity. Therefore, this condition is not applicable to the project activity.

Step 1.4: Assessment of the validity of the data and parameters

This step stipulates that “Where emission factors, values or emission benchmarks are used and determined only once for the crediting period, they should be updated, except if the emission factors, values or emission benchmarks are based on the historical situation at the site of the project activity prior to the implementation of the project and cannot be updated because the historical situation does not exist anymore as a result of the CDM project activity.” In the context of the present project activity the emission factor has been updated in accordance with the approach used to calculate the emission factor.

Step 2: Update the current baseline and the data and parameters

As evident from the explanation provided above the baseline scenario remains unchanged. The value of combined margin emission factor is updated as per the latest version (Version 20.0 of CEA data base²⁵) of database available at the time of PDD submission for renewal. In line with the principles and requirements version 2.1, the impact of new relevant national and/or sectoral policies and circumstances on the baseline taking into account relevant EB guidance with regard to renewal of the crediting period at the time of requesting renewal of crediting period; and the correctness of the application of an approved baseline methodology for the determination of the continued validity of the baseline or its update, and the estimation of emission reductions for the applicable crediting period.

As per para 27 of the approved consolidated Methodology ACM0002 (Version 22.0) “If the project activity is the installation of a Greenfield power plant with or without a BESS, the baseline scenario is electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”.

The project activity involves setting up of solar plant to harness the power generation from solar radiations to produce electricity and supply to the grid. In the absence of the

²⁵ <https://cea.nic.in/cdm-co2-baseline-database/?lang=en#rdgp>

project activity, the equivalent amount of power would have been supplied by the Indian grid, which is fed mainly by fossil fuel fired plants.

The combined margin ($EF_{grid, CM, y}$) is the result of a weighted average of two emission factor pertaining to the electricity system: the Operating margin (OM) and Build margin (BM), in accordance with the Tool to calculate the emission factor for an electricity system – Version 7.0. Calculations for this combined margin must be based on data from an official source (where available) and made publicly available. In India, Central Electricity Authority (CEA), Government of India provides this data, and accordingly the same has been used.

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

Parameter	Value	Nomenclature	Source
$EF_{grid, CM, y}$	0.8612 tCO ₂ /MWh	Combined margin CO ₂ emission factor for the project electricity system in year y	Calculated ²⁶ as the weighted average of the operating margin (0.75) & build margin (0.25) values, sourced from Baseline CO ₂ Emission Database, Version 20 published by Central Electricity Authority (CEA), Government of India.
$EF_{grid, OM, y}$	0.9643 tCO ₂ /MWh	Operating margin CO ₂ emission factor for the project electricity system in year y	Calculated as the last 3-year (2021-22, 2022-23 and 2023-24) generation-weighted average, sourced from Baseline CO ₂ Emission Database, Version 20 ²⁷ , published by Central Electricity Authority (CEA), Government of India
$EF_{grid, BM, y}$	0.5522 tCO ₂ /MWh	Build margin CO ₂ emission factor for the project	Baseline CO ₂ Emission Database, Version 20.0 ²⁸ , December 2024 published by

²⁶ https://cea.nic.in/wp-content/uploads/2021/03/User_Guide_Version_20.0.pdf

²⁷ https://cea.nic.in/wp-content/uploads/2021/03/User_Guide_Version_20.0.pdf

²⁸ https://cea.nic.in/wp-content/uploads/2021/03/User_Guide_Version_20.0.pdf

		electricity system in year y	Central Electricity Authority (CEA), Government of India
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B.5. Demonstration of additionality

The project generates power using solar energy which is a renewable energy. Baseline considerations for the project are based on approved consolidated baseline methodology ACM0002 (Version 22.0). The project follows section 5.3.2 of the applied methodology which requires the project developer to determine the additionality based on "Tool for the demonstration and assessment of additionality", Version 7.0.

The project is retroactive and is already registered under GS4GG²⁹ and at the time of registration the additionally is demonstrated for life of the project; hence additional.

The investment analysis as per registered PDD³⁰ is also mentioned here for reference which are as follows:

Default Value Benchmark: As per para 19 of EB101, Annex 11 the cost of equity is determined by selecting the values provided in the Appendix, i.e. Default values for cost of equity (expected return on equity) is presented below:

Table under the Appendix in EB101, Annex 11 specifies default value of expected return on equity in real terms for Energy Industries (Group 1) in India = 9.79%³¹.

Benchmark estimation: Appendix in EB101, Annex 11 specifies default value of expected return on equity in real terms for Energy Industries (Group 1) in India = 9.79%.

Inflation Forecast for India as per IMF = 3.986%³²

Therefore, Benchmark = 14.17%

Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II and III):

Details of the project	Value	Source
State where the project is situated	Gujarat	

²⁹ <https://registry.goldstandard.org/projects/details/2153>

³⁰ <https://assurance-platform.goldstandard.org/project-documents/GS7572>

³¹ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v9.0.pdf>

³² <https://www.imf.org/external/pubs/ft/weo/2018/02/weodata/weorept.aspx?sy=2016&ey=2023&scsm=1&ssd=1&sor t=country&ds=.&br=1&pr1.x=90&pr1.y=2&c=534&s=PCPI%2CPCPIPCH%2CPCPIE%2CPCPIEPCH&grp=0&a=>

Total Capacity in AC (MW)	120MW	As per DPR dated 15/02/2019
Total Capacity in DC (MWp)	175.34	As per DPR dated 15/02/2019
Expected Date of Commissioning	30/11/2020	As per DPR dated 15/02/2019
PLF (%)	28.36%	As per DPR dated 15/02/2019 in accordance to EB 48 Annex 11
Annual generation (kWh)	28,382,900	Calculated Value
Annual Deration (%)	0.70%	As per DPR dated 15/02/2019
Tariff at decision making (INR/kWh)	2.67	As per DPR dated 15/02/2019
O & M Expenses (INR Mn.)	64.88	As per DPR dated 15/02/2019
Escalation in the operational expenses (%)	5.00%	As per DPR dated 15/02/2019
TOTAL COST (INR Mn.)	5,650.90	As per DPR dated 15/02/2019
Equity Investment (INR Mn.)	1,412.73	As per DPR dated 15/02/2019
Loan Amount (INR Mn.)	4,238.18	As per DPR dated 15/02/2019
Interest rate (%)	10.50%	As per DPR dated 15/02/2019
Loan Tenure (Qtr.)	80	As per DPR dated 15/02/2019
Moratorium Period (Qtr.)	4	
Repayment Period (Qtr.)	76	Calculated Value
Repayment instalments value (INR Mn.)	55.765	Calculated Value
No. of Days Receivables	90	As per DPR dated 15/02/2019
O&M Expenses (Days)	30	As per DPR dated 15/02/2019
Interest on Working Capital Debt	11.25%	As per DPR dated 15/02/2019
Salvage Value (%)	10%	As per Order No. 3 of 2015 of GERC Order dated 18/05/2015, pg. 38
IT Depreciation Rate (%)	7.69%	As Per Income Tax, Depreciation rates for power generating units
Income tax rate (%)	34.94%	Calculated Value
MAT (%)	21.55%	Calculated Value

Project Participants' Name	Equity IRR	Benchmark (Equity IRR)
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Juniper Green Sigma Private Limited	8.26%	14.17%
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The project activity cannot be considered as financially attractive as the equity IRR for the project activity is less than the Benchmark.

Sub-step 2d: Sensitivity Analysis

Sensitivity Analysis Addressing Guidance 27 & 28 of EB 105, Annex 06, following factors has been subjected to sensitivity analysis:

1. PLF
2. O&M Cost
3. Project Cost
4. Tariff

The rationale of sensitivity is, "The ultimate objective of the sensitivity analysis is to determine the likelihood of the occurrence of a scenario other than the scenario presented, in order to provide a cross-check on the suitability of the assumptions used in the development of the investment analysis."

Variation %	-10%	Normal	10%	Breaching Value
PLF	5.82%	8.26%	10.66%	22.30%
O&M	8.63%	8.26%	7.89%	-163.73%
Project Cost	10.52%	8.26%	6.43%	-20.38%
Tariff Rate	5.82%	8.26%	10.66%	22.30%

The results of sensitivity analysis show that even with a variation of +10% & -10% in project cost, O&M cost, PLF and Tariff Rate Equity IRR is significantly lower than the benchmark. And it is evident from the results given above; the project remains additional even under the most favorable conditions.

B.5.1 Prior Consideration

The project is undergoing renewal of crediting period. Hence prior consideration not required. The project activity is already registered under GS4GG and there is no design change has been conducted for the project activity.

B.5.2 Ongoing Financial Need

The project activity has demonstrated the additionality at the time of project registration for 25 years of life of the project. Since the commissioning of project, carbon

revenues are obtained which supported the project. Hence, the carbon revenue derived from project activity have been playing an important role in helping project owner in operating the project and contributing to SDGs, e.g., providing renewable electricity, employment and decent work and integrating to climate change measures.

Since the project is already commissioned and this is a renewal of design certification, the project developer has actual data of previous crediting period, so based on financial data, the ongoing financial need (OFN) has been demonstrated and the results of the same are as mentioned below. The qualitative narrative is described below:

The total expense and percentage of total expense in the particular based on the OFN sheet are as follows:

S.No.	Expense	Percentage of total expense as per OFN sheet
1	Finance cost	35.61%
2	Depreciation expense	18.57%
3	Employee benefit expense	2.26%
4	Total tax expense	5.09%
5	Interest expense	32.36%
6	Other expense	5.24%

The total Revenue and % of total Revenue sources based on the OFN sheet are as follows:

S.No.	Revenue	Percentage of total revenue as per OFN sheet
1	Revenue from operations (Sale of power and sale of voluntary emission reduction)	95.45%
2	Other income	4.55%

Thus, as per the OFN sheet analysis, the proportion of total revenue to total expense is 78.82%, indicating that expenses still exceed the revenue. This imbalance suggests that the project is not financially sustainable on its own. Without the additional revenue

from carbon credits, it would be very difficult for the project to continue operations. Hence, carbon revenue plays a crucial role in supporting the project's sustainability.

Additionally, the project is already commissioned and the revenue is entirely dependent on power generation. Therefore, PLF (Plant Load Factor) is a key sensitivity parameter. At the time of registration, the PLF was assumed to be 28.36%, whereas the actual generation data reflects a lower PLF of 23.19%. This indicates that the actual revenue is significantly below the projected levels. As this is a solar project, module degradation over time is expected, making any substantial increase in PLF unlikely during the crediting period (approximately 5 years).

The ongoing financial need for the project activity arises because of following parameters: O&M expense, salaries of employees, consultant cost, VVB cost and GS4GG cost. All mentioned expenses are higher (as demonstrated in OFN sheet) than the revenue generated by the project activity therefore carbon revenue is required to fulfil ongoing financial need.

B.6. Sustainable Development Goals (SDG) outcomes

Relevant Target/Indicator for each of the three SDGs

SUSTAINABLE DEVELOPMENT GOALS TARGETED	MOST RELEVANT SDG TARGET	SDG IMPACT
		INDICATOR (PROPOSED OR SDG INDICATOR)
13 Climate Action (mandatory)	13.2. Integrate climate change measures into national policies, strategies and planning Target-244,434 tCO₂e/year	Emissions Reductions ³³

³³ As per digital SDG impact tool indicator is GSDM-I13.2.1 Amount of GHGs emissions avoided or sequestered.

7 Affordable and Clean Energy	7.2 By 2030, increase substantially the share of renewable energy in the global energy mix Target-283,829.64 MWh/year	MWh of renewable energy ³⁴
8 Decent Work and Economic Growth	8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value Employment number- 15	Total number of jobs ³⁵

B.6.1 Explanation of methodological choices/approaches for estimating the SDG Imp
For this project activity, the following SDGs are expected to be impacted:

Outcome of SDG 7 (Affordable and Clean Energy)

Measurement Method:

The baseline for the project is no project, thus leading to generation in the relevant grid which is dominated by fossil fuel. The clean energy generated by the project is calculated based on the amount of electricity generated by the project per annum. As per Emission reduction (ER) sheet the project is expected to generate 283,829.64 MWh³⁶ of clean energy per annum.

QA/QC Procedure:

This parameter is monitored monthly and recorded, and value generation is cross checked with invoices. The meters are calibrated on regular basis within stipulated frequency. The calibration frequency of meters is once in 3 years as per PPA, registered PDD and as tested by a national/international testing laboratory. The calibration details of the meters are provided in appendix 5 below.

Outcome of SDG 8 (Decent Work and Economic Growth)

³⁴ As per digital SDG impact tool indicator is GSDM-I7.2.1 Total electricity produced: Renewable.

³⁵ As per digital SDG impact tool indicator is GSDM-I8.5.1 Total number of jobs.

³⁶ The calculation of 283,829.64 MWh/year are provided in the ER sheet.

The project will provide employment to 15 persons including O&M staff, management, outsourced jobs as well as security guards during the O&M phase and this will be maintained throughout the crediting period.

Measurement method:

Employment generation is monitored through employment records, staff attendance registers or letter from O & M staff for employment details and HR records.

QA/QC Procedure:

This parameter is based on records, data and no any QA/QC procedure required. The VVB can confirm this parameter with interview with PD or site in-charge or employees for employment generation.

Outcome of SDG 13 (Climate Action)

The project leads to mitigation of 244,434 tCO₂e/year

Measurement Method:

The emission reduction parameter is calculated as product of net electricity supplied to grid and grid emission factor. The grid emission factor is ex ante parameter and determined based on data obtained from "CO₂ Baseline Database for Indian Power Sector" version 20.0, published by the Central Electricity Authority, Ministry of Power, Government of India. This is in line with "Tool to calculate the emission factor for an electricity system, version 7.0."

QA/QC Procedure:

This parameter is calculated and no QA/QC Procedure is required. As per the consolidated methodology of ACM0002 Grid-connected electricity generation from renewable sources version 22.0 the emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y$$

Where:

ER_y = Emission reductions in year y (tCO₂e/yr)

BE_y = Baseline emissions in year y (tCO₂e/yr)

PE_y = Project emissions in year y (tCO₂e/yr)

Baseline Emissions:

Baseline Emissions for the amount of electricity supplied by project activity, BE_y is calculated as -

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

Where:

BE_y = Baseline emissions in year y (tCO₂/yr)

$EG_{PJ,y}$ = 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/yr)

$EF_{grid,CM,y}$ = Combined margin CO₂ emission factor for grid-connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (t CO₂/MWh)

Calculation of $EG_{PJ,y}$

The calculation of $EG_{PJ,y}$ is different for

- a) Greenfield plants,
- b) Retrofits and replacements, and
- c) Capacity additions

The project activity is the installation of solar projects and it is a green field project. So, the formula in option (a) i.e., greenfield plants is used to calculate the value of $EG_{PJ,y}$. In accordance with para 49 of the applied methodology.

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

Where,

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

$EG_{facility,y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh/yr)

The project activity falls under Indian grid, which constitutes of both fossil fuels and non-fossil fuels sources of electricity generation. Emission reductions due to the project activity are considered to be equivalent to the baseline emissions, since the solar project would not lead to any project emission and leakage emissions. Emission reductions are related to the electricity exported by the project and the emission coefficient of the grid system.

Baseline emission factor is calculated as combined margin, consisting of a combination of operating margin and build margin factors according to the procedures prescribed in

the latest tool for calculating the emission factor for an electricity system. The steps of calculation are as follows:

Step 1: Identify the relevant electricity systems

As described in tool “For determining the electricity emission factors, identify the relevant project electricity system. Similarly, identify any connected electricity systems”. It also states that “If the DNA of the host country has published a delineation of the project electricity system and connected electricity systems, these delineations should be used”. Keeping this into consideration, the Central Electricity Authority (CEA), Government of India has divided the Indian Power Sector into five regional grids viz. Northern, Eastern, Western, North-eastern and Southern. However, all the 5 zones have been synchronized and called as Indian Grid.

Step 2: Choose whether to include off-grid power plants in the project electricity system (optional)

Option I (Only the green power is included in the calculation) is opted for the project activity i.e. only grid connected power plants are included in the calculation

Step 3: Select a method to determine the operating margin (OM).

According to the tool, the calculation of the operating margin emission factor ($EF_{grid,OM,y}$) is based on one of the following methods:

- a) Simple OM; or
- b) Simple adjusted OM; or
- c) Dispatch data analysis OM; or
- d) Average OM

Any of the four methods can be used for calculating OM. However, the simple adjusted OM and dispatch data analysis OM cannot be currently applied in India due to lack of necessary data however, the simple OM method (option a) can only be used if low cost/must-run resources constitute less than 50% of total grid generation in:

- 1) Average of the five most recent years, or
- 2) Based on long-term averages for hydroelectricity production.

The Share of Low Cost / Must-Run (% of Net Generation) in the generation profile of the different grids in India in the last five years is as follows:

Share of Must-Run (Hydro/Nuclear) (% of Net Generation)

	2019-20	2020-21	2021-22	2022-23	2023-24
Indian Grid	17.0%	16.5%	15.8%	15.33%	12.52%
Source: CO ₂ Baseline Database for the Indian Power Sector - Central Electricity Authority (CEA) ³⁷					

As per section 4, paragraph 10 (j) of Tool 7 version 7.0, "Low-cost/must-run (LCMR) resources are defined as power plants with low marginal generation costs or dispatched independently of the daily or seasonal load of the grid. They include hydro, geothermal, wind, low-cost biomass, nuclear and solar generation.

In India, hydro and nuclear stations qualify as low-cost/must-run sources as per section 2 of CO₂ Baseline Database for the Indian Power Sector version 20.0, December 2024³⁸. Therefore, Share of Must-Run (% of Net generation) considers only Hydro/Nuclear stations for the calculation of operating margin emission factor. The above data clearly shows that the percentage of total grid generation by low-cost/ must-run plants (on the basis of average of five most recent years) for the INDIAN grid is less than 50 % of the total generation.

Thus, the Average OM method cannot be applied, as low cost/must run resources constitute less than 50% of total grid generation.

The simple OM emission factor is calculated as the generation-weighted average CO₂ emissions per unit net electricity generation (tCO₂/MWh) of all generating power plants serving the system, not including low-cost/must-run power plants/units.

For the simple OM, the simple adjusted OM and the average OM, the emissions factor can be calculated using either of the two following data vintages:

³⁷ https://cea.nic.in/wp-content/uploads/2021/03/CO2_Database_Version_20.0_2023_24.xlsx

³⁸ https://cea.nic.in/wp-content/uploads/2021/03/User_Guide_Version_20.0.pdf

- (a) **Ex ante option:** if the ex-ante option is chosen, the emission factor is determined once at the validation stage, thus no monitoring and recalculation of the emissions factor during the crediting period is required.

OR,

- (b) **Ex post option:** if the ex-post option is chosen, the emission factor is determined for the year in which the project activity displaces grid electricity, requiring the emissions factor to be updated annually during monitoring.

PD has chosen ex-ante option for calculation of Simple OM emission factor using a 3-year generation weighted average, based on the most recent data available at the time of submission of the RCP-PDD to the VVB for validation.

Step 4: Calculate the operating margin emission factor according to the selected method

The operating margin emission factor has been calculated using a 3-year data vintage:

Net Generation in Operating Margin (GWh) (incl. Imports)			
	2020-21	2021-22	2022-23
Indian Grid	1,035,672	1,117,846	1,248,868

Simple Operating Margin (tCO ₂ /MWh) (incl. Imports)			
	2020-21	2021-22	2022-23
Indian Grid	0.9605	0.9710	0.9615

Weighted Generation Operating Margin	
Indian Grid	0.9643

Step 5: Calculate the build margin (BM) emission factor

As per Methodological tool: "Tool to calculate the emission factor for an electricity system" (Version 07.0, EB 100, Annex 4) para 72:

In terms of vintage of data, project participants can choose between one of the following two options:

- (a) **Option 1** - for the first crediting period, calculate the build margin emission factor ex ante based on the most recent information available on units already built for sample group m at the time of CDM-PDD submission to the VVB for validation. For the second

crediting period, the build margin emission factor should be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the VVB. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used. This option does not require monitoring the emission factor during the crediting period.

(b) **Option 2** - For the first crediting period, the build margin emission factor shall be updated annually, ex post, including those units built up to the year of registration of the project activity or, if information up to the year of registration is not yet available, including those units built up to the latest year for which information is available.

Option 1 as described above is chosen to calculate the build margin emission factor for the project activity.

BM is calculated ex-ante based on the most recent information available at the time of submission of PDD and is fixed for the entire crediting period.

Build Margin (tCO ₂ /MWh) (not adjusted for imports)	
	2023-24
Indian Grid	0.5521

Step 6: Calculate the combined margin (CM) emission factor (EF_{grid,CM,y})

As per Methodological tool: "Tool to calculate the emission factor for an electricity system" (Version 07.0, EB 100, Annex 4) para 81:

The calculation of the combined margin (CM) emission factor (EF_{grid,CM,y}) is based on one of the following methods:

- (a) Weighted average CM; or
- (b) Simplified CM.

PD has chosen option (a) i.e. weighted average CM to calculate the combined margin emission factor for the project activity.

As per para 85 of the tool 07 version 07.0, The combined margin emissions factor is calculated as follows:

$$EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$$

Where:

$EF_{grid,CM,y}$ = Combined margin CO₂ emission factor for the project electricity system in year y

$EF_{grid,BM,y}$ = Build margin CO₂ emission factor in year y (t CO₂/MWh)

$EF_{grid,OM,y}$ = Operating margin CO₂ emission factor in year y (t CO₂/MWh)

W_{OM} = Weighting of operating margin emissions factor (per cent)

W_{BM} = Weighting of build margin emissions factor (per cent)

According to “Tool 07: Tool to calculate the emission factor for an electricity system” para 86 (a). The following default values should be used for w_{OM} and w_{BM} :

Wind and solar power generation project activities: $w_{OM} = 0.75$ and $w_{BM} = 0.25$ (owing to their intermittent and non-dispatchable nature) for the first crediting period and for subsequent crediting periods; hence the weights for OM and BM are 0.75 and 0.25 respectively.

Therefore,

$$EF_{grid,CM,y} = 0.9580 * 0.75 + 0.8670 * 0.25 = 0.8612 \text{ tCO}_2/\text{MWh}$$

As per the latest CEA database and Tool to calculate the emission factor for an electricity system', version 07.0, the weights for OM and BM are 0.75 and 0.25 respectively. Using the values for operating and build margin emission factor provided in the CEA database version 20.0 and their respective weights for calculation of combined margin emission factor, the baseline carbon emission factor (CM) was calculated: 0.8612 tCO₂e/ MWh. Therefore, the more conservative value of baseline carbon emission factor (CM) has been taken that is 0.8612 tCO₂e/MWh.

Project Emission:

As per the ACM0002 version-22.0, Project Emission for most renewable energy power generation project activities, $PE_y = 0 \text{ tCO}_2\text{e}$.

However, some project activities may involve project emissions that can be significant. These emissions shall be accounted for as project emissions by using the following equation:

$$PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y}$$

Where: PE_y = Project emissions in year y (tCO₂e/ year)

$PE_{FF,y}$ = Project emissions from fossil fuel consumption in year y (tCO₂/ year)

$PE_{GP,y}$ = Project emissions from the operation of geothermal power plants due to the release of non-condensable gases in year y (tCO₂e/ year)

$PE_{HP,y}$ = Project emissions from water reservoirs of hydro power plants in year y (tCO₂e/ year).

The project activity involves the generation of electricity from the installation of solar. Hence, as per ACM0002, Version 22, there is no project emission for solar projects. Therefore, project emissions are zero.

$PE_y = 0$ tCO₂e.

Leakage Emissions:

No leakage emissions are considered in the project activity. The emissions potentially giving rise to leakage in the context of electric sector projects are emissions arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport) are neglected.

$LE_y = 0$ tCO₂e.

B.6.2 Data and parameters fixed ex ante

SDG13

Data/parameter	$EF_{grid,OM,y}$
Unit	tCO ₂ /MWh
Description	Operating Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 20.0, December 2024 ³⁹
Value(s) applied	0.9643 (Detail Calculation has been provided in ER Sheet)

³⁹ https://cea.nic.in/wp-content/uploads/2021/03/User_Guide_Version_20.0.pdf

Choice of data or Measurement methods and procedures	Calculated as per "Tool to calculate the emission factor for an electricity system, version 07" as 3-year generation weighted average using data for the years 2021-22, 2022-23 and 2023-24. The data are obtained from "CO ₂ Baseline Database for Indian Power Sector" version 20.0, published by the Central Electricity Authority, Ministry of Power, Government of India
Purpose of data	For the calculation of the Baseline Emission
Additional comment	This parameter is fixed ex-ante for the entire crediting period.

Data/parameter	$EF_{grid,BM,y}$
Unit	tCO ₂ /MWh
Description	Build Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 20.0 ⁴⁰ , December 2024
Value(s) applied	0.5522
Choice of data or Measurement methods and procedures	Calculated as per "Tool to calculate the emission factor for an electricity system, version 07". As such the latest value of build margin, 2023-24 is taken. The data are obtained from "CO ₂ Baseline Database for Indian Power Sector" version 20.0 December 2024, published by the Central Electricity Authority, Ministry of Power, Government of India
Purpose of data	For the calculation of the Baseline Emission
Additional comment	This parameter is fixed ex-ante for the entire crediting period.

⁴⁰ https://cea.nic.in/wp-content/uploads/2021/03/User_Guide_Version_20.0.pdf

Data/parameter	$EF_{grid,CM,y}$
Unit	tCO ₂ /MWh
Description	Combined Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 20, ⁴¹ December 2024
Value(s) applied	0.8612
Choice of data or Measurement methods and procedures	The combined margin emissions factor is calculated as follows: $EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$ Where: $EF_{grid,BM,y}$ = Build margin CO₂ emission factor in year y (tCO₂/MWh) $EF_{grid,OM,y}$ = Operating margin CO₂ emission factor in year y (tCO₂/MWh) W_{OM} = Weighting of operating margin emissions factor (%) = 75% W_{BM} = Weighting of build margin emissions factor (%) = 25%
Purpose of data	For the calculation of the Baseline Emission
Additional comment	This parameter is fixed ex-ante for the entire crediting period.

B.6.3 Ex ante estimation of SDG Impact

SDG 7: Affordable and Clean Energy - Project expected to generate 283,829.64 MWh clean energy every year.

SDG 8: Decent Work and Economic Growth – Overall 15 persons were employed throughout the project will be provided per year.

SDG13: Climate Action - The project leads to mitigation of 244,434 tCO₂e per annum.

Calculation of Outcome for SDG13- Climate Action.

⁴¹ https://cea.nic.in/wp-content/uploads/2021/03/User_Guide_Version_20.0.pdf

Baseline emissions

As per the ACM0002 Version-22.0 the baseline emissions are the product of electrical energy baseline $EG_{PJ,y}$ expressed in MWh of electricity produced by the renewable generating unit multiplied by an emission factor.

$$BE_y = EG_{PJ,y} * EF_{grid,CM,y}$$

Where,

$EG_{PJ,y}$ = Total quantity of net electricity delivered to the Indian grid.

$EF_{grid,CM,y}$ = Combined margin CO₂ emission factor for grid connected power generation in year y

$EF_{grid,CM,y} = 0.8612 \text{ tCO}_2/\text{MWh}$.

Project Participant	Capacity	PLF (%)	Generated Power (MWh/year)	Baseline Emission Factor (tCO ₂ /MWh)	Baseline emissions (tCO ₂ e/year)
Juniper Green Sigma Private Limited	120MW	28.36%	283,829.64	0.8612	244,434

$$BE_y = 283,829.64 * 0.8612 \text{ tCO}_2/\text{year} = 244,434 \text{ tCO}_2/\text{year} \text{ (round down value)}$$

Project emissions

As per the ACM0002 ver-22.0 No project emissions are applicable. Hence, $PE_y = 0 \text{ tCO}_2/\text{year}$.

Leakage emissions

As per the ACM0002 ver-22.0 No leakage emissions are applicable. Hence, $LE_y = 0 \text{ tCO}_2/\text{year}$

Emission reductions

$$ER_y = BE_y = 222,434 \text{ tCO}_2/\text{year}$$

B.6.4 Summary of ex ante estimates of each SDG Impact

SDG 7: Affordable and Clean Energy:

YEAR	BASILINE ESTIMATE	PROJECT ESTIMATE	NET BENEFIT
Year 1	0	287,831.17 MWh	287,831.17 MWh
Year 2	0	285,816.35 MWh	285,816.35 MWh
Year 3	0	283,815.64 MWh	283,815.64 MWh

Year 4	0	281,828.93 MWh	281,828.93 MWh
Year 5	0	279,856.12 MWh	279,856.12 MWh
Total		1,419,148.21 MWh	1,419,148.21 MWh
Total number of crediting years		5	
Annual average over the crediting period	0	283,829.64 MWh	283,829.64 MWh

The project activity falls under Indian grid, which constitutes of both fossil fuels and non-fossil fuels sources of electricity generation hence in baseline, the affordable and Clean Energy generated was 0. Since the project is a solar plant project, therefore the Affordable and Clean Energy produced by the project is 283,829.64 MWh per year.

SDG 8: Decent Work and Economic Growth

YEAR	BASELINE ESTIMATE	PROJECT ESTIMATE	NET BENEFIT
Year 1	0 Jobs	15 Jobs	15 Jobs
Year 2	0 Jobs	15 Jobs	15 Jobs
Year 3	0 Jobs	15 Jobs	15 Jobs
Year 4	0 Jobs	15 Jobs	15 Jobs
Year 5	0 Jobs	15 Jobs	15 Jobs
Total	0 Jobs	15 Jobs	15 Jobs
Total number of crediting years		5	
Annual average over the crediting period	0 Jobs	15 Jobs	15 Jobs

There were no jobs in the baseline scenario, however the jobs generated by the project activity is 15 jobs per year.

SDG13: Climate Action

YEAR	BASELINE ESTIMATE	PROJECT ESTIMATE	NET BENEFIT
Year 1	247,880 tCO ₂ e	0 tCO ₂ e	247,880 tCO ₂ e
Year 2	246,145 tCO ₂ e	0 tCO ₂ e	246,145 tCO ₂ e
Year 3	244,422 tCO ₂ e	0 tCO ₂ e	244,422 tCO ₂ e
Year 4	242,711 tCO ₂ e	0 tCO ₂ e	242,711 tCO ₂ e
Year 5	241,012 tCO ₂ e	0 tCO ₂ e	241,012 tCO ₂ e
Total	1,222,170 tCO ₂ e	0 tCO ₂ e	1,222,170 tCO ₂ e
Total number of crediting years		5	
Annual average over the crediting period	244,434 tCO ₂ e	0 tCO ₂ e	244,434 tCO ₂ e

The project activity falls under Indian grid, which constitutes of both fossil fuels and non-fossil fuels sources of electricity generation hence in baseline, the estimated emission is 244,434 tCO₂e per year. Since the project is solar plant project, therefore the project does not emit any GHG.

B.7. Monitoring plan

B.7.1 Data and parameters to be monitored

Relevant SDG Indicator GSDM-I13.2.1 Amount of GHGs emissions avoided or sequestered

Data / Parameter	Emissions Reduction
Unit	tCO ₂ e
Description	Total amount of greenhouse gases avoided or sequestered due to implementation of project activity
Source of data	Calculated as per "Tool to calculate the emission factor for an electricity system,". The data are obtained from "CO ₂ Baseline Database for Indian Power Sector" version 20.0, published by the Central Electricity Authority, Ministry of Power, Government of India.
Value(s) applied	244,434 tCO ₂ e emission reductions estimated per annum

Measurement methods and procedures	Calculated from CEA database and Energy Generation
Monitoring frequency	Annually
QA/QC procedures	The energy meters are calibrated once in every 3 years as per clause 7.2 of the PPA which is also in line with registered PDD. The calibrations would be done by a national/international testing laboratory. Calibration records will be maintained at the O&M site office. Data would be cross-verified against sold electricity figure in the joint meter reading statement issued by the Gujarat Urja Vikas Nigam Limited (GUVNL). It is to be noted that the meter in question shall be in control and supervision of GUVNL and shall be calibrated only as and when GUVNL so desires. The metering system comprises of main and check meter. In the event that the main metering system is not in service due to maintenance, repair or testing, the reading shall be obtained from the check meter.
Purpose of data	Calculations of Baseline Emissions
Additional comment	Data is archived in paper & electronic form for two years after the end of crediting period or of the last issuance of VERs for this project activity, whichever occurs later.

Relevant SDG Indicator GSDM-I7.2.1 Total electricity produced: Renewable

Data / Parameter	$EG_{\text{facility},y}^{42}$
Unit	MWh/year

⁴² The parameter is monitored as per Tool 05 version 3.0 in line with the requirement of paragraph 83 of applied methodology ACM0002 version 22.0, "requirement for the $EG_{\text{PJ},\text{grid},y}$ should apply to parameters $EG_{\text{facility},y}$ ".

Description	Net energy production due to solar power project implementation of project activity during the year y
Source of data	Statement of net export of power to the grid at the plant site
Value(s) applied	283,829.64
Measurement methods and procedures	The net energy exported to the grid is measured every month using calibrated energy meter by the State Electricity Board authorities in the presence of the project implementer. The meter/s shall be jointly inspected, and sealed by authorized representatives of the company and the state utility. Measuring procedure: Will be measured by an export-import energy meter. The net electricity exported by the project plant would be calculated by deducting the amount of imported electricity from the total amount of exported electricity. Accuracy class of energy meter: 0.2s Entity responsible: JGSPL
Monitoring frequency	Measurement- Continuous Recording- Monthly
QA/QC procedures	The meters will be calibrated once in every 3 years by an independent testing laboratory. Calibration records will be maintained at the plant. Data would be cross-verified against sold electricity figure in the joint meter reading statement issued by the Gujarat Urja Vikas Nigam Limited (GUVNL). It is to be noted that the meter in question shall be in control and supervision of GUVNL and shall be calibrated only as and when GUVNL so desires. The metering system comprises of main and check meter. In the event that the main metering system is not in service due to maintenance, repair or testing, the reading shall be obtained from the check meter.

Purpose of data	The Data/Parameter is required to calculate the baseline emission
Additional comment	Data will be archived electronically for a period of 2 years beyond the end of crediting period.

Relevant SDG Indicator **GSDM-I8.5.1 Total number of jobs**

Data / Parameter	Quantitative employment
Unit	Number (employees)
Description	Total jobs created as a result of the project
Source of data	Employment Records
Value(s) applied	It is expected that a minimum of 15 employees (10 skilled + 5 unskilled) will be maintained during the crediting period. All the 15 employees are local working in the site.
Measurement methods and procedures	Not applicable
Monitoring frequency	Once in a Monitoring period
QA/QC procedures	The number of persons employed is mentioned in the plant register, which can be crossed checked with daily attendance register.
Purpose of data	To monitor the contribution to SDG 8
Additional comment	Data is archived in paper & electronic form for two years after the end of crediting period or of the last issuance of VERs for this project activity, whichever occurs later.

Safeguarding Principle 9.5 Hazardous and Non-hazardous Waste

Data / Parameter	Hazardous Waste
Unit	Kg
Description	The manufacture, trade, release and use of hazardous and non-hazardous chemicals and/or materials.

Source of data	Plant records
Value(s) applied	25 ⁴³
Measurement methods and procedures	Hazardous Waste involves identification, quantification, safe storage, appropriate treatment and disposal. The waste will be stored in the designated storage area within the premises and will be disposed to the waste handlers, in full compliance with all the applicable local and legal laws for monitoring and disposal and as per the provisions of the Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008 ⁴⁴ .
Monitoring frequency	Annually
QA/QC procedures	The manufacture, trade, release and use of hazardous and non-hazardous chemicals and/or materials.
Purpose of data	Analysis of safeguarding principle
Additional comment	-

B.7.2 Sampling plan

No sampling process is involved as the project activity is a solar power generation. Hence, the section is not applicable.

B.7.3 Other elements of monitoring plan

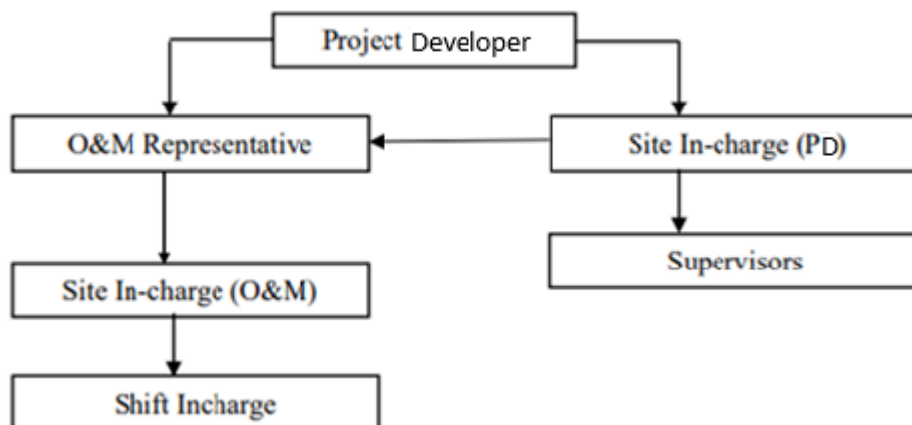
The monitoring plan is developed in accordance with the modalities and procedures for GS project activities and is proposed for grid-connected solar power project plant being implemented in Gujarat, India. The monitoring plan, which will be implemented by the project participant describes about the monitoring organization, parameters to be monitored, monitoring practices, quality assurance, quality control procedures, data storage and archiving.

⁴³ Estimated value for the complete crediting period.

⁴⁴ <https://cpcb.nic.in/displaypdf.php?id=aHdtZC80dGhfQW1lbmRtZW50c19SdWxlcY5wZGY=>

The authority and responsibility for registration, monitoring, measurement, reporting and reviewing of the data rests with the project participant. The monitoring team will compose the following staff:

Organizational Structure:



Responsibilities of Site In charge (PD): Overall functioning and maintenance of the project activity, the Site in charge shall coordinate with the O&M operator as well as the site supervisors. Also, site in charge is responsible for GHG emission calculation and Invoicing.

Responsibilities of O&M Representative: Co-ordination between Site in charge of the O&M operator as well as the project developer and further report to developer head office.

Responsibilities of Site In-charge (O&M Operator): Responsibility for maintaining the data records, ensures completeness of data, and reliability of data (calibration of equipment) as well as data recording for all the parameters.

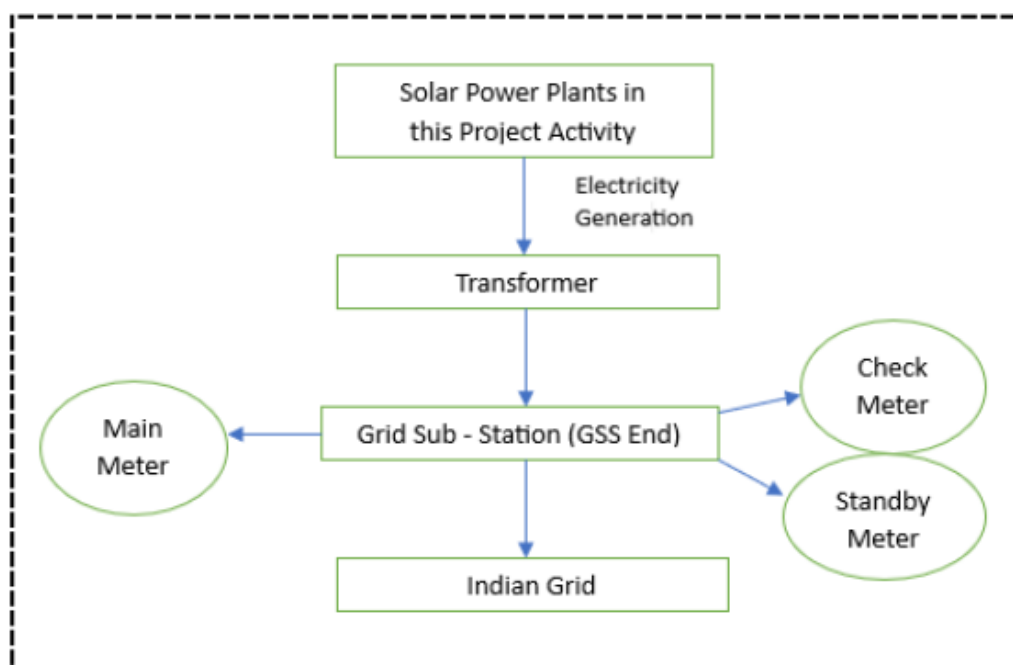
Responsibilities of Shift In-charge: Responsibility for day-to-day data collection and maintains day to day monitored data.

Data archiving policy: All monitored data will be archived electronically for a period of two years after the end of the crediting period or the last issuance of VERs, whichever occurs later

Data Measurement: The export and import energy are measured continuously using above mentioned Main & Check meters installed at GETCO (Gujarat Energy transmission Corporation Ltd.) Sub-station located at following locations: -

Capacity (MW _{AC})	Substation	Location
45 MW	66kV Khadol S/s	Village - Bilvaniya and Vantdasuka, Tehsil – Dhansura, Dist.- Aravalli
35 MW	66kV Babsar S/s	Village - Babsar, Tehsil – Vadali, Dist.- Sabar kantha
40 MW	66kV Bhordu S/s	Village - Bhordu, Tehsil – Tharad, Dist.- Banas kantha

A simplified SLD of the monitoring system including the location of energy meters and the project is located various villages of Aravalli, Sabar kantha and Banas kantha districts in Gujarat state of India. The substation details are mentioned above. There are 3 sites in total and each site are having three meters one main meter, one check meter and one standby meter i.e., 9 meters in total and the meters are located at GETCO (Gujarat Energy transmission Corporation Ltd.) Sub-station (GSS) located at following locations as mentioned in the above table and the same has been demonstrated in the below diagram. The location of the energy meters along with serial number is mentioned in appendix 5. The given SLD is same for all the 3 sites and it compromises of 120 MW capacity in total.



Export & Import readings of Main & Check meters shall be taken on monthly basis by authorized officer of SEB (Gujarat Urja Vikas Nigam Limited) in the presence of PD or representative of PD. The meter reading is being taken jointly and signed by the representatives of the SEB and PD or representative of PD. Based on the readings, invoices/ monthly bills will be raised by PD or representative of PD. These invoices/ monthly bills can be used for cross checking the meter readings taken for the respective project activity. All the meters used in the project activity is calibrated once in every 3 years by an independent testing laboratory. GUVNL is responsible for maintaining the QA/QC procedures (accuracy class and calibration frequency) GUVNL/Discom officer are fully responsible for the maintenance of the meters.

It is to be noted though Project owner or their representatives are available during meter reading, the calculations of net electricity supplied to grid is completely under purview of GUVNL (Gujarat Urja Vikas Nigam Limited) and Project owner do not have any control on it. Project owner gets the monthly credit report from where net electricity supplied to grid is obtained and used for emission reduction calculations. Emission reduction is calculated by multiplying net electricity generation ($EG_{PJ, y}$) with combined margin grid emission factor ($EF_{CM, y}$).

Mismatch in Monitoring Period and the Billing Period: In case the dates of a particular monitoring period do not match with the dates of the billing period, the net electricity exported to the grid would be calculated from:

$$D = (A/B) * C$$

A = Difference of number of days which are not matching of billing period and monitoring period.

B = Number of days of the billing period/month which was not matched with the monitoring period.

C = Net Electricity supplied to the grid for that given billing period/ month.

D = Net electricity exported to the grid.

The calculated value after apportioning would be used for calculation of emission reductions during that period.

Based on the above procedure, the Monthly Certificate for Share of Electricity Generated shall be provided to the project developer. This is to be noted that the detail procedure

of monitoring is illustrated here for the sake of understanding; for the preparation of monitoring report during periodic verifications, only the net electricity generation value mentioned in monthly solar plant certificates shall be directly used for emission reduction calculation.

Emergency preparedness:

The project activity does not result in any unidentified activity that can result in substantial emissions from the project activity. No need for emergency preparedness in data monitoring is visualized.

In the unlikely event of failure of Main meter and Check meter is found to be outside the acceptable limits of accuracy or faulty or not functioning properly, it will be repaired, recalibrated or replaced as soon as possible. In the event that the Main meter is not in service as a result of maintenance, repairs or testing, the Check meter will be used for readings and in the event that the Main meter and check meter both are not in service as a result of maintenance, repairs or testing, the Standby meter will be used for readings.

The net electricity is calculated from the difference between export and import, which is used for baseline emission calculations, and the export and import readings are taken from the energy meters which are required to be calibrated as per the calibration frequency. If the calibration is delayed, the error factor will be applied as per the accuracy class of the energy meter for the delayed period at the time of verification.

SECTION C. DURATION AND CREDITING PERIOD

C.1. Duration of project

C.1.1 Start date of project

The start date of project activity is the earliest Purchase Order date i.e., 04/03/2020. The project is a retroactive project.

C.1.2 Expected operational lifetime of project

25 Years 00 months⁴⁵

C.2. Crediting period of project

C.2.1 Start date of crediting period

The start date of first crediting period is 17/10/2020 to 16/10/2025⁴⁶ therefore, the start date of second crediting period is 17/10/2025.

C.2.2 Total length of crediting period

Start date of crediting period: 17/10/2025.

End date of crediting period:16/10/2030.

Total length of crediting period is 5 years 00 Months. (Renewable Crediting Period i.e., it will be renewed twice maximum up to 15 years i.e., 5yrs+5yrs+5yrs).

SECTION D. SUMMARY OF SAFEGUARDING PRINCIPLES AND GENDER SENSITIVE ASSESSMENT

D.1 Safeguarding Principles that will be monitored

A completed Safeguarding Principles Assessment is in [Appendix 1](#), ongoing monitoring is summarized below.

PRINCIPLES MITIGATION MEASURES ADDED TO THE MONITORING PLAN

⁴⁵ As per technical specification and registered PDD.
⁴⁶ As per GHG EMISSIONS REDUCTION & SEQUESTRATION PRODUCT REQUIREMENTS, version 3.1.
 The start date of Crediting Period is the date of start of operation which is 17/10/2020 or a maximum of two years prior to the date of Project Design Certification, whichever occurs later.
 In this case, the Design Certification date is 09/11/2020, making the earliest eligible start date 09/11/2018.
 Thus, the CP start date for CP 1 is 17/10/2020 and for the CP 2 is 17/10/2025 and inline as per the guideline however there was error in the last approved MR.

**Principle 9.5
Hazardous and
Non-
hazardous
Waste**

The project as fulfilling the requirement of Safeguarding Principles & Requirements version 2.1. The waste will be stored in the designated storage area within the premises and will be disposed to the waste handlers and the firm complies with all the local and legal laws for monitoring and disposal and as per the provisions of the Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008⁴⁷. Also, the project developer is trying to minimize the generation of hazardous and non-hazardous waste materials.

D.2. Assessment that project complies with GS4GG Gender Sensitive requirements

Question 1 - Explain how the project reflects the key issues and requirements of Gender Sensitive design and implementation as outlined in the Gender Policy?

As per Gold Standard Gender Policy, para 4.2 (i) "Foundational gender-sensitive requirement - This strengthens Gold Standard's 'do no harm' approach and addresses safeguards to prevent or mitigate adverse impacts on women or men and girls and boys. Such action is mandatory for all projects seeking Gold Standard certification and includes compliance with the gender 'do no harm' safeguards, gender gap analysis and gender sensitive stakeholder consultations." The project being a renewable energy project is not gender sensitive project. The project does not adversely impact men or women.

⁴⁷ <https://cpcb.nic.in/displaypdf.php?id=aHdtZC80dGhfQW1lbnRtZW50c19SdWxlcY5wZGY=>

Question 2 - Explain how the project aligns with existing country policies, strategies and best practices

India is one of the founding members of International Labor Organization (ILO), which formed in 1961. Also, India signed Convention on the Elimination of All Forms of Discrimination against Women :1753 on 1980 and ratified the CEDAW Convention on 9th July 1993 ⁴⁸India has the National Commission for Women Act, 1990 ensuring the equal right of men and women to the enjoyment of all economic, social and cultural rights set forth in the present Covenant. It defines the meaning of gender discrimination and sets out penalties and compensation. India is party to "Convention on the Elimination of All Forms of Discrimination against Women" ⁴⁹and the project has aligned its policies which does not discriminate on gender

⁴⁸ - [OHCHR Dashboard](#)

⁴⁹ [University of Minnesota Human Rights Library](#)

Question 3 - Is an Expert required for the Gender Safeguarding Principles & Requirements?

The project does not seek to graduate to gender-grade GS certification and thus foundational gender sensitive requirements have been justified. As per GS4GG GENDER EQUALITY REQUIREMENTS & GUIDELINES, "Gold Standard may require that the Project seek the input of an Expert Stakeholder and to include their recommendations in the Project design. For projects seeking gender-responsive certification, the Gold Standard VVBs audit teams shall include gender consultants with relevant sector expertise to verify the gender claims of the project". The Project participants do not involve and promote any discrimination about the gender differences. The same is ensured into HR Policy, hence no expert Stakeholder inputs are required. Further the questions raised in the Gold Standard Safeguarding Principles & Requirements document are described under Appendix 1.

Question 4 - Is an Expert required to assist with Gender issues at the Stakeholder Consultation?

No Expert is required to assist with Gender issues at the Stakeholder Consultation as the stakeholders were invited in a 'gender sensitive' manner and efforts has been made to solicit input from women and marginalized groups. As per the GS Stakeholder guidelines, section 1.1.2 "All Gold Standard projects shall "take gender issues into account". This requires local stakeholder consultation processes to reach a wide range of community representatives in ways that ensure equal and effective participation of both women and men, and that gender issues are fully factored into comprehensive social and environmental impact assessments." Since the project is retroactive project, the Stakeholder feedback Round was held at t Surendra Nagar on 29/03/2019. The Local Stakeholder Consultation Meeting had an overall healthy participation in the meeting. It was held during the day, as women tend to travel more freely and safely than after sunset. All the villagers were invited for the consultation through invitation pasted in public places (local administration Offices, Bus Stand, Market etc.) The meeting was conducted in local language and English translation is prepared for the purpose of reporting.

SECTION E. SUMMARY OF LOCAL STAKEHOLDER CONSULTATION

E.1 Summary of stakeholder mitigation measures

The project activity is registered in GS4GG. PD had conducted the Stakeholder consultation physical meeting in line with the GS4GG requirements and guidelines.

The local stakeholder consultation meeting was applicable as the project is retroactive registration project as well as the stakeholders remain unchanged, and there have been no modifications to the stakeholder group. Therefore, no separate local stakeholder consultation round was conducted during the renewal of the crediting period.

Stakeholder Feedback round has been carried out in line with the requirements of Gold Standard process at village Dhansura of Aravali district, village Babsar of Sabarkantha district and village Bhordu of Banaskantha district of Gujarat on 13/07/2020, 14/07/2020 and 15/07/2020 respectively meeting and following were the stakeholders for the project activity:

Below stakeholders from all categories suggested by Gold Standard was invited to the meeting:

1. Local villagers,
2. Community members,
3. O&M operators and employees,
4. Local government bodies,
5. Apart from these the stakeholders as identified by Gold Standard Board, i.e. Gold Standard partnered NGOs and DNA of India (MoEF) were also invited.

An invitation email was sent to the GS nominated NGO stakeholders on 12/06/2020 i.e. 30 days before the meeting held. According to the requirement of "GS4GG Gold Standard for the Global Goals Stakeholder Consultation & Engagement Procedure, Requirements & Guidelines" Stakeholder Feedback Round has been conducted at the project site which was attended by local stakeholders.

The expert stakeholders have been intimated for the SFR round and along with the invitations they were provided with a public link where all the project related documents are available. All the documents have been made available to public through website <https://registry.goldstandard.org/projects/details/2153> for 2 months i.e. from

30/05/2020 to 29/07/2020 for stakeholders to review and comment. They were free to comment either online or during the actual SFR meeting. There were no negative comments from the stakeholders through any means of communication channels (E mails, Phone calls, Grievance Register available at the project site). The documentation is available permanently to stakeholders at project site & company's website.

The agenda for the meeting was as follows;

- Introduction of the Project Developer.
- Solar plant details
- About GS and CDM mechanism
- Benefits from the Solar plant project
- Grievance Mechanism for stakeholders
- Yearly monitoring process for Sustainable development
- Feedback/Questions from Stakeholders
- Question and Answer session.

In the introductory speech, Mr. Ankush Malik (Representative of Project Developer) welcomed the gathering and gave a brief about the project activity & project participant. He further explained the whole process right from inception of the project till the current execution levels. He briefly explained how this project applies to CDM and Gold standards mechanism. He explained how such solar plant projects help in providing clean energy and thereby help in mitigating impacts due to Global Warming. He briefly explained the gist of Gold Standards prerequisites and sustainability projects in the country. He also discussed the sustainable development matrix parameters with the impacts on each by the project along with the monitoring plan for the sustainable development indicators related to the project activity. In the process it was also explained that the impacts assessment process would be done yearly.

He also explained how the project participants propose to set up a Grievance procedure where any comment/suggestion could be provided. In line with the Annex of GS Requirement – he explained how PD (Juniper Green Sigma Private Limited) proposes to establish continuous input and grievance procedure. As part of the process a Grievance register shall be maintained at the site.

Summary of the comments received:

The project is submitted to GS under retroactive type as start date of project was prior to first submission of project activity to Gold Standard. The first physical Local Stakeholder Consultation meeting was conducted as per CDM requirement. However, this requirement of "GS4GG Gold Standard for the Global Goals Stakeholder Consultation & Engagement Procedure, Requirements & Guidelines" has been followed by the project activity.

The first physical Local stakeholder consultation was carried out by inviting the local stakeholders through public notice. The notice was for all Local stakeholders and not a gender specific. Thus, gender equality has been followed during consultation. Since project is developed in particular site, the nearby local villagers are most relevant who are directly and indirectly may be affected. Thus, putting public notice at project site/nearby village involves engagement of all stakeholders for the project activity. During that initial physical stakeholder consultation, the project information was given and taken feedback for the project activity. The information about feedback registers also given to stakeholders so that they can give their feedback at any time. Thus, continuous input and Grievance Mechanism has been followed during first physical consultation.

A summary of the comments and queries from the stakeholders are presented below along with the responses from the representatives of the project participants.

The representative of project participant explained about the power generation process from this solar power Plant and emphasized on the positive impacts that this project would leave on the local community via:

Sr. No.	Comment	Response
	The project will use solar light for energy generation, would there be pollution from the plant?	For the project, the solar energy is renewable source of energy for pollution free electricity generation. Without the use of solar energy for electricity generation, that equal amount of electricity would have been

		generated by the fossil fuel-based power plants in the regional grid.
	I know for power plants, water is required. Is there water requirement for this project?	No, water is not required in this technology-based power projects. This shows the water saving opportunity for the region, which would be used during electricity generation by conventional power plants.
	I'm not sure whether the project will have noise problem. Would you please have some introduction of the problem?	There are no such moving parts in this type of technology-based power plants, thus there is no noise problem from this power project, at all.
	Will this project fetch the employment opportunities to the local residents?	Yes, this project would generate employment opportunities in the region. Moreover, this may attract more companies, to invest in such kind of clean energy generation projects, in this region along with employment opportunities.

The PD also placed a grievance register onsite in where the stakeholder can put down his/her complain and the same if found genuine will be addressed immediately and a grievance redress procedure is a formalized process through which individuals or employees can address complaints, concerns, or grievances they may have within an organization. Here's a typical mitigation mechanism:

- **Submission of Grievance:** The first step involves the individual formally submitting their grievance in the grievance register which is placed at entrance gate of the project.
- **Acknowledgment and Analysis:** Upon receiving the grievance, the organization acknowledges receipt of the complaint and do the analyze that the grievance is genuine or not.

- **Resolution of Grievance:** Based on the findings of the investigation, the organization works towards resolving the grievance. This could involve taking corrective actions, implementing changes in policies or procedures, providing compensation or restitution.
- **Documentation:** Throughout the entire process, detailed documentation is maintained. This includes records of the grievance, investigation findings, actions taken.

E.2 Final continuous input / grievance mechanism

METHOD	INCLUDE ALL DETAILS OF CHOSEN METHOD (S) SO THAT THEY MAY BE UNDERSTOOD AND, WHERE RELEVANT, USED BY READERS.
Continuous Input / Grievance Expression Process Book (mandatory)	During the stakeholder feedback round the local villagers and other stakeholders were informed about the continuous input mechanism and contact details were briefed. The Grievance Register are available at the project site at security office of Juniper Green Sigma Private Limited located at various villages of Sabarkantha, Banaskantha and Aravalli districts in Gujarat state of India. The project activity has a capacity of 120 MW_{AC}. The documentation is available permanently to stakeholders at project site at security office which is accessible to everyone for each site. Once a comment or grievance is received it has to be presented to the management during the monthly meet along with the action taken to resolve the same. In case any input/approval is required from the Management that shall be discussed and resolved during the monthly management meets. The management may decide to further assess or carry out further investigation if required. Although no grievances have been received by the locals and global stakeholders during the current renewal of crediting period.
GS Contact (mandatory)	help@goldstandard.org
Other	Mr. Ankush Malik Email id: ankush.malik@junipergreenenergy.com

APPENDIX 1 - SAFEGUARDING PRINCIPLES ASSESSMENT

Complete the Assessment below and copy all Mitigation Measures for each Principle into [SECTION D](#) above. Please refer to the instructions in the [Guide to Completing](#) this Form.

SOCIAL SAFEGUARDING PRINCIPLES		
Reference requirement	Question	Response
P.1 Human Rights		
P.1.1.1 	Does the project developer, its representatives and the Project disrespect internationally proclaimed human rights?	☐ YES ☒ NO
P.1.1.1 	Is the project involved or complicit in violence or human rights abuses of any kind as defined in the Universal Declaration of Human Rights?	☐ YES ☒ NO
P.1.1.2 	Have local communities or individuals raised human rights concerns regarding the project (e.g., during the stakeholder engagement process, grievance processes, public statements)?	☐ YES ☒ NO
P.1.1.3 	Is there a risk that rights-holders (e.g., Project-affected stakeholders) do not have the capacity to claim their rights?	☐ YES ☒ NO
P.1.1.3 	Does this project undermine national or regional measures for the realisation of the right to development?	☐ YES ☒ NO
If the answer to any of the questions above is "yes," please explain the reason and how the project will ensure compliance with applicable requirements.		
Not Applicable		
Would the project potentially involve or lead to:		
P.1.1.1 	adverse impacts on enjoyment of the human rights (civil, political, economic, social or cultural) of the affected population and particularly of marginalised groups?	☐ YES ☐ POTENTIALLY ☒ NO
P.1.1.2 	inequitable or discriminatory impacts on affected populations, particularly people living in poverty or marginalised or excluded individuals or groups, including persons with disabilities?	☐ YES ☐ POTENTIALLY ☒ NO

P.1.1.3 	restrictions in availability, quality of and/or access to resources or basic services, in particular to marginalised individuals or groups, including persons with disabilities?	☐ YES ☐ POTENTIALLY ☒ NO
P.1.1.3 	exacerbation of conflicts among and/or the risk of violence to project-affected communities and individuals?	☐ YES ☐ POTENTIALLY ☒ NO

Briefly describe below how the project incorporates a human rights-based approach.

For example, by describing how the project design:

- is informed by human rights analysis, including from UN human rights mechanisms (human rights treaty bodies, universal periodic review, special procedures)
- includes measures to assist the government to realise (respect, protect and fulfil) human rights under international law and to implement human rights-related standards in national law (whichever is higher)
- enhances the availability, accessibility and quality of benefits and services for potentially marginalised individuals and groups, and to increase their inclusion in decision-making processes that may impact them (consistent with the non-discrimination and equality human rights principle)
- provides reasonable accommodations to strengthen inclusivity and accessibility of project benefits and services to persons with disabilities.

Not Applicable

P.2 | GENDER EQUALITY AND WOMEN'S EMPOWERMENT

P.2.1.1 	Have women's groups/leaders raised gender equality concerns regarding the project, (e.g., during the stakeholder engagement process, grievance processes, public statements)?	☐ YES ☒ NO
P.2.1.2 	Does the project undermine the principles of non-discrimination, equal treatment, and equal pay for equal work?	☐ YES ☒ NO
P.2.1.2 	Does the project prevent men and women from having equal opportunities to participate in identified tasks and activities, whether through paid work, volunteer work, or community contributions, as appropriate?	☐ YES ☒ NO
P.2.1.2 	Does the project limit the participation of women or men based on pregnancy, maternity/paternity leave, or marital status?	☐ YES ☒ NO
P.2.1.2 	Is information about project objectives being communicated in a way that is inappropriate for the local context and not tailored to the methods of understanding of both women and men, which could hinder their participation?	☐ YES ☒ NO
P.2.1.3 	Has the project assessed gender risks without referencing the country's gender strategy or equivalent national commitment?	☐ YES ☒ NO

P.2.1.4 	Has expert stakeholder(s) been involved, and has their input been requested for the project design on gender equality and women's empowerment?	☐ YES ☒ NO
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If the answer to any of the questions above is "yes," please explain the reason and how the project will ensure compliance with applicable requirements.

Not Applicable

Would the project potentially involve or lead to:

P.2.1.1 	adverse impacts on gender equality and/or the situation of women and girls?	☐ YES ☐ POTENTIALLY ☒ NO
P.2.1.1 	exacerbation of risks of gender-based violence? For example, through the influx of workers to a community, changes in community and household power dynamics, increased exposure to unsafe public places and/or transport, etc.	☐ YES ☐ POTENTIALLY ☒ NO
P.2.1.2 	reproducing discriminations against women based on gender, especially regarding participation in design and implementation or access to opportunities and benefits?	☐ YES ☐ POTENTIALLY ☒ NO
P.2.1.2 	limitations on women's ability to use, develop and protect natural resources, taking into account different roles and positions of women and men in accessing environmental goods and services? For example, activities that could lead to natural resources degradation or depletion in communities who depend on these resources for their livelihoods and well-being.	☐ YES ☐ POTENTIALLY ☒ NO

Briefly describe below how the project is addressing any identified risk to gender equality and women's empowerment.

Not Applicable

[P.3 | COMMUNITY HEALTH AND SAFETY](#)

P.3.1.1 	Does the project involve potential risks to the health and safety of affected communities during its life cycle?	☐ YES ☒ NO
P.3.1.2 	Does the project involve any potential risks to the workers' safety and health?	☐ YES ☒ NO

If the answer to any of the questions above is "yes," please explain the reason and how the project will ensure compliance with applicable requirements.

Not Applicable

Would the project potentially involve or lead to:

P.3.1.1 	construction and/or infrastructure development (e.g., roads, buildings, dams)?	☐ YES ☒ NO
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P.3.1.2 	air pollution, noise, vibration, traffic, injuries, physical hazards, poor surface water quality due to runoff, erosion, sanitation?	☐ YES ☐ POTENTIALLY ☒ NO
P.3.1.2 	harm or losses due to failure of structural elements of the project (e.g., collapse of buildings or infrastructure)?	☐ YES ☐ POTENTIALLY ☒ NO
P.3.1.2 	risks of water-borne or other vector-borne diseases (e.g., temporary breeding habitats), communicable and noncommunicable diseases, nutritional disorders, mental health?	☐ YES ☐ POTENTIALLY ☒ NO
P.3.1.2 	transport, storage, and use and/or disposal of hazardous or dangerous materials (e.g., explosives, fuel and other chemicals during construction and operation)?	☐ YES ☐ POTENTIALLY ☒ NO
P.3.1.2 	adverse impacts on ecosystems and ecosystem services relevant to communities' health (e.g., food, surface water purification, natural buffers from flooding)?	☐ YES ☐ POTENTIALLY ☒ NO

Briefly describe below how the project is addressing any identified risk related to community health and safety.

Not Applicable

P.4 | CULTURAL HERITAGE, INDIGENOUS PEOPLE, DISPLACEMENT AND RESETTLEMENT

P.4.1 | Sites of Cultural and Historical Heritage

P.4.1.1 	Does the project involve altering, damaging, or removing sites, objects, or structures of significant cultural heritage?	☐ YES ☒ NO
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If the answer to question above is "yes," please explain the reason and how the project will ensure compliance with applicable requirements.

Not Applicable

Would the project potentially involve or lead to:

P.4.1.1 	activities adjacent to or within a cultural heritage site?	☐ YES ☐ POTENTIALLY ☒ NO
P.4.1.1 	significant excavations, demolitions, movement of earth, flooding or other environmental changes?	☐ YES ☐ POTENTIALLY ☒ NO
P.4.1.1 	alterations to landscapes and natural features with cultural significance?	☐ YES ☐ POTENTIALLY ☒ NO
P.4.1.1 	adverse impacts to sites, structures, or objects with historical, cultural, artistic, traditional or religious values or	☐ YES

	intangible forms of culture (e.g., knowledge, innovations, practices)? (Note: projects intended to protect and conserve Cultural Heritage may also have inadvertent adverse impacts)	☐ POTENTIALLY ☒ NO
P.4.1.2 	utilisation of tangible and/or intangible forms (e.g., practices, traditional knowledge) of Cultural Heritage for commercial or other purposes?	☐ YES ☐ POTENTIALLY ☒ NO
P.4.1.2 	If answer to question above is "YES" or "POTENTIALLY" - are the communities made aware of their right under the law, scope and nature of proposed development and its potential consequences?	☐ YES ☒ NO ☐ NA
P.4.1.3 	If answer to question above is "YES" - does the project provide equitable sharing of benefits from commercialisation of such knowledge, innovation, or practice, consistent with their customs and traditions?	☐ YES ☒ NO ☐ NA
P.4.1.4 	If answer to question above is "YES" - are opinions and recommendations of an Expert Stakeholder(s) not sought and demonstrated as being included in the project design?	☐ YES ☒ NO ☐ NA
P.4.1.4 	If answer to question above is "YES", has project design been changed, modified, updated considering opinions and recommendations of an Expert Stakeholder?	☐ YES ☒ NO ☐ NA

If the answer is "yes" or "potentially" to any of the above questions, please provide a brief description of the project situation below. Also, provide justification and/or evidence as necessary to demonstrate compliance with applicable requirements.

Not Applicable

[P.4.2 | Forced Eviction and Displacement](#)

P.4.2.1 	Does the project involve any risks related to involuntary relocation of people?	☐ YES ☒ NO
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If the answer to question above is "yes," please explain the reason and how the project will ensure compliance with applicable requirements.

Not Applicable

Would the project potentially involve or lead to:

P.4.2.1 	risk of forced evictions or involuntary relocation of people?	☐ YES ☐ POTENTIALLY ☒ NO
P.4.2.2 	temporary or permanent and full or partial physical displacement (including people without legally recognisable claims to land)?	☐ YES ☐ POTENTIALLY ☒ NO
P.4.2.2 	economic displacement (e.g., loss of assets or access to resources due to land acquisition or access restrictions – even in the absence of physical relocation)?	☐ YES ☐ POTENTIALLY

		☒ NO
P.4.2.2 	If answer to question above is "YES" or "POTENTIALLY", - has the project developed Resettlement Action Plan or Livelihood Action Plan in consultation and agreement with affected individual, group or community? - has the project integrated Resettlement Action Plan or Livelihood Action Plan into the Project design?	☐ YES ☒ NO ☐ NA
P.4.2.3 	If answer to question above is "YES" - are opinions and recommendations of an Expert Stakeholder(s) not sought and demonstrated as being included in the project design?	☐ YES ☒ NO ☐ NA
P.4.2.3 	If answer to question above is "YES", have project design been changed, modified, updated considering opinions and recommendations of an Expert Stakeholder?	☐ YES ☒ NO ☐ NA

If the answer is "yes" or "potentially" to any of the above questions, please provide a brief description of the project situation below. Also, provide justification and/or evidence as necessary to demonstrate compliance with applicable requirements.

Not Applicable

[P.4.3 | LAND TENURE AND OTHER RIGHTS](#)

P.4.3.1 	Does the project involve any risks related to identifying and managing legitimate tenure rights that may be affected by the project?	☐ YES ☒ NO
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If the answer to question above is "yes," please explain the reason and how the project will ensure compliance with applicable requirements.

Not Applicable

Would the project potentially involve or lead to:

P.4.3.1 	impacts on or changes to land tenure arrangements and/or community-based property rights/customary rights to land, territories and/or resources?	☐ YES ☐ POTENTIALLY ☒ NO
P.4.3.1 	uncertainties with regards to land tenure, access rights, usage rights or land ownership? Examples include, but are not limited to water access rights, community-based property rights and customary rights.	☐ YES ☐ POTENTIALLY ☒ NO
P.4.3.2 	Changes in legal arrangements, if yes, are the changes done in line with relevant laws and regulations?	☐ YES ☒ NO ☐ NA
P.4.3.2 	Changes in legal arrangements, if yes, are these changes agree with free, prior and informed consent of the involved stakeholders?	☐ YES ☒ NO ☐ NA

P.4.3.3 	Does some other entity (other than the project developer) hold uncontested land title for the entire Project Boundary?	☐ YES ☒ NO ☐ NA
P.4.3.4 	Are opinions and recommendations of an Expert Stakeholder(s) not sought and demonstrated as being included in the project design?	☐ YES ☒ NO ☐ NA
P.4.3.4 	If answer to question above is "YES", have project design been changed, modified, updated considering opinions and recommendations of an Expert Stakeholder?	☐ YES ☒ NO ☐ NA
P.4.3.5 	Have project developer in consultation with stakeholders established a functioning mechanism to receive, process, resolve, communicate and record grievances?	☐ YES ☒ NO ☐ NA

If the answer is "yes" or "potentially" to any of the above questions, please provide a brief description of the project situation below. Also, provide justification and/or evidence as necessary to demonstrate compliance with applicable requirements.

Not Applicable

[P.4.4 | INDIGENOUS PEOPLES](#)

P.4.4.1 	Does the project involve Indigenous People within the Project area of influence who may be affected directly or indirectly by the Project?	☐ YES ☒ NO
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If the answer to question above is "yes," please explain project situation and how the project will ensure compliance with applicable requirements.

Not Applicable

Would the project potentially involve or lead to:

P.4.4.1 	affect areas where indigenous peoples are present (including project area of influence)	☐ YES ☐ POTENTIALLY ☒ NO
P.4.4.1 	affect areas, land and territory claimed by indigenous peoples?	☐ YES ☐ POTENTIALLY ☒ NO
P.4.4.1 	impacts (positive or negative) to the human rights, lands, natural resources, territories, and traditional livelihoods of indigenous peoples?	☐ YES ☐ POTENTIALLY ☒ NO
P.4.4.7 	If answer to above questions is "YES" or "POTENTIALLY", - Is it determined that the proposed project may affect the rights, lands, resources, or territories of indigenous people? - Has an "Indigenous People Plan" (IPP) or "Indigenous People Plan Framework" been elaborated and included in the project documentation?	☐ YES ☒ NO ☐ NA

	- Was the plan developed in accordance with the effective and meaningful participation of indigenous peoples and in accordance with UNDP Guidelines?	
P.4.4.3	risk of forcibly removing indigenous people from their lands and territories?	☐ YES ☐ POTENTIALLY ☒ NO
P.4.4.4	utilisation and/or commercial development of natural resources on lands and territories claimed by indigenous peoples? Consider, and where appropriate ensure, consistency with the answers under Principle 4.1 above	☐ YES ☐ POTENTIALLY ☒ NO
P.4.4.5 P.4.4.6	If answer to question above is "YES" or "POTENTIALLY" - Did the project obtain free, prior and informed consent from indigenous people before taking their cultural, intellectual, religious, and/or spiritual property? - Does the project ensure that the indigenous people receive an equitable sharing of benefits resulting from the use of their traditional knowledge and practices? ? - Does the project ensure that the sharing of benefits resulting from the use of indigenous peoples' traditional knowledge and practices is culturally appropriate and inclusive? - Does the project ensure that the provision of equitable sharing of benefits does not impede land rights or equal access to basic services including health services, clean water, energy, education, safe and decent working conditions, and housing?	☐ YES ☒ NO ☐ NA
P.4.4.8	Does the project lack appropriate feedback and grievance channels for Indigenous Peoples and their representatives?	☐ YES ☒ NO ☐ NA
P.4.4.8	Has a grievance mechanism not been established at the beginning of programme or project implementation with due consideration given to customary dispute settlement mechanisms among the Indigenous Peoples concerned and will it remain operational throughout the project cycle?	☐ YES ☒ NO ☐ NA

P.4.4.9 	Are opinions and recommendations of an Expert Stakeholder(s) not sought and demonstrated as being included in the project design?	☐ YES ☒ NO ☐ NA
P.4.4.9 	If answer to question above is "YES", have project design been changed, modified, updated considering opinions and recommendations of an Expert Stakeholder?	☐ YES ☒ NO ☐ NA

If the answer is "yes" or "potentially" to any of the above questions, please provide a brief description of the project situation below. Also, provide justification and/or evidence as necessary to demonstrate compliance with applicable requirements.

Not Applicable

P.5 | CORRUPTION

P.5.1.1 	Does the project involve, or is it complicit in, contributing to or reinforcing corruption or corrupt projects?	☐ YES ☒ NO
P.5.1.1 	Does the project have a risk of encouraging bribery, kickbacks, or other unethical behavior?	☐ YES ☒ NO

If the answer to any of the questions above is "yes," please explain project situation and how the project will ensure compliance with applicable requirements.

Not Applicable

ECONOMIC SAFEGUARDING PRINCIPLES

P.6 | ECONOMIC IMPACTS

P.6.1 | LABOUR RIGHTS AND WORKING CONDITIONS

P.6.1.1 	Does the project involve, facilitate, or condone forced labor, or pose a potential risk of forced labor?	☐ YES ☒ NO
P.6.1.1 	Does the project violate any labor or health and safety laws, international obligations, or ILO conventions?	☐ YES ☒ NO
P.6.1.2 	Does the project violate the principles of equal opportunity and fair treatment in its employment decisions?	☐ YES ☒ NO
P.6.1.3 	Does the project violate national laws, if available regarding non-discrimination in employment?	☐ YES ☒ NO
P.6.1.4 P.6.1.5 	Does the project allow child labor?	☐ YES ☒ NO
P.6.1.7 P.6.1.8 	Does the project have insufficient processes and measures in place to ensure the safety and health of project workers?	☐ YES ☒ NO
P.6.1.9 	Does the project have insufficient measures to safeguard and support vulnerable project workers, such as women, people with disabilities, migrant workers, and young workers, and to prevent any kind of harassment, abuse, bullying, or exploitation, including gender-based violence (GBV)?	☐ YES ☒ NO

P.6.1.10 	Does the project have no grievance mechanism available for workers to voice workplace concerns? Is information about this mechanism not provided to workers at the time of recruitment, or is it not easily accessible?	☐ YES ☒ NO
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If the answer to any of the questions above is "yes," please explain project situation and how the project will ensure compliance with applicable requirements.

Not Applicable

Would the project potentially involve or lead to:

(NOTE: APPLIES TO BOTH PROJECT AND CONTRACTOR WORKERS)

P.6.1.1 	use of forced labour?	☐ YES ☐ POTENTIALLY ☒ NO
P.6.1.1 	working conditions that do not meet national labour laws and international commitments?	☐ YES ☐ POTENTIALLY ☒ NO
P.6.1.1 	working conditions that may deny freedom of association and collective bargaining?	☐ YES ☐ POTENTIALLY ☒ NO
P.6.1.1 	absence of documented working agreements with all individual workers <i>if such agreements do not exist, or do not address working conditions and terms of employment, the project developer shall provide reasonable working conditions and terms of employment.</i>	☐ YES ☐ POTENTIALLY ☒ NO
P.6.1.1 	use of migrant workers? <i>if engaged, the developer shall ensure that they are engaged substantially equivalent terms and conditions to non-migrant workers carrying out similar work.</i>	☐ YES ☐ POTENTIALLY ☒ NO
P.6.1.1 	having no arrangements for basic services ⁵⁰ for workers? <i>the project developer shall put in place and implement policies on the quality and management of the accommodation and provision of basic services in a manner</i>	☐ YES ☐ POTENTIALLY ☒ NO

⁵⁰ Basic services requirements refer to minimum space, supply of water, adequate sewage and garbage disposal system, appropriate protection against heat, cold, damp, noise, fire, and disease-carrying animals, adequate sanitary and washing facilities, ventilation, cooking and storage facilities and natural and artificial lighting, and in some cases basic medical services.

	<i>consistent with the principles of non-discrimination and equal opportunity. Workers' accommodation arrangements should not restrict workers' freedom of movement or of association</i>	
P.6.1.2 	any form of discrimination or harassment based on factors unrelated to job requirements, such as gender, race, nationality, ethnicity, social or indigenous origin, religion or belief, disability, age, or sexual orientation?	☐ YES ☐ POTENTIALLY ☒ NO
P.6.1.2 	any form of discrimination in any aspect of employment, such as recruitment, compensation, working conditions, training, job assignment, promotion, termination, or discipline?	☐ YES ☐ POTENTIALLY ☒ NO
P.6.1.2 	harassment, intimidation, and/or exploitation, especially in regard to women?	☐ YES ☐ POTENTIALLY ☒ NO
P.6.1.3 	discriminatory working conditions and/or lack of equal opportunity where national law provides provision to address non-discrimination in employment?	☐ YES ☐ POTENTIALLY ☒ NO
P.6.1.4 	use of child labour? (including third-party engaged workers)	☐ YES ☐ POTENTIALLY ☒ NO
P.6.1.4 	inadequate and verifiable mechanisms for age verification?	☐ YES ☒ NO
P.6.1.7 	no processes and measures in place for the safety and health of project workers?	☐ YES ☒ NO
P.6.1.7 	No provision of safety and health training provisions, including on the proper use and maintenance of personal protective equipment conducted by competent persons and the maintenance of training records?	☐ YES ☒ NO
P.6.1.7 	No provision to record and document accidents, diseases, incidents, and any resulting injuries, illnesses, or deaths?	☐ YES ☒ NO
P.6.1.8 	occupational health and safety risks due to physical, chemical, biological and psychosocial hazards (including violence and harassment) throughout the project life-cycle?	☐ YES ☒ NO
P.6.1.9 	No measures to protect vulnerable project workers from harassment, exploitation, and gender-based violence (GBV)? This includes women, people with disabilities, migrant workers, and young workers.	☐ YES ☒ NO
P.6.1.10 	No grievance mechanism available for workers to voice workplace concerns.	☐ YES ☒ NO
P.6.1.11 	No measures for due diligence and the establishment of policies and procedures to manage and monitor the performance of third-party employees in the project?	☐ YES ☒ NO

If the answer is "yes" or "potentially" to any of the above questions, please provide a brief description of the project situation below. Also, provide justification and/or evidence as necessary to demonstrate compliance with applicable requirements.

Not Applicable

P.6.2 | NEGATIVE ECONOMIC CONSEQUENCES

P.6.2.1	Is there a risk of project failure during implementation or after project certification due to a lack of financial resources?	☐ YES ☒ NO
P.6.2.2	Does the project have potential negative impacts or pose a risk to the local economy?	☐ YES ☒ NO
P.6.2.2	Are there any potential risks or negative impacts this project may have on vulnerable or marginalised social groups, despite the benefits it may bring?	☐ YES ☒ NO

If the answer to any of the questions above is "yes," please explain project situation and how the project will ensure compliance with applicable requirements.

Not Applicable

Would the project involve or lead to:

P.6.2.2	economic impacts (negative/detrimental) to the local economy?	☐ YES ☐ POTENTIALLY ☒ NO
P.6.2.2	negative economic consequences during and after project implementation, e.g., for vulnerable and marginalised social groups in targeted communities?	☐ YES ☐ POTENTIALLY ☒ NO

If the answer is "yes" or "potentially" to any of the above questions, please provide a brief description of the project situation below. Also, provide justification and/or evidence as necessary to demonstrate compliance with applicable requirements.

Not Applicable

P.7 | CLIMATE AND ENERGY

P.7.1 | GHG EMISSIONS

P.7.1.1	Does the project have a risk of increasing greenhouse gas emissions over the Baseline Scenario?	☐ YES ☒ NO
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If the answer to question above is "yes," please explain project situation and how the project will ensure compliance with applicable requirements.

Not Applicable

Would the project involve or lead to:

P.7.1.1	increase greenhouse gas emissions over the Baseline Scenario?	☐ YES
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		☐ POTENTIALLY ☒ NO
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If the answer is "yes" or "potentially" to the above question, please provide a brief description of the project situation below. Also, provide justification and/or evidence as necessary to demonstrate compliance with applicable requirements.

Not Applicable

P.7.2 | ENERGY SUPPLY

<u>P.7.2.1 </u>	Does the project pose a risk to the availability and reliability of energy supply to other users?	☐ YES ☒ NO
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If the answer to question above is "yes," please explain project situation and how the project will ensure compliance with applicable requirements.

Not Applicable

Would the project involve or lead to:

<u>P.7.2.1 </u>	negative impact on the availability and reliability of energy supply to other users?	☐ YES ☐ POTENTIALLY ☒ NO
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If the answer is "yes" or "potentially" to the above question, please provide a brief description of the project situation below. Also, provide justification and/or evidence as necessary to demonstrate compliance with applicable requirements.

Not Applicable

P.8 | WATER

P.8.1 | IMPACT ON NATURAL WATER PATTERNS/FLOWS

<u>P.8.1.1 </u>	Does the project increase water usage to a level that will not allow for the maintenance of environmental flows?	☐ YES ☒ NO
<u>P.8.1.1 </u>	Does the project result in the discharge of wastewater that does not meet the required standard for beneficial reuse and could therefore negatively impact the environmental flow?	☐ YES ☒ NO
<u>P.8.1.1 </u>	Does the project have the potential risk to exceed the rate of recharge for the groundwater source?	☐ YES ☒ NO
<u>P.8.1.1 </u>	Does the project involve any processes or activities that could contaminate the groundwater and render it unsuitable for use?	☐ YES ☒ NO

If the answer to any of the questions above is "yes," please explain project situation and how the project will ensure compliance with applicable requirements.

Not Applicable

Would the project involve or lead to:

<u>P.8.1.1 </u>	affect the natural or pre-existing pattern of watercourses, groundwater and/or the watershed(s) such as high seasonal	☐ YES ☐ POTENTIALLY
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	flow variability, flooding potential, lack of aquatic connectivity or water scarcity?	☒ NO
P.8.1.1 	Wastewater discharge of quality that does not meet the required standard for beneficial reuse?	☐ YES ☐ POTENTIALLY ☒ NO
P.8.1.1 	significant extraction, diversion of ground water? For example, construction of dams, reservoirs, river basin developments, groundwater extraction	☐ YES ☐ POTENTIALLY ☒ NO
P.8.1.2 	Are opinions and recommendations of an Expert Stakeholder(s) not sought and demonstrated as being included in the project design?	☐ YES ☒ NO ☐ NA

If the answer is "yes" or "potentially" to any of the above questions, please provide a brief description of the project situation below. Also, provide justification and/or evidence as necessary to demonstrate compliance with applicable requirements.

Not Applicable

[P.8.2 | EROSION AND/OR WATER BODY INSTABILITY](#)

P.8.2.1 	Does the project have a risk of negatively impacting the catchment and has it been assessed and addressed?	☐ YES ☒ NO
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If the answer to question above is "yes," please explain project situation and how the project will ensure compliance with applicable requirements.

Not Applicable

Would the project involve or lead to:

P.8.2.2 	negatively impact on the catchment area?	
P.8.2.5 	<i>If yes, Erosion prevention measures, including soil and slope protection measures, must be implemented before project commencement. These measures should involve natural terracing, infiltration strips, permanent ground cover, hedge and tree rows, and effective slope length assessment. Regular reassessment of these measures is necessary.</i>	☐ YES ☐ POTENTIALLY ☒ NO
P.8.2.6 	Are opinions and recommendations of an Expert Stakeholder(s) not sought and demonstrated as being included in the project design?	☐ YES ☒ NO ☐ NA

If the answer is "yes" or "potentially" to any of the above questions, please provide a brief description of the project situation below. Also, provide justification and/or evidence as necessary to demonstrate compliance with applicable requirements.

Not Applicable

[P.9 | ENVIRONMENT, ECOLOGY AND LAND USE](#)

[P.9.1 | LANDSCAPE MODIFICATION AND SOIL](#)

P.9.1.1 -	Is there any risk of soil resource degradation or loss of ecosystem services provided by soils in the project?	
P.9.1.3 	<i>If yes, the project shall maintain healthy soils by minimising negative impacts on soil health, productivity, structure, and water retention. Steps to minimise soil degradation include crop rotation, composting, using N-fixing plants, and reducing tillage and ecologically harmful substances.</i>	☐ YES ☒ NO

If the answer to question above is "yes," please explain project situation and how the project will ensure compliance with applicable requirements.

Not Applicable

Would the project involve or lead to:

P.9.1.4 	production, harvesting, and/or management of living natural resources by small-scale landholders and/or local communities?	☐ YES ☐ POTENTIALLY ☒ NO
P.9.1.4 	if answer to above question "yes" or "potentially", does project adopt appropriate and culturally sensitive sustainable resource management practices?	☐ YES ☒ NO ☐ NA

If the answer is "yes" or "potentially" to any of the above questions, please provide a brief description of the project situation below. Also, provide justification and/or evidence as necessary to demonstrate compliance with applicable requirements.

Not Applicable

[P.9.2 | VULNERABILITY TO NATURAL DISASTER](#)

P.9.2.1 	Does the project have any risks associated with natural or man-made hazards that could result from land use changes due to the project?	☐ YES ☒ NO
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If the answer to question above is "yes," please explain project situation and how the project will ensure compliance with applicable requirements.

Not Applicable

Would the project involve or lead to:

P.9.2.2 	any potential risks that require emergency preparedness and response planning?	☐ YES ☐ POTENTIALLY ☒ NO
P.9.2.2 	if answer to above question "yes" or "potentially", did the project developer disclose appropriate information about emergency preparedness and response to affected communities?	☐ YES ☒ NO ☐ NA

If the answer is "yes" or "potentially" to any of the above questions, please provide a brief description of the project situation below. Also, provide justification and/or evidence as necessary to demonstrate compliance with applicable requirements.

Not Applicable

P.9.3 | BIOSAFETY AND GENETIC RESOURCES

P.9.3.1	Does the project involve the transfer, handling, and use of genetically modified organisms/living modified organisms that may result in adverse effects on biological diversity?	☐ YES ☒ NO
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If the answer to question above is "yes," please explain project situation and how the project will ensure compliance with applicable requirements.

Not Applicable

Would the project involve or lead to:

P.9.3.1	the transfer, handling and use of genetically modified organisms/living modified organisms (GMOs/LMOs) that result from modern biotechnology	☐ YES ☐ POTENTIALLY ☒ NO
P.9.3.1	If answer to above question is "yes" has a risk assessment by a competent Expert stakeholder been carried out in accordance with Annex iii of the Cartagena protocol on biosafety to the convention on biological diversity?	☐ YES ☒ NO ☐ NA
P.9.3.2	If answer to above question is "yes" has any risks identified in the risk assessment?	☐ YES ☒ NO ☐ NA
P.9.3.3	Forestry (for example Afforestation/Reforestation) involving GMO planting? <i>Note - Forestry projects (for example Afforestation/Reforestation) involving GMO planting are not eligible for Certification under Gold Standard for the Global Goals.</i>	☐ YES ☒ NO ☐ NA

If the answer is "yes" or "potentially" to any of the above questions, please provide a brief description of the project situation below. Also, provide justification and/or evidence as necessary to demonstrate compliance with applicable requirements.

Not Applicable

P.9.4 | RELEASE OF POLLUTANTS

P.9.4.1	Does the project have a risk of releasing pollutants to air, water, and land in routine, non-routine, or accidental circumstances?	☐ YES ☒ NO
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If the answer to question above is "yes," please explain project situation and how the project will ensure compliance with applicable requirements.

Not Applicable

Would the project involve or lead to:

P.9.4.1	any potential risk of pollutant release that cannot be avoided?	☐ YES ☐ POTENTIALLY ☒ NO
P.9.4.3	If answer to above question is "Yes" or "potentially", has the project identified all potential pollution sources that may	☐ YES

	degrade the quality of soil, air, surface, and groundwater in the project area?	☒ NO ☐ NA
P.9.4.2 	If answer to above question is "Yes" or "potentially", do the pollution prevention and control technologies and practices applied during the project life cycle align with national regulations or international best practices?	☐ YES ☒ NO ☐ NA
P.9.4.3 	If answer to above question is "Yes", is there a monitoring plan to ensure that mitigation measures are implemented, and resources are protected?	☐ YES ☒ NO ☐ NA

If the answer is "yes" or "potentially" to any of the above questions, please provide a brief description of the project situation below. Also, provide justification and/or evidence as necessary to demonstrate compliance with applicable requirements.

Not Applicable

[P.9.5 | HAZARDOUS AND NON-HAZARDOUS WASTE](#)

P.9.5.1 	Does the project involve the generation of waste materials (both hazardous and non-hazardous)?	☒ YES ☐ NO
P.9.5.3 	Does the project involve risk of release of hazardous materials resulting from their production, transportation, handling, storage, or use?	☒ YES ☐ NO
P.9.5.5 	Does the project involve the use of any chemicals or materials subject to international bans or phase-outs?	☐ YES ☒ NO

If the answer to any of the questions above is "yes," please explain project situation and how the project will ensure compliance with applicable requirements.

P.9.5.1 and P.9.5.3- A hazardous waste inventory is maintained as per the provisions of the Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008

Would the project involve or lead to:

P.9.5.1 	the generation and management of waste materials?	☒ YES ☐ POTENTIALLY ☐ NO
P.9.5.1 	treatment, destruction, or disposal of waste material?	☒ YES ☐ NO ☐ NA
P.9.5.1 	If answer to above question is "Yes", does the project involve an environmentally friendly method that includes appropriate control of emissions and residues resulting from the handling and processing of waste material?	☐ YES ☒ NO ☐ NA
P.9.5.3 	risk of release of hazardous materials resulting from their production, transportation, handling, storage, or use?	☐ YES ☒ NO ☐ NA
P.9.5.3 	If answer to above question is "yes", does project has measures in place to address health risks?	☐ YES ☒ NO

		☐ NA
P.9.5.4 	Involve manufacture, trade, and use of chemicals and hazardous materials subject to international bans or phase-outs due to their high toxicity to living organisms, environmental persistence, potential for bioaccumulation, or potential for depletion of the ozone layer	☐ YES ☐ POTENTIALLY ☒ NO

If the answer is "yes" or "potentially" to any of the above questions, please provide a brief description of the project situation below. Also, provide justification and/or evidence as necessary to demonstrate compliance with applicable requirements.

P 9.5.1 and P 9.5.3- A hazardous waste inventory is maintained as per the provisions of the Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008. The waste will be stored in the designated storage area within the premises and will be disposed to the waste handlers and the firm complies with all the local and legal laws for monitoring and disposal.

[P.9.6 | PESTICIDES & FERTILISERS](#)

P.9.6.1 	Does the project involve the use of chemical pesticides?	☐ YES ☒ NO
P.9.6.5 	Does the project involve purchase, store, manufacture, trade or use products that fall in Classes IA (extremely hazardous) and IB (highly hazardous)	☐ YES ☒ NO
P.9.6.6 	Does the project use fertilisers, and if so, are measures being taken to minimise their use and nutrient losses to the environment?	☐ YES ☒ NO

If the answer to any of the questions above is "yes," please explain project situation and how the project will ensure compliance with applicable requirements.

Not Applicable

Would the project involve or lead to:

P.9.6.1 	chemical pesticides use for pest management?	☐ YES ☐ POTENTIALLY ☒ NO
P.9.6.4 	If answer to question above is "yes" or "potentially", does project has documented Chemical Pesticides Policy in place?	☐ YES ☒ NO ☐ NA
P.9.6.5 	purchase, store, use, manufacture, or trade in Class II (moderately hazardous) pesticides?	☐ YES ☐ POTENTIALLY ☒ NO
P.9.6.5 	If answer to question above is "yes" or "potentially", does project has appropriate controls on manufacture, procurement, or distribution and/or use of these chemicals?	☐ YES ☒ NO ☐ NA

If the answer is "yes" or "potentially" to any of the above questions, please provide a brief description of the project situation below. Also, provide justification and/or evidence as necessary to demonstrate compliance with applicable requirements.

Not Applicable

P.9.7 | HARVESTING OF FORESTS

<u>P.9.7.1 </u>	Does the project have a risk of unsustainable forest management, including timber harvesting?	☐ YES ☒ NO
<u>P.9.7.1 </u>	Does the project pose a risk of depleting biodiversity and ecosystem functionality in areas where improved forest management is undertaken?	☐ YES ☒ NO
<u>P.9.7.1 </u>	Does the project risk not meeting requirements for environment-friendly, socially beneficial, and economically viable plantations using native species whenever possible?	☐ YES ☒ NO

If the answer to any of the questions above is "yes," please explain project situation and how the project will ensure compliance with applicable requirements.

Not Applicable

P.9.8 | FOOD SECURITY

<u>P.9.8.1 </u>	Does the project involve the risk of negatively influencing access to and availability of food for people affected?	☐ YES ☒ NO
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If the answer to the question above is "yes," please explain project situation and how the project will ensure compliance with applicable requirements.

Not Applicable

Would the project involve or lead to:

<u>P.9.8.1 </u>	modification of the quantity or nutritional quality of food available such as through crop regime alteration or export or economic incentives?	☐ YES ☐ POTENTIALLY ☒ NO
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If the answer is "yes" or "potentially" to the above question, please provide a brief description of the project situation below. Also, provide justification and/or evidence as necessary to demonstrate compliance with applicable requirements.

Not Applicable

P.9.9 | ANIMAL WELFARE

<u>P.9.9.1 </u>	Does the project involve any risks to animal welfare? Animal welfare shall be ensured by providing access to water and food, appropriate environment, humane treatment, and staff training. Evidence of mistreatment will be treated as an immediate non-conformity.	☐ YES ☒ NO
<u>P.9.9.2 </u>	Does the project involve any potential risk of excessive or inadequate use of veterinary medicines?	☐ YES ☒ NO
<u>P.9.9.4 </u>	Does the project involve the risk of administering synthetic growth promoters, including hormones?	☐ YES ☒ NO

If the answer to any of the questions above is "yes," please explain project situation and how the project will ensure compliance with applicable requirements.

Not Applicable

Would the project involve or lead to:

P.9.9.1 	animal husbandry or harvesting of fish populations or other aquatic species? ⁵¹	☐ YES ☒ NO ☐ NA
P.9.9.1 	limiting access for animals to basic needs like drinking water, adequate food, daylight, appropriate shelter etc.?	☐ YES ☐ POTENTIALLY ☒ NO
P.9.9.3 	inadequate measures to isolate sick animals and control the spread of disease, especially zoonotic diseases?	☐ YES ☒ NO ☐ NA
P.9.9.5 	inadequate low-stress methods, equipment, and facilities that facilitate calm animal movement.	☐ YES ☒ NO ☐ NA
P.9.9.6 	inadequate measures to ensure that animals are exposed to the least stress possible during transportation and slaughtering?	☐ YES ☒ NO ☐ NA
P.9.9.7 	inappropriate spacing per animal and stocking rates per land unit?	☐ YES ☒ NO ☐ NA
P.9.9.8 	inadequate measures to address the specific needs of aquatic animals?	☐ YES ☒ NO ☐ NA
P.9.9.9 P.9.9.10 	primary production of living natural resources such as animal husbandry, aquaculture, and fisheries? If the answer is yes, implement industry-standard sustainable management practices in line with to one or more relevant and credible standards and utilise available technologies.	☐ YES ☒ NO ☐ NA

If the answer is "yes" or "potentially" to any of the above question, please provide a brief description of the project situation below. Also, provide justification and/or evidence as necessary to demonstrate compliance with applicable requirements.

Not Applicable

[P.9.10 | HIGH CONSERVATION VALUE AREAS AND CRITICAL HABITATS](#)

⁵¹ 'Involve' means if the project mechanism and/or impact(s) are achieved via changing animal husbandry practices in some way.

P.9.10.1	Does the project have the risk of negatively impacting HCV areas and/or critical habitats?	☐ YES ☒ NO
P.9.10.2	Does the project in the project area or area of downstream impacts have risks to the following: native tree patches, individual native trees, freshwater resources (including rivers, lakes, swamps, temporary water bodies, and wells), habitats of rare, threatened, and endangered species, and biodiversity-enhancing areas?	☐ YES ☒ NO
If the answer to any of the questions above is "yes," please explain project situation and how the project will ensure compliance with applicable requirements.		
Not Applicable		
Would the project involve or lead to:		
P.9.10.1	identified habitats as HCV areas and or Critical habitats?	☐ YES ☐ POTENTIALLY ☒ NO
P.9.10.1	If answer to above question is "yes", does the project have any risks that could negatively impact the catchment, project success, and surrounding HCV and ecological assets, as well as any measurable adverse impacts on the criteria or biodiversity values for which the critical habitat was designated, and on the ecological processes supporting that biodiversity?	☐ YES ☒ NO ☐ NA
P.9.10.1	If answer to above question is "yes", is a robust, appropriately designed, and long-term Habitats and Biodiversity Action Plan absent which will make the project unable to achieve net gains of those biodiversity values for which the critical habitat was designated?	☐ YES ☒ NO ☐ N/A
P.9.10.2	Does the project area or area of downstream impacts have native tree patches, individual native trees, freshwater resources (including rivers, lakes, swamps, temporary water bodies, and wells), habitats of rare, threatened, and endangered species, and biodiversity-enhancing areas?	☐ YES ☐ POTENTIALLY ☒ NO
P.9.10.2	If the answer to the above question is "yes", will the project have any adverse effects on these areas?	☐ YES ☒ No ☐ NA
P.9.10.3	If the answer to above question is "yes", does the project has opportunities to minimise unwarranted conversion or degradation of the habitat and to enhance the habitat as part of its development?	☐ YES ☒ No ☐ NA
P.9.10.4	Is the project applying Land Use & Forest Activity Requirements and managing a minimum 10% of the project area to protect or enhance the biological diversity of native ecosystems following HCV approach as per the given requirements?	☐ YES ☒ No ☐ NA
P.9.10.5	Are opinions and recommendations of an Expert Stakeholder(s) not sought and demonstrated as being included in the project design?	☐ YES ☒ NO ☐ NA

If the answer is "yes" or "potentially" to any of the above question, please provide a brief description of the project situation below. Also, provide justification and/or evidence as necessary to demonstrate compliance with applicable requirements.

Not Applicable

P.9.11 | ENDANGERED SPECIES

<u>P.9.11.1 </u>	Does the project lead to the reduction or negative impact on any recognised Endangered, Vulnerable or Critically Endangered species?	☐ YES ☒ NO
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If the answer to question above is "yes," please explain project situation and how the project will ensure compliance with applicable requirements.

Not Applicable

Would the project involve or lead to:

<u>P.9.11.2 </u>	distortion of habitats of endangered species?	☐ YES ☐ POTENTIALLY ☒ NA
<u>P.9.11.2 </u>	If answer to the above question is "yes", does the project plan to protect and enhance them?	☐ YES ☐ POTENTIALLY ☒ NO ☐ N/A
<u>P.9.11.2 </u>	Are opinions and recommendations of an Expert Stakeholder(s) not sought and demonstrated as being included in the project design?	☐ YES ☒ NO ☐ NA

If the answer is "yes" or "potentially" to any of the above question, please provide a brief description of the project situation below. Also, provide justification and/or evidence as necessary to demonstrate compliance with applicable requirements.

Not Applicable

P.9.12 | INVASIVE ALIEN SPECIES

<u>P.9.12.1 </u>	Does project introduce any alien species (not currently established in the country or region of the project) into new environments?	☐ YES ☒ NO
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If the answer to question above is "yes," please explain project situation and how the project will ensure compliance with applicable requirements.

Not Applicable

Would the project involve or lead to:

<u>P.9.12.1 </u>	risk of introducing any alien species with a high risk of invasive behaviour regardless of whether such introductions are permitted under the existing regulatory framework?	☐ YES ☐ POTENTIALLY ☒ NO
<u>P.9.12.1 </u>	risk of potential accidental or unintended introductions including the transportation of substrates and vectors (such as soil, ballast, and plant materials) that may harbour alien species.	☐ YES ☐ POTENTIALLY ☒ NO

P.9.12.2	risk of spreading alien species into areas in which they have not already been established?	☐ YES ☐ POTENTIALLY ☒ NO
If the answer is "yes" or "potentially" to any of the above question, please provide a brief description of the project situation below. Also, provide justification and/or evidence as necessary to demonstrate compliance with applicable requirements.		
Not Applicable		

APPENDIX 2 - CONTACT INFORMATION OF PROJECT DEVELOPER(S)

Organization name	Juniper Green Sigma Private Limited
Registration number with relevant authority	U40100DL2011PTC228318
Street/P.O. Box	Sector 32
Building	Plot No. 18, 1st Floor, Institutional Area
City	Gurugram
State/Region	Haryana
Postcode	122001
Country	India
Telephone	+91 0124-4739600
E-mail	ankush.malik@junipergreenenergy.com
Website	http://junipergreenenergy.com/
Contact person	Mr. Ankush Malik
Title	Asst. Manager-Renewable Energy
Salutation	Mr.
Last name	Malik
Middle name	-
First name	Ankush
Department	-
Mobile	9810067467
Direct tel.	-
Personal e-mail	ankush.malik@junipergreenenergy.com

APPENDIX 3 - LUF ADDITIONAL INFORMATION

This is a solar power project hence the section is Not applicable.

APPENDIX 4 - DESIGN CHANGES

There is no design change from previous PDD hence, the section is Not applicable.

APPENDIX 5- CALIBRATION DETAILS

1. For 35 MW solar plant connected to Babsar Substation:

Sr No.	Meter Number	Type	Make	Accuracy class	Date of calibration	Due date ⁵²
1	GJ4583A	Main meter	Secure	0.2s	20/06/2023	19/06/2026
2	GJ4584A	Check meter	Secure	0.2s	20/06/2023	19/06/2026
2	GJ4585A	Standby meter	Secure	0.2s	20/06/2023	19/06/2026

2. For 40 MW solar plant connected to Bhordu Substation:

Sr No.	Meter Number	Type	Make	Accuracy class	Date of calibration	Due date ⁵³
1	GJ4603A	Main meter	Secure	0.2s	08/07/2023	07/07/2026
2	GJ4604A	Check meter	Secure	0.2s	08/07/2023	07/07/2026
2	GJ4605A	Standby meter	Secure	0.2s	08/07/2023	07/07/2026

3. For 45 MW solar plant connected to Khadol Substation:

Sr No.	Meter Number	Type	Make	Accuracy class	Date of calibration	Due date ⁵⁴
1	GJ4606A	Main meter	Secure	0.2s	08/08/2023	07/08/2026
2	GJ4607A	Check meter	Secure	0.2s	08/08/2023	07/08/2026
2	GJ4608A	Standby meter	Secure	0.2s	08/08/2023	07/08/2026

⁵² As per clause 7.2 of PPA the calibration frequency of meters is once in three years.

⁵³ As per clause 7.2 of PPA the calibration frequency of meters is once in three years.

⁵⁴ As per clause 7.2 of PPA the calibration frequency of meters is once in three years.

DOCUMENT HISTORY

Version	Date	Remarks
1.5	29 June 2023	Editorial changes to match V2.1 of the Safeguarding Principles Requirements
1.4	21 June 2023	Editorial changes to match V2.0 of the Safeguarding Principles Requirements
1.3	14 April 2023	Integrated the design change memo as annex of the document. Editorial changes
1.2	14 October 2020	Hyperlinked section summary to enable quick access to key sections Improved clarity on Key Project Information Inclusion criteria table added Gender sensitive requirements added Prior consideration (1 yr rule) and Ongoing Financial Need added Safeguard Principles Assessment as annex and a new section to include applicable safeguards for clarity Improved Clarity on SDG contribution/SDG Impact term used throughout Clarity on Stakeholder Consultation information required Provision of an accompanying Guide to help the user understand detailed rules and requirements
1.1	24 August 2017	Updated to include section A.8 on 'gender sensitive' requirements
1.0	10 July 2017	Initial adoption