



South Asia

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Gold Standard for Global Goals Validation Report for Renewal of Crediting Period

GS PROJECT NO. GS7080

**“72 MWAC RAMNAD SOLAR
POWER PROJECT”**

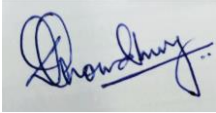
Report No. ET-006672

08 May 2024

TÜV SÜD South Asia Pvt. Ltd.
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South Asia

Title of the project activity	72 MWAC Ramnad Solar Power Project
GS Reference number of the project activity	GS7080
Version number of the validation report	2.0
Completion date of the validation report	08/05/2024
Version number of PDD to which this report applies	3.0
Project participant(s)	Ramnad Solar Power Limited
Host Party	India
Sectoral scope(s)	01: Energy industries (renewable sources)
Methodology (ies)	ACM0002: Grid-connected electricity generation from renewable sources -Version 21.0
Estimated amount of annual average GHG emission reductions or GHG removals by sinks in the next crediting period	106,873 tCO ₂ e
Name of VVB	TUV SUD South Asia Pvt Ltd
Name, position and signature of the approver of the validation report	 Deepankar Chowdhury, Head - Quality Assurance, TÜV SÜD South Asia



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Annex 1: List of findings

Annex 2: Information Reference List



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1 INTRODUCTION

1.1 Objective

TÜV SÜD has been commissioned by the aforementioned client Infinite Solutions to perform an independent validation assessment for the renewal of crediting period of Gold Standard Project 7080.

The objective of the Validation is to have an independent evaluation of the update PDD's compliance with relevant UNFCCC and GS4GG requirements and host Party criteria to confirm that the original project baseline is still valid or has been updated taking into account of new data where applicable. In particular, the project's baseline, monitoring plan and the project's compliance with relevant GS and UNFCCC requirements and host Party criteria are validated in order to confirm the correctness of the application of the approved baseline methodologies for the determination of the continued validity of the baseline/or its update, and estimation of the emission reductions for the applicable crediting period. The validation scope involves reviewing the updated GS-PDD against the Gold Standard, GS4GG requirements.

1.2 Scope

The scope of any assessment is defined by the underlying legislation, regulation and guidance given by relevant entities or authorities. In the case of GS project activities, the scope is set by:

- GS4GG requirements
- Clean Development Mechanism Validation and Verification Standard (VVS) for Project Activities v3.0
- Baselines and monitoring methodologies (including GHG inventories)
- Environmental issues relevant to the applicable sectoral scope
- Applicable environmental and social impacts and aspects of GS project activity
- Current technical and operational knowledge of the specific sectoral scope and information on best practice
- Stakeholder consultation and feedback

The validation process is not meant to provide any form of consulting for the project participant (PP). However, stated requests for clarifications, corrective actions, and/or forward actions may provide input for improvement of the project design.

Once TÜV SÜD receives the PD, it is made available on the GS Registry through a dedicated interface on the Gold standard website. The Validation shall commence only after the project documents are listed on the registry.

1.3 Validation Process

The information provided by the project participants is assessed by applying the means of validation specified in the GS4GG, Toolkit and the VVS.

A competent assessment team is selected prior to the start of the validation. The team is

selected to cover the technical area(s), sectoral scope(s) and relevant host country experience for evaluating the GS project activity. Additionally, a competent Technical Reviewer or Technical Reviewer Team is appointed to conduct checks on quality and completeness.

The validation team performs first a desk review, followed by an remote-site visit, which results in the formation of a draft report and a list of findings. The next step involves the evaluation of the findings through direct communication with the PPs and then finally the preparation of the validation report. This validation report and other supporting documents then undergo an internal quality control by the CB “Environment and energy” before submission to the GS.

1.4 Appointment of the Team

According to the technical scopes and experiences in the sectoral or national business environment, TÜV SÜD has composed an assessment team in accordance with the appointment rules of the TÜV SÜD Certification Body “Environment and Energy”.

The composition of an assessment team has to be approved by the Certification Body (CB) to assure that the required skills are covered by the team. The CB of TÜV SÜD operates the following qualification levels for team members that are assigned by formal appointment rules:

- Assessment Team Leader (ATL)
- Validator (V)
- Technical Experts (TE)
- Country expert (CE)
- Technical reviewer (TR)

It is required that the sectoral scope(s) and the technical area(s) (TA) linked to the methodology/ies and project has to be covered by the assessment team. Appointment certificates of the selected team members are attached to this report as Annex.

Validation team member

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of VVB or outsourced entity)	Involvement in			
						Desk review	Remote-site inspection	Interview(s)	Validation findings
1.	Team Leader Validator/Technical Expert/ Host country Expert	IR	Vyas	Arjun	TÜV SÜD South Asia Private Limited (TÜV SÜD)	√	√	√	√
2	Trainee Validator	IR	Patil	Pratiksha	TÜV SÜD South Asia Private Limited (TÜV SÜD)	√	√	√	√

Technical reviewer and approver of the validation and certification report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of VVB or outsourced entity)
1.	Technical reviewer	EI	Sudheendra	K	TÜV SÜD South Asia Private Limited (TÜV SÜD)
2	Approver	IR	Deepankar	Chowdhury	TÜV SÜD South Asia Private Limited (TÜV SÜD)

1.5 Review of Documents

Based on the initial submitted GS-PDD, the assessment team performed a desk review to:

- verify the completeness of the data and the information presented in the GS-PD.
- check the validity of the baseline with respect to the current national /sectoral policies , ongoing financial additionality , applicability of the methodology and sustainable development indicators.
- evaluate the data management and the quality assurance and quality control system in the con-text of their influence on the generation and reporting of emission reductions.

A complete list of all documents reviewed is available in the Information Reference List attached as Annex 2 of this report.

1.6 Remote Assessment and follow-up Interviews

Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Bag	Debjit	Deputy General Manager-PP	27/09/2023	PDD description, applicability of methodology, base- line validity, and monitoring plan, ER calculation.	Arjun Vyas and Pratiksha Patil
2	Deepak	Pathak	Deputy Manager – PP	27/09/2023	PDD description, applicability of methodology, base- line validity, and monitoring plan, ER calculation.	
3	Elavarasan	-	Associate manager-PP	27/09/2023	PDD description, applicability of	

					methodology, base- line validity, and monitoring plan, ER calculation.
4	Sumant	Saurabh	Deputy manager - PP	27/09/2023	PDD description, applicability of methodology, base- line validity, and monitoring plan, ER calculation.
5	Kumar	Shantanu Sahu	Assistant Manager- Infinite Environmental Solutions	27/09/2023	PDD description, applicability of methodology, base- line validity, and monitoring plan, ER calculation.

The audit team had interacted with stakeholders of the project. The implementation of the project, working condition, benefits from the project activity and any other issues/problems faced by them were discussed through remote interviews.

1.7 Resolution of Clarification and Corrective and Forward Action Requests

The objective of this phase of the validation is to resolve the requests for corrective actions, clarifications, and any other outstanding issues which need to be clarified for TÜV SÜD's conclusion on the achieved emission reductions. 5 CARs were raised during the course of validation. 2 CL and 0 FAR has been raised. All the CARs raised by TÜV SÜD are resolved during communication between the client and TÜV SÜD. To guarantee the transparency of the validation process, the concerns raised and responses that have been given are documented in detail in the List of Findings that is attached as Annex 1 to this report.

1.8 Internal Quality Control

Internal quality control within the team is assured by means of a technical review process that takes place after the remote-site assessment and after closure of findings. The internal quality control in the validation process is given by the final decision (Validation and Certification Conclusion) made by the CB "Environment and Energy".

2 CARBON VALIDATION AND REPORTING

The project activity developed by Ramnad Solar Power Limited. The project activity involves installation of 72 MWac (corresponding to 86.40 MWp) solar power project. The project is installed in the same project boundary at Village: O. Karisalkulam, Tehsil: Kamuthi, District: Ramanthpuram State: Tamil Nadu.

The electricity generated from project activity will be sold under the Power Purchase Agreement (PPA), signed with Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO) wholly owned by the Government of Tamil Nadu.

The project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 106,873 tCO₂e per year, thereon displacing 114,794 MWh/year amount of electricity from power plants connected to the Indian electricity grid, which is mainly dominated by fossil fuel-based power plant.

In the following sections, the results of the validation are stated. The validation results relate to the project performance as documented and described in the final PDD. The validation findings for each validation subject are presented below.

2.1 FARs from Validation / Previous Validation

No FARs have been raised.

2.2 CLs, CARs and FARs raised

Area of validation findings	No. of CL	No. of CAR	No. of FAR
Compliance with PDD form			
Application and selection of methodologies and standardized baselines	CL 2	CAR 2, CAR 3 and CAR 4	
Validity of original baseline or its update			
Financial check			
Estimated emission reductions or net anthropogenic removals			
Validity of monitoring plan			
Crediting period			
Project participants			
Sustainability opinion			
Key Project Description and Project Description	CL 1	CAR 1	
		CAR 5	
Total	02	5	0

2.3 Compliance with PDD form

PD applies the applicable Gold Standard for the global goals, key project information and project design document, version 2.0 of 03/10/2023. The validation team verified that for the renewal crediting period, information transferred to the later valid version of the PDD form is materially the same as that in the registered PDD and the sections of the PDD relating to the baseline, estimated GHG emission reductions, monitoring plan and crediting period and GS4GG requirements have been updated in accordance to the Gold Standard for the global goals principles & requirements, version 1.2.

The project was previously registered under CDM with Project id – 10582. It is successfully transitioned to GS4GG on 06/03/2022 and not claiming any CERs under CDM. The claim can be verified using weblink: <https://cdm.unfccc.int/Projects/DB/Plus1595925633.68/view>. Further, it is seen from GS website documents that a deviation is taken in previous CP from GS4GG requirements which is approved by GS. Deviation taken is indicated below.

“Deviation from GS4GG principles and requirement, section 5.1.39 “Transparent, annual update reports need to be provided for Projects that have achieved the Project Design

Certification stage or have successfully transitioned to Gold Standard for the Global Goals.

2.4 Application and selection of methodologies and standardized baselines

Means of Validation	<p>VVB has verified whether the baseline and monitoring methodology applied in the project activity in accordance with the applicable requirements in the Project standard for project activities. The PP has applied the latest methodology version ACM0002 Ver.21 in the updated PDD.</p> <p>The applicability condition of the ACM0002 Ver.21 in context of project activity is demonstrated in PDD. The summary of the project compliance With applicability criteria is listed below:</p>		
	ACM0002 (Version 20.0) applicability conditions	Project Case	Conclusion made by validation team
	<p>This methodology is applicable to grid-connected renewable energy power generation project activities that:</p> <p>Install a Greenfield powerplant;</p> <p>Involve a capacity addition to(an) existing plant(s);</p> <p>Involve a retrofit of (an) existing operating plants/units;</p> <p>Involve a rehabilitation of (an) existing plant(s)/unit(s); or</p> <p>Involve a replacement of (an) existing plant(s)/unit(s).</p>	<p>The project activity is a Renewable Energy Project i.e. Solar Power Project which falls under applicability criteria option 1 (a) i.e., “Install a Greenfield power plant”.</p> <p>As per ACM0002 “Greenfield power plant - a new renewable energy power plant that is constructed and operated at a site where no renewable energy power plant was operated prior to the implementation of the project activity;”</p> <p>Prior to the</p>	<p>The registered project is 72 MWac solar power project and generated electricity is supplied to Indian National Grid. It is validated from GS PDD Version 5.0 dated 01/11/2020.</p> <p>Based on the above assessment the validation team confirms that the registered GS project activity is a Greenfield grid connected wind power project. Hence, this applicability condition is fulfilled.</p>

		<p>project's commissioning on 08/02/2016, no other renewable power plant existed in the same location therefore the plant is a greenfield activity.</p> <p>Hence the project activity meets the given applicability criterion.</p>	
	<p>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:</p> <p>Integrate BESS with a Greenfield power plant;</p> <p>Integrate a BESS together with implementing a capacity addition to (an) existing solar photovoltaic or wind power plant(s)/unit(s);</p> <p>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);</p>	<p>The project activity does not have a battery energy storage system. Thus, this criterion is not applicable.</p>	<p>As per submitted PDD, the generated electricity is supplied to the Indian National Grid and there is no battery energy storage system. Hence, this conditions is not applicable.</p>

	<p>Integrate a BESS together with implementing a retrofit of (an) existing solar photovoltaic or wind power plant(s)/unit(s).</p>		
	<p>The methodology is applicable under the following conditions:</p> <p>Hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit;</p> <p>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;</p>	<p>The project activity is not a Hydro power project, and it does not have BEES. Hence not applicable.</p>	<p>The project is a solar power project. Hence, this applicability condition is not relevant to the project activity.</p>

	<p>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);</p> <p>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 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</p>		
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	<p>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.</p>		
	<p>4) In case of hydro power plants, one of the following conditions shall apply:</p> <p>The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or</p> <p>The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density, calculated using equation (7), is greater than 4 W/m²; or</p> <p>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</p> <p>The project activity is an integrated hydro power project involving multiple reservoirs, where the power</p>	<p>The project is not a hydro power project. Hence, not applicable.</p>	<p>The project is a solar power project. Hence, this applicability condition is not relevant to the project activity.</p>

	<p>density for any of the reservoirs, calculated using equation (7), is lower than or equal to 4 W/m², all of the following conditions shall apply:</p> <p>The power density calculated using the total installed capacity of the integrated project, as per equation (8), is greater than 4 W/m²;</p> <p>Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity;</p> <p>Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m² shall be: Lower than or equal to 15 MW; and Less than 10 per cent of the total installed capacity of integrated hydro power project.</p>		
	<p>5) In the case of integrated hydro power projects, project participants shall:</p> <p>Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively</p>	<p>The project is not a hydro power project. Hence, not applicable.</p>	<p>The project is a solar power project. Hence, this applicability condition is not relevant to the project activity.</p>

	<p>constitute to the generation capacity of the integrated hydro power project; or</p> <p>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 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.</p>		
	<p>6) The methodology is not applicable to:</p> <p>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; Biomass fired power</p>	<p>Not applicable as the project is setting up a solar power project.</p>	<p>The project is a solar power project. Hence, this applicability condition is not relevant to the project activity.</p>

	plants/units		
	7) 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”.	The project does not involve retrofits, rehabilitations, replacements, or capacity additions. Hence not applicable.	The project is greenfield project and not a retrofit rehabilitations, replacements, or capacity additions. Hence not applicable
	Additional requirements for Hydro power project.	The project is not a hydro project hence this requirement is not applicable.	The project is a solar power project. Hence, this applicability condition is not relevant to the project activity.
	<p>Renewable Energy projects connected to national, or a regional electricity grid must be located in either:</p> <p>Least Developed Country (LDC), Small Island Developing State (SIDS) or a Land Locked Developing Country (LLDC) or</p> <p>Low Income and Low Middle-income country where the penetration level of the proposed Renewable Energy Technology type is less than 5% of the total grid installed capacity, at the time of the first submission to preliminary review.</p>	The project activity is already registered in GS4GG and applying for renewal of crediting period. Therefore, this requirement is not applicable.	From GS project we page, the project is already registered, and this project is for RCP. Hence, this condition is not applicable.

Findings	CL 2, CAR 2, CAR 3 and CAR 4 CAR/CL has been raised and has been closed successfully.
Conclusion	TÜV SÜD confirms that the chosen baseline and monitoring methodology is applicable to the project activity.

2.5 Validity of Original baseline and updates

Means of validation	<p>DOE has assessed the validity of the baseline of the project activity as per below as per the tool Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period.</p> <p>According to the Methodological tool of “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)”, the stepwise procedure to assess the continued validity of the baseline and to update the baseline at the renewal of a crediting period are as follows:</p> <p>Step 1: Assess the validity of the current baseline for the next crediting period.</p> <p>Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies.</p> <p>The baseline scenario remains unchanged and is in compliance with all the relevant mandatory national and/or sectoral policies.</p> <p>Step 1.2: Assess the impact of circumstances.</p> <p>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. PD 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 PD 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 under CDM.</p> <p>Step 1.3: Assess whether the continuation of the use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which renewal is requested.</p>
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As explained in step 1.2, the baseline scenario was the electricity import/generation from the power plants connected to the electricity grid. The project activity in green field project and there is not any baseline equipment or investment involved in 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 along 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. Only the approach used to calculate the baseline emission factor is updated as per the latest version of database available at the time of PDD submission for renewal. In line with the CDM project standard for project activity version 03.0, 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 the approved consolidated Methodology ACM0002 (Version 21.0, EB 116, Annex 1) para 24: *“If the project activity is the installation of a Greenfield power plant with or without a BESS as described under paragraph 4(a) or paragraph 5(a), the baseline scenario is electricity delivered to the grid by the project activity that 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 TOOL07.”*

The project activity involved setting up solar plant to produce electricity and supply to the grid. In the absence of the project activity, the equivalent amount of power would have been supplied to the electricity grid by the operation of grid-connected power plants (mainly by fossil

fuel fired plants) and by the addition of new generation sources, as reflected in the combined margin (CM) calculations.

Hence, the baseline for the project activity is the equivalent amount of power from the Indian grid.

The combined margin ($EF_{grid,CM,y}$) is the result of a weighted average of two emission factor pertaining to the electricity system: the operating margin (OM) and build margin (BM). Calculations for this combined margin must be based on data from an official source (where available) and made publicly available. The CEA database version 18.0 was the latest available data at the time of PDD submission to DOE for validation, hence same is considered for emission factor calculations.

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

Parameter	Value	Nomenclature	Source
$EF_{grid,CM,y}$	0.9310 tCO ₂ /MWh	Combined margin CO ₂ emission factor for the project electricity system in year y	Calculated as the weighted average of the operating margin (0.75) & build margin (0.25) values, sourced from Baseline CO ₂ Emission Database, Version 18.0, September 2022 published by Central Electricity Authority (CEA), Government of India.
$EF_{grid,OM,y}$	0.9518 tCO ₂ /MWh	Operating margin CO ₂ emission factor for the project electricity system in year y	Calculated as the last 3 year (2019-20, 2020-21 and 2021-22) generation-weighted average, sourced from Baseline CO ₂ Emission Database, Version 18.0, Sep 2022 published by Central Electricity Authority (CEA), Government of India.
$EF_{grid,BM,y}$	0.8687 tCO ₂ /MWh	Build margin CO ₂ emission factor for the project electricity system in year y	Baseline CO ₂ Emission Database, Version 18.0. Sep 2022 published by Central Electricity Authority (CEA), Government of India.

The assessment team has confirmed the establishment of baseline and emission factors are in line with Tool 11 and the CEA version 18.0.

Findings	No findings has been raised.
Conclusion	The assessment team has assessed the validity of baseline as per tool and confirms to be in line with the tool. TUV SUD confirms that the validity of the baseline has been assessed as per the requirements of the methodological Tool and CDM VVS PA v3.0.

2.6 Financial check

Means of validation	<p>The project uses the finance derived Gold Standard Certification which is approximately 0.75% of project income to meet the 2.55% of the expense related to O&M activities.</p> <ul style="list-style-type: none"> (i) Certification related cost: The certification process itself requires investment, including costs associated with project design, validation, transition, and verification. 10.69% of the finance derived from Gold Standard Certification has helped cover these expenses, ensuring the project meets the rigorous standards and criteria set by the Gold Standard. (ii) 42.91% of the finance derived Gold Standard Certification meets the expenses incurred to carry out CSR activities. (iii) Operations and Maintenance(O&M): O&M costs includes salary expenses towards employment generated, regular cleaning & system monitoring ensuring the project operates optimally. 46.41% of the finance derived from Gold Standard Certification meets the 2.55% of the O&M costs. <p>Therefore, project activity relies on carbon revenue from generated ER for smooth operation and continuation of the project activity and thus project activity needs finances generated by GS-VERs.</p> <p>PP has demonstrated the OFN based on the OFN Sheet. The revenue from the carbon is for maintaining expenses related to 20 jobs for the project operation and Operation & maintenance cost and other administration related expenses. The same has been validated by the audit team based on OFN Sheet.</p>
Findings	No findings were raised.
Conclusion	The OFN has been demonstrated by the PP in accordance with GS requirements.

2.7 Estimated emission reductions or net anthropogenic removals.

Means of validation	<p>As per the approved consolidated Methodology ACM0002 (Version 21.0, EB 116, Annex 1), Emission reductions are calculated as follows: $ER_y = BE_y - PE_y$ Where: ER_y = Emission reductions in year y (t CO₂e/yr)</p>
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	<p>BE_y = Baseline emissions in year y (t CO₂/yr) PE_y = Project emissions in year y (t CO₂e/yr)</p> <p>Baseline Emissions:</p> <p>Baseline Emissions for the amount of electricity supplied by project activity, BE_y is calculated as $BE_y = E_{GPJ,y} \times EF_{grid,CM,y}$</p> <p>Where:</p> <p>BE_y = Baseline emissions in year y (t CO₂/yr) E_{GPJ,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” (tCO₂/MWh).</p> <p>Using the values for operating and build margin emission factor provided in the CEA database version 18.0 and their respective weights for calculation of combined margin emission factor, the baseline carbon emission factor (CM) is 0.9310 tCO₂e/MWh. $E_{GPJ,y} = 114,794 \text{ MWh/year}$ $EF_{grid,CM,y} = 0.9310 \text{ tCO}_2/\text{MWh}$ $BE_y = E_{GPJ,y} \times EF_{grid,CM,y}$ $BE_y = 114,794 \times 0.9310 \text{ tCO}_2/\text{year}$ $BE_y = 106,873 \text{ tCO}_2/\text{year}$</p> <p>Project emissions</p> <p>As per the ACM0002 version 21.0, Project Emission for most renewable energy power generation project activities, PE_y = 0. 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:</p> $PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y} + PE_{BEES,y}$ <p>Where:</p> <p>PE_y = Project emissions in year y (tCO₂e/year)</p> <p>PE_{FF,y} = Project emissions from fossil fuel consumption in year y (tCO₂/year)</p> <p>PE_{GP,y} = Project emissions from the operation of geothermal power plants due to the release of non-condensable gases in year y (t CO₂e/year)</p> <p>PE_{HP,y} = Project emissions from water reservoirs of hydro power plants in year y (tCO₂e/year).</p> <p>PE_{BEES,y} = Project emissions from charging of a BESS using electricity from the grid or from fossil fuel electricity generators (t CO₂e/year)</p>
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	<p>The project activity involves the generation of electricity from the installation of solar projects. The project activity does not use fossil fuel for its operation, it does not involve geothermal energy or water reservoirs or Battery energy storage system.</p> <p>Therefore: $PE_{FF,y}=0$, $PE_{GP,y}=0$, $PE_{HP,y}=0$, $PE_{BEEs,y}=0$.</p> <p>Since, there is no project emission for the project activity. Therefore, project emissions are zero.</p> <p>Leakage Emissions No other leakage emissions are considered. The emissions potentially arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport etc.) are neglected.</p> <p>Emission Reductions Emission reductions are calculated as follows- $ER_y = BE_y - PE_y$</p> <p>Where: ER_y = Emission reductions in year y (tCO₂/yr) BE_y = Baseline emissions in year y (tCO₂/yr) PE_y = Project emissions in year y (tCO₂/yr)</p> <p>$ER_y = BE_y - PE_y$ $ER_y = 106,873 - 0$ $ER_y = 106,873$ (tCO₂/y)</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Baseline Estimate</th> <th>Project Estimate</th> <th>Net Benefit</th> </tr> </thead> <tbody> <tr> <td>26/10/2023 to 25/10/2024</td> <td>0</td> <td>107,948</td> <td>107,948</td> </tr> <tr> <td>26/10/2024 to 25/10/2025</td> <td>0</td> <td>107,408</td> <td>107,408</td> </tr> <tr> <td>26/10/2025 to 25/10/2026</td> <td>0</td> <td>106,871</td> <td>106,871</td> </tr> <tr> <td>26/10/2026 to 25/10/2027</td> <td>0</td> <td>106,336</td> <td>106,336</td> </tr> <tr> <td>26/10/2027 to 25/10/2028</td> <td>0</td> <td>105,805</td> <td>105,805</td> </tr> <tr> <td>Total</td> <td>0</td> <td>534,368</td> <td>534,368</td> </tr> </tbody> </table> <p>The parameters and formulae presented in the ER sheet and the PDD were cross checked and verified with approved methodology and the respective tools.</p>	Year	Baseline Estimate	Project Estimate	Net Benefit	26/10/2023 to 25/10/2024	0	107,948	107,948	26/10/2024 to 25/10/2025	0	107,408	107,408	26/10/2025 to 25/10/2026	0	106,871	106,871	26/10/2026 to 25/10/2027	0	106,336	106,336	26/10/2027 to 25/10/2028	0	105,805	105,805	Total	0	534,368	534,368
Year	Baseline Estimate	Project Estimate	Net Benefit																										
26/10/2023 to 25/10/2024	0	107,948	107,948																										
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26/10/2027 to 25/10/2028	0	105,805	105,805																										
Total	0	534,368	534,368																										
Findings	No CAR/CL has been raised																												
Conclusion	The GHG emission calculations of the project activity are as per the applied methodology ACM0002 Version 21.0.																												

2.8 Validity of monitoring plan

<p>Means of validation</p>	<p>The project activity has applied approved monitoring methodology ACM0002 Version 21.0. The PDD has described the monitoring plan in a clear and transparent manner, which is in compliance with applied approved monitoring methodology. The validation team has validated each parameter required to be monitored as per applied monitoring methodology and is of the opinion that the proposed monitoring plan in PDD is feasible to implement and will result credible emission reductions resulted due to the project activity.</p> <p>Parameters fixed ex ante</p> <p>$EF_{grid,CM,y}$: Combined margin CO2 emission factor for the project electricity system in year y</p> <p>$EF_{grid,OM,y}$: Operating margin CO2 emission factor for the project electricity system in year y</p> <p>$EF_{grid,BM,y}$: Build margin CO2 emission factor for the project electricity system in year y</p> <p>The parameters fixed ex ante have been checked by the audit team and are in line with the methodology as well as the registered PDD. The values are in line with methodology and confirmed by the audit team.</p> <p>Parameters monitored ex-post</p> <p>The following parameters will be monitored ex-post:</p> <table> <tr> <td>SDG 13</td> <td>ERy - Annual emission reduction</td> </tr> <tr> <td>SDG 8</td> <td>Employees' monthly wages</td> </tr> <tr> <td>SDG 7</td> <td>Quantity of net electricity generation supplied by the project plant/unit to the grid in year y</td> </tr> </table> <p>The monitoring plan presented in the PDD complies with the requirements of the applicable methodology. The assessment team has verified all parameters in the monitoring plan against the requirements of the methodology and no deviations have been found. PP has appropriately mentioned the maintenance and frequency of monitoring equipment and monitoring frequency against each monitoring parameter.</p> <p>The procedures have been reviewed by the assessment team through document review and/or interviews with the relevant personnel. The information provided has allowed the assessment team to confirm that the proposed monitoring plan is feasible within the project design. The relevant points of monitoring plan have been discussed with the PPs. Specifically, these points include the location of meters, data management, and the quality assurance and quality control procedures to be implemented in the context of the project.</p> <p>Management system and quality assurance</p>	SDG 13	ERy - Annual emission reduction	SDG 8	Employees' monthly wages	SDG 7	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y
SDG 13	ERy - Annual emission reduction						
SDG 8	Employees' monthly wages						
SDG 7	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y						

	As per the interaction had with project proponent and document verification it is confirmed that the monitoring arrangements in the monitoring plan are feasible within the project design.
Findings	No CAR/CL has been raised.
Conclusion	<p>It is TUV SUD's opinion that the monitoring plan is in accordance with the monitoring methodology; the monitoring plan will give opportunity for real measurement of achieved emission reductions.</p> <p>TUV SUD has checked all the parameters presented in the monitoring plan against the requirements of the methodology and methodological tools; no deviations relevant to the project activity have been found in the plan.</p> <p>TUV SUD confirms that the monitoring arrangements described in the monitoring plan, including the data management and quality assurance and quality control procedures, are feasible within the project design, and the means of implementation of the monitoring plan are sufficient to ensure the emission reductions achieved by/resulting from the registered CDM project activity can be reported ex post and verified.</p>

1.1 Crediting period

Means of validation	The first crediting period started on 26/10/2018 to 25/10/2023 and the second crediting period starts from 26/10/2023 to 25/10/2028. However, As per the section 5.1.46 of GS principle and requirements version 1.2, it is confirmed that the PP will not claim the emission reductions for the period, when there was a delay and the monitoring will start only from the day the project is deemed renewed.
Conclusion	No CAR/CL has been raised.
Findings	TUV SUD confirms that as per the section 5.1.46 of GS principle and requirements version 1.2, it is confirmed that the PP will not claim the emission reductions for the period, when there was a delay and the monitoring will start only from the day the project is deemed renewed. The same is accepted as per GS4GG requirement.

1.1 Project participants

Means of validation	The project participants described in the PDD are Ramnad Solar Power Limited. Hence accepted.
Conclusion	No CAR/CL has been raised.
Findings	TUV SUD verified that the project participants included in the PDD are consistent with the names of the project participants in the project view page. The validation team confirms that the same is as per GS4GG requirements.

2 SUSTAINABILITY VALIDATION

2.1 Assessment of SDG outcomes

Assessment of SDG outcomes. The outcome of SDG 13:

Emission reduction before renewal of crediting period: 110,317 tCO₂e/year
Emission reduction during renewal of crediting period: 106,873 tCO₂e/year. Though the Grid EF has increased as per CEA Data Base v 18, because of degradation factor annual generation figure is less than the previous CP and hence the annual ER for the RCP is less than the previous CP

3 VALIDATION OPINION

TUV SUD has performed a validation of the updated GSPDD for the project activity “72 MWac Ramnad Solar Power Project” GS registration No. 7080. The validation of the updated GS PDD has been performed for second renewal crediting period (from 26/10/2023 to 25/10/2028) and is based on the information made available to us.

TUV SUD has performed this validation in accordance with GS 4GG principles and requirements, version 1.2 of 23/10/2019, which included an assessment of:

- An impact of new relevant national and/or sectoral policies and circumstances on the baseline taking into account relevant guidance from the Board with regard to renewal of the crediting period at the time of requesting renewal of crediting period:
- The correctness of the application of an approved baseline methodology and determination of the continued validity of the baseline or its update, and the estimation of emission reductions for the applicable crediting period.
- On going financial need.
- SDG outcomes.

The review of the updated project design documentation and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews have provided TUV SUD with sufficient evidence to validate the fulfillment of the stated criteria applicable for RCP.

The review of PDD and the subsequent follow-up interviews has provided TUV SUD with sufficient evidence to determine the validity of the original baseline scenario. The project correctly applies the baseline and monitoring methodologies. The total emission reductions from the project activity “72 MWac Ramnad Solar Power Project” are estimated to be on an average 106,873 tCO₂e per year over the selected 5 years renewable crediting period. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

It is TUV SUD’s opinion that the project “72 MWac Ramnad Solar Power Project” in India meets all the relevant requirements for the renewal of the crediting period. Hence TUV SUD requests the renewal of the crediting period for the project activities.

Annex 1: Clarification requests, corrective action requests and forward action requests

CL from this verification

CL ID	01	Section no.	Key Project Information Page of PDD	Date: 30/09/2023
Description of CL				
As per GS project page, the project developer is Infinite environmental solutions LLP. Kindly clarify the role of Ramnad Solar Power Limited here in the project and clarify who is the project developer.				
Project participant response				Date: 04/10/2023
The data in the PSF is as per the registered Cover letter for the project. All registered documents for the project mention "Ramnad Solar Power Limited" as the project developer. PP is providing cover letter to the verification team.				
Documentation provided by project participant				
Cover letter				
VVB assessment				Date: 04/10/2023
PP has provided the cover letter clarifying the role of Ramnad Solar Power Limited in the project as project representative. Hence, CL is closed.				

CL ID	02	Section no.	A.1.1 of PDD	Date: 30/09/2023
Description of CL				
In section A.1.1 of PD version 1.0 dated 05/09/2023, it is stated that, Armand Solar Power Limited has received Consent for Establishment from TANGEDCO and TN Pollution Control Board; Also, the Power Purchase Agreement demonstrates the PP as the legal owner.				
Explain role of Armand Solar Power here in the project.				
Project participant response				Date: 04/10/2023
Typo in section A.1.1 of RCP PDD has been corrected to "Ramand solar power limited". PP is also providing supporting documents for Consent for Establishment from TANGEDCO and TN Pollution Control Board and Power Purchase Agreement.				
Documentation provided by project participant				
Consent for Establishment from TANGEDCO. TN Pollution Control Board. Power Purchase Agreement.				
VVB assessment				Date: 04/10/2023
Typo has been corrected and the name of the entity is been in line with Consent for Establishment from TANGEDCO and TN Pollution Control Board and Power Purchase Agreement. Hence, CL 02 is closed.				

CAR from this verification

CAR ID	01	Section no.	A.1 of PDD	Date: 30/09/2023
Description of CAR				

Kindly remove duplicate parameters from table: The details of the project.	
Project participant response	Date: 04/10/2023
Duplicate parameters have been removed from the table in section A.1 of PDD.	
Documentation provided by project participant	
NA	
VVB assessment	Date: 04/10/2023
Duplicate information is been removed and the data provided in the table in section A.1 of PDD 2.0 and the data provided in the table is been in line with PPA. Hence, CAR 01 is closed.	

CAR ID	02	Section no.	B.2 of PDD	Date: 30/09/2023
Description of CAR				
In section B.2 of PDD version 1.0 dated 05/09/2023, Applicability Criteria 1.				
PP need to provide more clarification in this section regarding how the installed project is greenfield power plant and list down the supporting docs provided by PP during validation.				
Project participant response				Date: 04/10/2023
PP has added justification of how the plant is greenfield in applicability criteria 1 of the PDD. PP is providing ESIA report and Commissioning certificate to verify the plant was constructed in barren land and date of commissioning.				
Documentation provided by project participant				
NA				
VVB assessment				Date: 04/10/2023
PP has provided the justification of applicability criteria 1 and the justification is in line with the methodology. Hence, CAR 02 is closed.				

CAR ID	03	Section no.	B.2 of PDD	Date: 30/09/2023
Description of CAR				
In section B.2 of PDD Version 1.0 dated 05/09/2023, Applicability Criteria of tool to calculate the emission factor for an electricity system:				
PP need to provide why this condition is applicable if applicable and provide the justification for the same.				
Project participant response				Date: 04/10/2023
PP has corrected the justification for applicability criteria of tool to calculate the emission factor for an electricity system.				
Documentation provided by project participant				
VVB assessment				Date: 04/10/2023
PP has provided the justification of applicability criteria of tool to calculate the emission factor for an electricity system and the justification is in line with the methodology. Hence, CAR 03 is closed.				

CAR ID	04	Section no.	B.6.3 of PDD	Date: 30/09/2023
Description of CAR				
PP need to maintain consistency in attributes nomenclature in section B.6.3. [Line 6 of page 33]				
Project participant response				Date: 04/10/2023
Nomenclature has been corrected as per ACM0002 version 21.0				
Documentation provided by project participant				
VVB assessment				Date: 04/10/2023
PP has corrected the nomenclature and now it has been in line with methodology. Hence, CAR 04 is closed.				

CAR ID	05	Section no.	Appendix 3 and 4 of PDD	Date: 30/09/2023
Description of CAR				
PP need to provide the response over the empty appendix 3 and 4, if not applicable need to write it so.				
Project participant response				Date: 04/10/2023
PP has added not applicable in appendix 3 and 4 of the PDD.				
Documentation provided by project participant				
VVB assessment				Date: 04/10/2023

FAR from this verification

FAR ID	01	Section no.		Date: 08/05/2024
Description of FAR				
Since the renewal of the period has been delayed, the PD can only claim ER from the time the project is renewed onwards in compliance with section 5.1.46 of GS principle and requirements version 1.2. This shall be checked during the 1 st verification of the 2 CP by the verifying VVB.				
Project participant response				Date: DD/MM/YYYY
Documentation provided by project participant				
VVB assessment				Date: DD/MM/YYYY

Information Reference List

No.	Author	Title	References to the document
1	Ramnad Solar Power Limited (RSPL)	Registered GS-PDD	Version 5.0 1/11/2020
2	Ramnad Solar Power Limited (RSPL)	GS-PDD for the 2 nd CP	Version 1.0 5/9/2023
3	Ramnad Solar Power Limited (RSPL)	GS-PDD for the 2 nd CP	Version 2.0 03/09/2023
4	UNFCCC	Methodology ACM0002	Version 21
5	Gold Standard	The Gold Standard global goals principles & requirements	Version 1.2 of 23/10/2019
6	Ramnad Solar Power Limited (RSPL)	ER calculation sheet	Version 1
7	Ramnad Solar Power Limited (RSPL)	OFN	Version 1
8	Ramnad Solar Power Limited (RSPL)	SDG Impact tool	Version 1
9	Ramnad Solar Power Limited (RSPL)	JMR Excel Sheet	
10	Gold Standard	- Validation and Verification Standard	Version 1.0
11	Gold Standard	Renewable Energy activity requirements	Version 1.4
12	Gold Standard	Site Visit and Remote Audit Requirements and Procedures	Version 2.0
13	Gold Standard	Safeguarding Principles And Requirements	Version 2.1
14	UNFCCC	Tool for the demonstration and assessment of additionality	Version 7.0
15	UNFCCC	Assessment of the validity of the original/current baseline and	Version 3.0.1

		update of the baseline at the renewal of the crediting period	
16	UNFCCC	Tool to calculate emission factors for an electricity system	Version 7.0
17	Google Earth	Location of the plant	
19	Project Developer	Cover Letter	
20	Project Developer	Local Stakeholder Consultation documents	
21	Project Developer	Commissioning Certificate	
22	Project Developer	Declaration of Double counting	
23	Project Developer	Employment list and records	
24	Project Developer	Employee training records	
25	Project Developer	Technical specifications	
26	Project Developer	Stakeholders Feedbacks	
27	Project Developer	Purchase Orders of equipment	
28		CEA Database	
29	Project Developer	DPR	
30	Project Developer	Purchase Orders	
31	Project Developer	Energy purchase Agreement	
32	Project Developer	ESIA Report	



South Asia