




Verification and certification report form for
GS project activities
(Version 04.0)

BASIC INFORMATION

Title and GS4GG reference number of the project activity	Title: Energy for Mam Rshan GS reference no.: GS 6460
Scale of the project activity	<input type="checkbox"/> Large-scale <input type="checkbox"/> Small-scale <input checked="" type="checkbox"/> Micro-scale
Version number of the verification and certification report	1.2
Completion date of the verification and certification report	06/05/2024
Monitoring period number and duration of this monitoring period	5 th monitoring period. Duration: 01/10/2022 to 30/09/2023 (including both days)
Version number of the monitoring report to which this report applies	1.5 of 03/05/2024
Crediting period of the project activity corresponding to this monitoring period	01/10/2018 to 30/09/2023
Project participants	atmosfair gGmbH
Host Party	Iraq
Applied methodologies and standardized baselines	Suppressed Demand Methodology Micro-Scale Electrification and Energization v1
Mandatory sectoral scopes	1 (TA 1.2)
Conditional sectoral scopes, if applicable	N/A
Estimated amount of GHG emission reductions or GHG removals for this monitoring duration in the registered PDD	1,323 tCO ₂ e
Certified amount of GHG emission reductions or GHG removals for this monitoring period	615 tCO ₂ e
Name and UNFCCC reference number of the VVB	Carbon Check (India) Private Limited- E0052
Name, position and signature of the approver of the verification and certification report	 Sanjay Kumar Agarwalla, Technical Director

SECTION A. Executive summary

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Carbon Check (India) Private Ltd. (CC IPL) has performed the fifth periodic verification of the GS project “Energy for Mam Rashan” (GS project id: GS 6460) for the period 01/10/2022 to 30/09/2023 (inclusive of both the dates). The project activity focus is to improve and stabilize the energy supply in the camp by introducing renewable energy and thereby making everyday life more bearable in the camp Mam Rashan. The project aims to provide electricity to the camp during the day when the national grid is off and such to replace the diesel generators alternatively used. The camp is only supplied with power from the public grid at night and few hours in daytime. The project involves installation of two solar photovoltaic system of 387 kWp and 605 kWp with battery storage capacities and the low-voltage grid in IDP camp Mam Rashan in the village Mam Rashan within the Shekhan District in the Duhok Governorate of Iraqi Kurdistan.

Verification methodology and process

The Verification team confirms the contractual /11/ relationship signed on the 25/01/2024 between the Carbon Check (India) Private Ltd. (hereafter the “VVB”) and the project developer – atmosfair gGmbH. The team assigned to the verification meets the Carbon Check (India) Private Ltd’s internal procedures including the UNFCCC requirements for the team composition and competence. CC IPL has conducted a thorough contract review as per UNFCCC and Carbon Check’s procedures and requirements.

The verification has been performed as per the requirements described in the Gold Standard for the Global Goals Principles & Requirements (version 1.2) /B01-a/; and GS4GG VVS version 1.0 /B01-b/ and constitutes the review and completion of the following steps:

- Review of the registered PDD (version 5.0; Dated: 15/08/2019) /03/, including the monitoring plan and the corresponding validation report /09/, the Sustainability Matrix and monitoring data.
- Desk review of the MR, emission reduction spreadsheet
- Review of the applied monitoring methodology “Suppressed Demand Methodology Micro-Scale Electrification and Energization” (version 1.0) /B05/;
- Review of any CMP and EB decisions, clarifications and guidance and the Gold Standard Secretariat.
- Remote assessment (11/03/2024) /12/
- Resolution of CARs and CLs raised during verification.
- Issuance of Verification Report

In Carbon Check’s opinion, the project activity was correctly implemented according to selected monitoring methodology, monitoring plan and the registered PDD /03/. The monitoring data allowed for the verification of the amount of achieved GHG emission reductions. Through document review and remote assessment, the verification team confirms that the project has resulted in the 615 tCO_{2e} emission reductions i.e., 615 GS VERs during this fifth monitoring period. The GHG emission reductions and non-GHG parameters were correctly calculated/monitored based on the approved monitoring methodology “Suppressed Demand Methodology Micro-Scale Electrification and Energization” (version 1.0) /B05/ and the monitoring plan contained in the registered PDD (version 5.0; Dated: 15/08/2019) /03/.

SECTION B. Verification team, technical reviewer and approver**B.1. Verification 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/document review	Remote inspection	Interviews	Verification findings
1.	Team Leader/ Technical Expert	IR	Anand	Amit	CCIPL	X	X	X	X
2.	Trainee Assessor	IR	Raj	Piyush	CCIPL	X	X	X	X
3.	Local Expert	ER	Khader	Ezdo Khodeda	CCIPL	NA	X	X	NA

B.2. Technical reviewer and approver of the verification 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	IR	C.	Indumathi	CCIPL
2.	Approver	IR	Agarwalla	Sanjay Kumar	CCIPL

Audit Team Experience:

The team composition is linked to the methodology and local experience in the host country.

Amit Anand: Qualified lead assessor and internal technical reviewer for validations and verifications GHG mitigation projects under CDM, VCS and GS and actively been involved in the validation and verification or internal technical review of more than 300 GHG mitigation projects. He is qualified as technical expert for TA 1.1, 1.2, 3.1, 4.1, 13.1, 13.2, 14.1 and 15 under CDM SS categorization. He has undergone extensive training in the validation and verification of carbon offset projects including the accreditation requirements for the VVBs. Currently, he is employed with Carbon Check in the capacity of CEO. Amit has extensive work experience on working on land use and Forestry projects under CDM, VCS and GS projects in East Africa, particularly in Kenya, Uganda, Rwanda, Ethiopia and DRC.

Piyush Raj: He is a trainee assessor. He has done various validation and verification projects under CDM, VCS, GS4GG and GCC and other GHG schemes. He is a trainee assessor as per the Validation/Verification training in ISO 14064-1, ISO-14065-2 and ISO 14064-3 and attended GS4GG webinars.

Ezdo Khodeda Khader: He is appointed as a Local Expert for Iraq. He was empanelled with VVB in line with procedure for empanelment of local expert. He was included in verification team in line with requirement of paragraph 6.6.2 of GS4GG VVS version 1.0 /B01-b/. The LE was engaged in the remote audit only for the interview/interactions with beneficiaries and not involved in any document assessment since, all the project documents are in English.

Indumathi C: She is a qualified internal technical reviewer for validation and verification of GHG emission reduction projects under CDM, VCS and GS. She is an appointed Team Leader and Technical Expert for technical areas TA 1.1, 1.2, 3.1, 13.1 & 13.2. She has more than 13 years of work experience in climate change mitigation, renewable energy, energy efficiency and energy access. She has worked with various Designated Operational Entities like TUV NORD, TUV Rheinland and 4KES for more than 250 GHG emission reduction projects under different carbon crediting mechanisms. She is a certified GHG Auditor and Energy Manager (Bureau of Energy Efficiency, Government of India).

SECTION C. Application of materiality

The threshold of materiality was evaluated based on "GS4GG VVS version 1.0 para. 9.6.3. /B01-b/. It was concluded that the materiality threshold applicable to the project activity based on actual emission reductions achieved is 10% of 615 tCO₂e which is equal to 61.5 tCO₂e.

In planning the verification, verification team took cognizance of GS4GG VVS version 1.0 para. 9.6.3 /B01-b/ and a materiality threshold of 61.5 tCO₂e is determined for the current verification of the project activity.

C.1. Consideration of materiality in planning the verification

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	Human Error: Recording and reporting of the information in the ER spreadsheet.	Medium	All the ER spreadsheet data of the solar PV plants database, determination of parameters for operational of solar PV plants including data calculation. This includes all the parameters to be monitored ex-post as per the PDD	The risk were mitigated by reviewing the training records of the personnel involved in the data capture and calculations. The monitoring responsibilities will be reviewed. Also, the ER data/calculations will be cross-checked to insure error-free data.
2.	Information System: Use of spreadsheets without adequate controls related to data changes/updates, version tracking, traceability, security	Medium	The data is recorded in spreadsheets based on the raw data collected during the field visits. Access to the spreadsheets for calculation of ERs, monitoring and sales database and baseline project & baseline, and other test records.	The identified risk were mitigated by reviewing the management of access to the records. It will be confirmed through interviews whether the raw data is collected by the field personnel and then transmitted and stored electronically to the PP's office. The data quality control to be checked.
3.	Sample	Medium	The sample size is not suitable, or the surveyed plants are not random (If applicable).	Cross-check the procedure to identify the sample size against the sampling guideline and standard and confirm the sample size is calculated correctly.

C.2. Consideration of materiality in conducting the verification

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In line with the GS4GG VVS v1.0 /B01-b/ the materiality /B09/ in verification, a reasonable level of assurance is defined for the verification of the project by complete verification of all the monitoring records was done by the verification team and compared with the values indicated in the emission reduction spreadsheet.

Some inconsistencies were identified and subsequently finding was raised. These findings are detailed in Appendix 4 and they were successfully closed. Therefore, related identified mistakes as listed in findings in Appendix 4 to this report have been determined to be immaterial. And thus, it is confirmed that there are no material errors, omissions or misstatements and a reasonable level of assurance is established.

SECTION D. Means of verification

D.1. Desk/document review

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The verification was performed primarily based on the review of the Monitoring report /01-f/, emission reduction worksheet /02-c/ and supporting documentation. This process included review of data and information presented to verify their completeness and review of the monitoring plan and monitoring methodology. Documents reviewed or referenced during the verification are listed in Appendix 3 below.

D.2. On-site inspection

Duration of on-site inspection:				
No.	Activity performed on-site	Site location	Date	Team member

The last on-site visit was conducted in July 2023 for 4th periodic verification by the objective observer appointed by PD and approved by Sustain Cert. Therefore, in line with para. 3.1.2 of the "Site Visit and Remote Audit Requirements and Procedures v2.0" /B02/ on-site visit is not done for the verification of the current monitoring period.

The verification team has carried out remote interviews /12/ in order to assess the information mentioned in MR /01-f/ is consistent with the registered PDD /03/. During the desk review, the relevant updated information is consistent with the registered PDD /03/ and corresponding validation report were checked. Previous periodic monitoring report and verification reports, telephonic interview and video call with project representatives were carried out. Details obtained are cross checked with publicly available documents to cross check consistency of information.

The verification report, previous verification reports were checked, comparing the relevant evidence and interview with the PD representative and operation staff through video call, Carbon Check has confirmed that the project is consistent with the registered PDD.

VVB has also carried out the risk assessment in accordance with the Annex 1 of the Site Visit and Remote Audit Requirements and Procedures, version 2.0 /B02/:

S. No.	Risk Identified	Justification
For all certification stages:		
1.	Risk of non-conformity with core GS4GG principles including but not limited to safeguarding principles, stakeholder inclusivity, SDG Impacts.	Not applicable
2.	Risk of non-conformity with potential reversal of GHG benefits and other SDG Impacts.	Not applicable
3.	Risk of non-conformity with key methodological requirements (applicability conditions, project boundary, identification of baseline scenario, algorithms and/or formulae used to determine emission reductions, monitoring methodology).	Not applicable
4.	Risk of any negative feedback/observations received from GS stakeholders, e.g., TAC, end-users, NGO supporters etc, not being addressed sufficiently by the project.	Not applicable
5.	Risk of key stakeholders and/or end users of project technology not willing/able to be interviewed through telephone/videocalls.	Not applicable
For Verifications		
6.	Any outstanding FAR(s)/pending issue(s) since the previous physical site visit.	No FAR was raised in last verification since the previous site visit.
7.	Any design change(s)/temporary deviation(s) since the previous physical site visit.	There are no design changes / temporary deviation(s) since the

		previous physical site visit. Thus, no risk is anticipated.
8.	Any gaps in monitoring data, if any, that cannot be justified as per applicable requirements.	There are no gaps in monitoring data that are identified during the verification. Thus, no risk is anticipated.

D.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Erdman	Nele	atmosfair gGmbH (Senior Project Coordinator)	11/03/2024	PDD development, GS requirements, Emission reduction calculations, methodology applicability. Project Design, ownership details, carbon credit sharing arrangements, monitoring and reporting arrangements, QA/QC procedures, baseline assessment, project technology	Amit Anand Piyush Raj Ezdo Khodeda Khader
2.	Eena	Nawar	atmosfair gGmbH (O&M Manager)			
3.	Hamo	Hazim	atmosfair gGmbH (Technician)			
4.	Ahmad	Dakhel	Beneficiary (F-234)	11/03/2024	Project information, Energy generation, Grid availability, Project benefits, Operation & Maintenance.	
5.	Suliman	Sara	Beneficiary (H-65)	11/03/2024		
6.	Issa	Hassan	Beneficiary (B-171)	11/03/2024		
7.	Haji	Kirallah	Beneficiary (F-173)	11/03/2024		
8.	Hassan	Ziad	Beneficiary (C-104)	11/03/2024		
9.	Khalaf	Ishan	Beneficiary (C-58)	11/03/2024		
10.	Khader	Raad	Beneficiary (School)	11/03/2024		
11.	Qasim	Layla	Beneficiary (E-48)	11/03/2024		
12.	Haji	Amina	Beneficiary (E-41)	11/03/2024		
13.	Alyas	Amin	Beneficiary (E-29)	11/03/2024		
14.	Saido	Kalat	Beneficiary (E-35)	11/03/2024		
15.	Khadr	Wisam	Beneficiary (E-17)	11/03/2024		
16.	Barjs	Shanaz	Beneficiary (Public Administration)	11/03/2024		

D.4. Sampling approach

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PD’s sampling approach:

PD has proposed continuous monitoring. The energy provided to the consumers is constantly looked through the energy meters and the number of households provided by energy is constantly monitored. This is in line with the applied methodology /B05/.

The monitoring parameters monitored continuously are:

- 1) Number of units in a type of consumer group connected to a specific renewable energy system.
- 2) Measured net amount of renewable electricity produced in kWh (Em) in a year (y) by the renewable energy generation system.
- 3) Number of households connected to the low voltage grid and such the number of households supplied with clean energy.
- 4) Measured net amount of renewable electricity produced in kWh for a non-eligible consumer connected to a specific renewable energy system.

CC IPL’s verification sampling approach:

As per para.25 of the Standard: Sampling and surveys for CDM project activities and programmes of activities (version 09.0) /B08/, the verification team has to verify whether the project developer has implemented the sampling and surveys according to the sampling plan in the registered monitoring plan. The verification includes determining:

- (a) Whether the required confidence/precision has been met.
- (b) Whether the selected sample was representative of the population.

In line with para. 26 of the Sampling Standard (version 09.0) /B07/, the verification team has applied a sampling approach for remote surveys as part of verification. Since PD had applied continuous monitoring approach, the verification team has chosen acceptance sampling for monitoring parameters in accordance with para. 27 of the sampling standard (version 09.0) /B07/.

The following table illustrates the agenda covered during the acceptance sampling by the VVB in accordance with Table 1, para. 37 of “Standard: Sampling and surveys for CDM project activities and programmes of activities (version 09.0) /B07/;

Parameter	How the PP conducted sampling surveys	How the VVB could obtain records for verification	Criteria for deciding what ultimately constitutes a discrepancy
Measured net amount of renewable electricity produced in kWh (Em) in a year (y) by the renewable energy generation system	Continuous monitoring through camp management.	Cross-check of beneficiaries from PD’s database. (Questionnaire, operation surveys/interviews) including but not limited to following: <ul style="list-style-type: none"> • Consistency between the information as contained in MR, ER sheet and revealed from off-site inspection/ interviews. • Project scenario • Enquire/observe whether PV plants are in use or not? 	VVB results, accounting for duly justified differences.
Number of units in a type of consumer group connected to a specific renewable energy system	Continuous monitoring through camp management.	Cross-check of beneficiaries from PD’s database. (Questionnaire, operation surveys/interviews) including but not limited to following: <ul style="list-style-type: none"> • Consistency between the information as contained in 	VVB results, accounting for duly justified differences.

		MR, ER sheet and revealed from off-site inspection/ interviews. <ul style="list-style-type: none"> • Project scenario • Enquire/observe whether PV plants are in use or not? 	
Number of households connected to the low voltage grid and such the number of households supplied with clean energy.	Continuous monitoring through camp management.	Cross-check of beneficiaries from PD's database. (Questionnaire, operation surveys/interviews)including but not limited to following: <ul style="list-style-type: none"> • Consistency between the information as contained in MR, ER sheet and revealed from off-site inspection/ interviews. • Project scenario • Enquire/observe whether PV plants are in use or not? 	

CC IPL has considered para 39 (a) of “Standard for Sampling and surveys for CDM project activities and programmes of activities, Version 09.0” /B06/ for determining the sampling size to be assessed by VVB /12/.

In case of the current verification, the estimated emission reduction is 1,323 tCO₂e per year, the verification team determined the sample size for acceptance sampling by evaluating the following:

- Using its own professional judgment
- Guidance provided in the Standard ‘Sampling and surveys for CDM project activities and programme of activities’ version 09.0 /B06/:
- Considering Acceptable Quality Level (AQL): 0.5% Unacceptable Quality Level (UQL): 20% and producer risk of 10% and consumer risk of 10% and acceptance number (c) : 0.

A sample size of 11 was required as per table 2 in the referred Standard /B07/. The paragraph 4.1.1 (d) of “Site Visit and Remote Audit Requirements and Procedures v2.0” /B02/ states that VVB shall choose 10% additional sample for PoA verification using the remote audit. In line with this approach VVB has selected 10% additional samples i.e.,13 samples to verify the project activity. The verification team selected random samples from PD’s database. The operational status of solar PV systems was checked during the remote assessment for the identified samples. The household connected to low voltage grid were checked with amount of energy generation from solar PV plant along with the consumers connected to grid along with grid availability was crosschecked during the remote audit. This assessment of the selected samples was done to ascertain the implementation status of the project activity w.r.t. the PV generation system types, number of consumers, location etc.

D.5. Clarification requests (CLs), corrective action requests (CARs) and forward action requests (FARs) raised

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
Compliance of the monitoring report with the monitoring report form	-	-	-
Compliance of the project implementation and operation with the registered PDD	CL 01 CL 04	CAR 01	-
Post-registration changes	-	-	-
Compliance of the registered monitoring plan with the methodologies including applicable tools and standardized baselines	-	CAR 02 CAR 07	-

Compliance of monitoring activities with the registered monitoring plan	CL 02 CL 03	CAR 03	-
Compliance with the calibration frequency requirements for measuring instruments	-	-	-
Assessment of data and calculation of emission reductions or net removals	-	CAR 04 CAR 05 CAR 06	-
Assessment of reported sustainable development co-benefits	-	-	-
Global stakeholder consultation	-	-	-
Others (please specify)	-	-	-
Total	04	07	-

SECTION E. Verification findings

E.1. Compliance of the monitoring report with the monitoring report form

Means of verification	Document Review and Interview
Findings	No finding raised.
Conclusion	CC IPL confirms that the monitoring report initial version 1.0 of 05/12/2023 and final version 1.5 of 03/05/2024 are prepared using GS monitoring report template version 1.1 of 14/10/2020 /B03/ which is the latest available template and completed with relevant information as per the template requirement.

E.2. Remaining forward action requests from validation and/or previous verifications

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Based on the review of validation report /03/ and previous verification report /04/, no FAR found raised which needed to be addressed during this verification.

E.3. Compliance of the project implementation and operation with the registered project design document

Means of verification	Document Review and Interview
Findings	CL 01, CL 04, and CAR 01 were raised and closed satisfactorily. Kindly refer appendix 4 for more details.
Conclusion	<p>As verified from remote audit /12/, the audit team confirm the project implementation and operation complies with the project design document /03/. Initially PD has installed 387 kWp PV system with BESS which was operational from January 2018 and further add up the capacity of 605 kWp with BESS which was operational from December 2020. There are total 1,837 consumers connected to low-voltage grid out of which 1833 are Households, 2 school and 2 public administration building including 1 police station.</p> <p>It is noted that no changes have been observed or identified which may impact the additionality, no addition of component nor extension of technology, no addition nor removal of project sites, no change of values of the actual operational parameter relevant to determination of emission reductions which are within the control of the PD; no change has been observed or identified that may impact the scale of the project activity or applicability of baseline and monitoring methodology "Suppressed Demand Methodology Micro-Scale Electrification and Energization" (version 1.0) /B05/. The operational status of all PV plant, impact on identified SDGs from 01/10/2022 to 30/09/2023 has been taken into consideration.</p> <p>It is Carbon Check's opinion that the project implementation and operation complies with the project design document.</p>

E.4. Post-registration changes

E.4.1. Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents¹

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Not Applicable

E.4.2. Corrections

>>
Not Applicable

E.4.3. Changes to the start date of the crediting period

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Not Applicable

E.4.4. Inclusion of a monitoring plan

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Not Applicable

E.4.5. Permanent changes from registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines or other methodological regulatory documents

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Not Applicable

E.4.6. Changes to the project design

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Not Applicable

E.4.7. Changes specific to afforestation and reforestation project activities

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Not Applicable

E.5. Compliance of the registered monitoring plan with applied methodologies, applied standardized baselines, and other applied methodological regulatory documents

Means of verification	Document Review and Interviews
Findings	CAR 02 and CAR 07 was raised and closed satisfactorily. Kindly refer appendix 4 for more details.
Conclusion	During this monitoring period, the validated and registered monitoring plan /03/ was found to be in accordance with the applied methodology /B05/. All monitoring parameters, monitoring procedures follow the methodology requirements and registered monitoring plan.

E.6. Compliance of monitoring activities with the registered monitoring plan

E.6.1. Data and parameters fixed ex ante or at renewal of crediting period

Means of verification	Document Review and Interviews	
Findings	No finding raised.	
Conclusion	The following ex-ante parameters are considered in the calculation of the emission reductions:	
	Parameter	Value

¹ Other standards, methodologies, methodological tools and guidelines (to be) applied in accordance with the applied(selected) methodologies are collectively referred to as the other (applied) methodological regulatory documents).

	Project emissions in year y (PE _y)	0
	Leakage emissions in year y (LE _y)	0
<p>The verification took cognizance of para. 17.2 of GS4GG VVS, version 1.0 /B01-b/. CCIPL is able to confirm that the Data and parameters fixed ex ante have been implemented in full compliance with the registered monitoring plan.</p>		

E.6.2. Data and parameters monitored.

Means of verification	Desk Review and Interviews																	
Findings	CL 02, CL 03, and CAR 03 were raised and closed satisfactorily. Kindly refer appendix 4 for more details.																	
Conclusion	<table border="1"> <thead> <tr> <th>Parameter</th> <th>Value</th> <th>Description/Assessment</th> </tr> </thead> <tbody> <tr> <td>Number of households supplied with electricity</td> <td>1833</td> <td>The VVB reviewed consumer database /07/ provided by Mam Rshan Camp management and crosschecked the same during the remote audit /12/ by interviewing PD's and camp management representative /12/ and found that total 1833 Households are currently living in the camp and getting electricity from the project activity.</td> </tr> <tr> <td>Li-Ion Battery behaviour and reaction taken</td> <td>100% (all battery racks)</td> <td>The VVB reviewed maintenance records /10/ provided by the PD in which monthly battery maintenance details were recorded by the monitoring software. Additionally performance test /10/ was conducted by PD in this monitoring period which, VVB crosschecked the same during the remote audit by interviewing the O&M manager /12/ and found appropriate.</td> </tr> <tr> <td>Number of Jobs created</td> <td>04 O&M team: - Local project manager: 1 - O&M team on site: 3</td> <td>The VVB reviewed employment records /10/ provided by the PD and crosschecked the same during the remote audit /12/ by interviewing PD's representative and O&M manager /12/ and found appropriate.</td> </tr> <tr> <td>Equal pay for work of equal value. Average hourly earnings of female and male employees, by occupation, age and</td> <td>5\$/hour</td> <td>The VVB reviewed employment records (Pay Slips) /10/ provided by the PD and crosschecked the same during the remote audit by interviewing PD's representative and O&M</td> </tr> </tbody> </table>	Parameter	Value	Description/Assessment	Number of households supplied with electricity	1833	The VVB reviewed consumer database /07/ provided by Mam Rshan Camp management and crosschecked the same during the remote audit /12/ by interviewing PD's and camp management representative /12/ and found that total 1833 Households are currently living in the camp and getting electricity from the project activity.	Li-Ion Battery behaviour and reaction taken	100% (all battery racks)	The VVB reviewed maintenance records /10/ provided by the PD in which monthly battery maintenance details were recorded by the monitoring software. Additionally performance test /10/ was conducted by PD in this monitoring period which, VVB crosschecked the same during the remote audit by interviewing the O&M manager /12/ and found appropriate.	Number of Jobs created	04 O&M team: - Local project manager: 1 - O&M team on site: 3	The VVB reviewed employment records /10/ provided by the PD and crosschecked the same during the remote audit /12/ by interviewing PD's representative and O&M manager /12/ and found appropriate.	Equal pay for work of equal value. Average hourly earnings of female and male employees, by occupation, age and	5\$/hour	The VVB reviewed employment records (Pay Slips) /10/ provided by the PD and crosschecked the same during the remote audit by interviewing PD's representative and O&M		
	Parameter	Value	Description/Assessment															
	Number of households supplied with electricity	1833	The VVB reviewed consumer database /07/ provided by Mam Rshan Camp management and crosschecked the same during the remote audit /12/ by interviewing PD's and camp management representative /12/ and found that total 1833 Households are currently living in the camp and getting electricity from the project activity.															
	Li-Ion Battery behaviour and reaction taken	100% (all battery racks)	The VVB reviewed maintenance records /10/ provided by the PD in which monthly battery maintenance details were recorded by the monitoring software. Additionally performance test /10/ was conducted by PD in this monitoring period which, VVB crosschecked the same during the remote audit by interviewing the O&M manager /12/ and found appropriate.															
	Number of Jobs created	04 O&M team: - Local project manager: 1 - O&M team on site: 3	The VVB reviewed employment records /10/ provided by the PD and crosschecked the same during the remote audit /12/ by interviewing PD's representative and O&M manager /12/ and found appropriate.															
Equal pay for work of equal value. Average hourly earnings of female and male employees, by occupation, age and	5\$/hour	The VVB reviewed employment records (Pay Slips) /10/ provided by the PD and crosschecked the same during the remote audit by interviewing PD's representative and O&M																

	persons with disabilities		manager /12/ and found appropriate.
	Number of units in a type of consumer group connected to a specific renewable energy system (Ni)	Total 1837 connections: 1833 households, 2 public administration building including 1 police station, 2 schools	The VVB reviewed consumer database /07/ provided by Mam Rashan Camp management and crosschecked the same during the remote audit by interviewing PD's and camp management representative /12/ and found appropriate.
	Measured net amount of renewable electricity produced in kWh (Em) in a year (y) by the renewable energy generation system (Em,y)	525,439 kWh/y	The VVB reviewed generation records /06/ and ER sheet /02/ provided by PD and crosschecked the same during the remote audit by interviewing O&M manager and taking live demonstration of recording of generation records /12/ which VVB found appropriate.
	Measured net amount of renewable electricity produced in kWh for a non-eligible consumer connected to a specific renewable energy system (NECec,y).	0 kWh/y	The VVB reviewed consumer database /07/ provided by Mam Rashan Camp management and crosschecked during the remote audit /12/ and found that total 1837 consumers (1833 Households, 2 administrative building and 2 Schools) are currently living in the camp and getting electricity from the project activity who are eligible consumers in line with the applied methodology /B05/.
	Grid availability	6.30 h/day	The VVB reviewed grid availability records between 8 AM to 8 PM /06/ provided by PD and crosschecked the same during the remote audit by interviewing O&M manager and taking live demonstration of recording of grid availability data /12/ which VVB found appropriate.
Carbon Check is able to confirm that the monitoring has been implemented in full compliance with the registered monitoring plan and all the parameters listed in the registered monitoring plan have been completely monitored.			

E.6.3. Implementation of sampling plan

Means of verification	Desk Review and Interviews
Findings	No finding raised.

Conclusion	<p>According to the standard for sampling and survey /B07/ and related guidelines /B06/ the sampling plan was determined at the time of project registration and applied during the monitoring.</p> <ul style="list-style-type: none"> - PD has proposed continuous monitoring in the registered PDD /03/ and not adopted sampling approach for monitoring. The energy provided to the consumers is constantly looked through the energy meters and the number of households provided by energy is constantly monitored. This is in line with the applied methodology /B05/. <ol style="list-style-type: none"> 1) Data to be collected: Number of units in a type of consumer group connected to a specific renewable energy system. 2) Measured net amount of renewable electricity produced in kWh (Em) in a year (y) by the renewable energy generation system. 3) Number of households connected to the low voltage grid and such the number of households supplied with clean energy. 4) Measured net amount of renewable electricity produced in kWh for a non-eligible consumer connected to a specific renewable energy system. - Implementation plan: Annual. <p>Actual implementation of sampling plan during the monitoring plan:</p> <ul style="list-style-type: none"> - Sampling method: The sample size included all consumers and was continuously monitored from project database system in the project. The target population is the 1837 consumers (1833 Households, 2 administrative building and 2 Schools) of the Mam Rashan camp. The sampling frame is homogenous within itself, with respect to service level, established ex-ante baseline and user characteristics. Depending on the number of consumers connected to low voltage PV grid system in the camp, PD continuous monitor consumers connected along with generation from PV plant: <p>In line with para. 26 of the Sampling Standard (version 09.0) /B07/, the verification team has applied a sampling approach for remote surveys as part of verification. Since PD had applied continuous monitoring approach, the verification team has chosen acceptance sampling for monitoring parameters in accordance with para. 27 of the sampling standard (version 09.0) /B07/.</p> <p>VVB confirms that the procedure applied during the current monitoring period for monitoring parameters are accordance with monitoring plan mentioned in the registered PDD. The same has been verified during the remote assessment by the VVB.</p>
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E.7. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	Desk Review and Interviews
Findings	No finding raised.
Conclusion	There is no monitoring equipment involved in monitoring of the required parameters. Hence, no calibration requirement applicable for the project activity.

E.8. Assessment of data and calculation of emission reductions or net removals

E.8.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

Means of verification	Desk Review and Interviews
Findings	CAR 04 was raised and closed satisfactorily. Kindly refer appendix 4 for more details.
Conclusion	<p>Baseline Emissions:</p> <p>In line with applied methodology Suppressed Demand Methodology Micro- Scale Electrification and Energization, version 1.0 /05/ baseline emissions are calculated as below:</p> $BE_y = MIN (E_{d,y} \div MS_{Lec,y}; 1) \times (MS_{Lec,y} \times EF)$

Where:

BE_y = Baseline emissions in t CO₂ for an electricity generation system in a year (y).
 $E_{d,y}$ = Renewable electricity in kWh delivered (d) in a year (y). $E_{d,y}$ must be based on actual monitoring.

$MSL_{ec,y}$ = Minimum Service Level in energy consumption in kWh (ec) for all consumer groups in a year (y).

EF = Default emission factor of 0.0013 t CO₂e/kWh or another approved emission factor.

$MIN(E_{d,y} \div MSL_{ec,y}; 1)$ = If the delivered renewable electricity in kWh (E_d) in a year (y) is higher than or equal to the Minimum Service Level for the entire electricity generation system in kWh (MSL_{ec}) in a year (y) then the (MSL_{ec}) is the maximum electricity consumption in kWh which can be credited. If the delivered renewable electricity in kWh (E_d) in a year (y) is less than the Minimum Service Level for the entire electricity generation system in kWh (MSL_{ec}) in a year (y) then the actual renewable electricity delivered in kWh (E_d) constitutes the maximum amount of electricity in kWh which can be credited.

The following equation is used to calculate the total MSL for all consumer group under the project:

$$MSL_{ec,y} = (MSL_{ec,hh,y} \times n_{hh}) + (MSL_{ec,hc,y} \times n_{hc}) + (MSL_{ec,d,y} \times n_d) + (MSL_{ec,s,y} \times n_s) + (MSL_{ec,k,y} \times n_k) + (MSL_{ec,pa,y} \times n_{pa}) + (MSL_{ec,tp,y} \times n_{tp}) + (MSL_{ec,xx,y} \times n_{xx})$$

$$MSL_{ec,y} = \sum_i (MSL_{ec,i,y} \times n_i)$$

Where:

$MSL_{ec,y}$ = Minimum Service Level in energy consumption in kWh (ec) for all consumer groups in a year (y).

$MSL_{ec,i,y} \times n_i$ = Minimum Service Level in energy consumption in kWh (ec) for a consumer group (i) in a year (y) times the number of units in the consumer group

The default MSL for electricity consumption (kWh) for each consumer group is stated below:

Parameter	Description of parameter	Default MSL energy consumption value in kWh for consumer group per day
$MSL_{ec,hh,y}$	Energy consumption in kWh (ec) for a household (hh) in year (y)	3.0 kWh/day
$MSL_{ec,hc,y}$	Energy consumption in kWh (ec) for a health center (hc) in year (y)	8.6 kWh/day
$MSL_{ec,d,y}$	Energy consumption in kWh (ec) for a dispensary (d) in year (y)	4.1 kWh/day
$MSL_{ec,s,y}$	Energy consumption in kWh (ec) for a school (s) in year (y)	10.0 kWh/day
$MSL_{ec,k,y}$	Energy consumption in kWh (ec) for a kindergarten (k) in year (y)	4.4 kWh/day
$MSL_{ec,pa,y}$	Energy consumption in kWh (ec) for a public administration building (pa) in year (y)	4.4 kWh/day
$MSL_{ec,tp,y}$	Energy consumption in kWh (ec) for a trading place (tp) in year (y)	11.0 kWh/day

	<p>Accordingly, estimated annual average baseline emission is 1,323 tCO_{2e} and actual certified baseline emission is 615 tCO_{2e} respectively over the crediting period.</p> <p>Project Emissions: In line with the applied methodology Suppressed Demand Methodology Micro- Scale Electrification and Energization, version 1.0 /B05/ the project emission are considered to be zero tonnes CO₂ each year (PE_y=0) for renewable biomass, wind and solar.</p> <p>Hence PD has considered project emission as zero for the electricity generation from renewable energies as solar technologies and wind turbines according to the methodology.</p> <p>PE_y=0</p> <p>Leakage emissions: As per the section 4 of the applied methodology Suppressed Demand Methodology Micro- Scale Electrification and Energization, version 1.0 /B05/ , leakage emission is zero. As the project activity is not transferring generating equipment from another activity and not providing electricity to non-eligible consumers /07/.</p> <p>LE_y= 0</p> <p>Emission Reduction: In line with the applied methodology Suppressed Demand Methodology Micro- Scale Electrification and Energization, version 1.0 /05/ emission reduction is calculated as:</p> <p>ER_y = BE_y-PE_y-LE_y</p> <p>Therefore, the actual emission reduction achieved as annual average over the crediting period is equal to (615 – 0 – 0) tCO_{2e} i.e. 615 tCO_{2e}.</p> <p>VVB confirms that baseline emissions have been appropriately calculated /02-c/ and are consistent and line with the with remote assessment /12/, the applied methodology /B05/ and registered PDD /03/.</p>
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E.8.2. Calculation of project GHG emissions or actual net anthropogenic GHG removals by sinks

Means of verification	Desk Review and Interviews
Findings	CAR 05 was raised and closed satisfactorily. Kindly refer appendix 4 for more details.
Conclusion	<p>Project emissions is considered zero in line with section 5 of the applied methodology /B05/.</p> <p>CC IPL confirms that project emissions have been appropriately calculated and are consistent with remote assessment /12/, the applied methodology /B05/ and registered PDD /03/.</p>

E.8.3. Calculation of leakage GHG emissions

Means of verification	Desk Review and Interviews
Findings	No finding raised.
Conclusion	<p>As per the section 4 of the applied methodology Suppressed Demand Methodology Micro- Scale Electrification and Energization, version 1.0 /B05/ , leakage emission is zero. As the project activity is not transferring generating equipment from another activity and not providing electricity to non-eligible consumers /07/.</p> <p>CC IPL confirms that leakage emissions are accounted correctly in the estimation of emission reduction as per the applied methodology /B05/.</p>

E.8.4. Summary calculation of GHG emission reductions or net anthropogenic GHG removals by sinks

Means of verification	Desk Review and Interviews
Findings	No finding raised.
Conclusion	<p>In line with applied methodology Suppressed Demand Methodology Micro- Scale Electrification and Energization, version 1.0 /05/ baseline emissions are calculated as below:</p> $BE_y = MIN (E_{d,y} \div MSL_{ec,y}; 1) \times (MSL_{ec,y} \times EF)$ <p>Where:</p> <p>BE_y = Baseline emissions in tCO₂ for an electricity generation system in a year (y)</p> <p>$E_{d,y}$ = Renewable electricity in kWh delivered (d) in a year (y). $E_{d,y}$ must be based on actual monitoring.</p> <p>$MSL_{ec,y}$ = Minimum Service Level in energy consumption in kWh (ec) for all consumer groups in a year (y)</p> <p>EF = Default emission factor of 0.0013 t CO₂e/kWh or another approved emission factor</p> <p>As explained in section E.8.1 above, the resulted Baseline emissions (BE_y) for the monitoring period is 615 tCO₂. Similarly, as explained in section E.8.2 and section E.8.3 project emission is zero for the monitoring period and leakage emission is considered zero as the project activity is providing electricity only to eligible consumers /07/ which are mentioned in applied methodology. VVB verified the same during the remote audit /12/.</p> <p>Therefore, resulted emission reduction for the monitoring period is 615 tCO₂e (round-down value).</p> <p>The data presented in the monitoring report /01-f/ and emission reduction worksheet /02-c/ were assessed by reviewing in detail project documentation, collection of monitored data, observation of established monitoring and reporting practices and assessment of the reliability of monitoring equipment. Sufficient evidence were presented and verified by CCIPL for the reported emission reductions as listed above.</p>

E.8.5. Comparison of actual GHG emission reductions or net anthropogenic GHG removals by sinks with estimates in registered RCP PDD

Means of verification	Desk Review and Interviews
Findings	CAR 06 was raised and closed satisfactorily. Kindly refer appendix 4 for more details.
Conclusion	<p>The emission reductions from the project for the current monitoring period as reported in the monitoring report version 1.5 dated 03/05/2024 /01-f/ is equal to 615 tCO₂e as against the estimated 1,323 tCO₂e for the same duration of the current monitoring period. The difference is due to unexpected maintenance of the plant and higher grid availability during day in some months of the current monitoring period.</p> <p>The emission reduction calculations provided in the spreadsheet /02-c/ have been verified to be correct and in line with the final PDD /03/.</p>

E.8.6. Remarks on difference from estimated value in registered PDD

Means of verification	Desk Review and Interviews
Findings	No finding raised.
Conclusion	<p>The value estimated in ex-ante emission reductions for the duration of the current monitoring period in the registered PDD is 1,323 tCO₂e, however, the approved certified emission reduction for the current monitoring period is 615 tCO₂e. The difference is due to unexpected maintenance of the plant and higher grid availability during day in some months of the current monitoring period. Since, the</p>

	<p>actual Emission reduction is less than the ex-ante estimate value, therefore, no analysis has been done and this is acceptable to verification team.</p> <p>The emission reduction calculations provided in the spreadsheet /02/ have been verified to be correct and in line with the final PDD /03/.</p>
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E.8.7. Actual GHG emission reductions or net anthropogenic GHG removals by sinks during the first commitment period and the period from 1 January 2013 onwards

Means of verification	Desk Review and Interviews	
Findings	No finding raised.	
Conclusion	GHG emission reductions or net GHG removals by sinks reported up to 31 December 2012	GHG emission reductions or net GHG removals by sinks reported from 1 January 2013 onwards
	NA	615 tCO ₂ e
	Year-wise breakup of emission reductions:	
	Year	Emission Reductions (tCO ₂ e)
	01/10/2022 to 31/12/2022	131
	01/01/2023 to 30/09/2023	484
	The emission reduction calculations provided in the ER spreadsheet /02-c/ have been verified to be correct and in line with the registered PDD /03/, also the values are consistently reported in the MR for this monitoring period.	

E.9. Assessment of reported sustainable development co-benefits

Means of verification	Desk Review and Interviews					
Findings	No findings raised.					
Conclusion	The verification team verified that whether the Sustainable development co-benefits are reported in MR /01-f/. Further, it is also confirmed that Project Developer has monitored the sustainable development co-benefits.					
	SDG	SDG Impact	Baseline estimate	Project estimate	Net Benefit	VVB Assessment
	07	Number of Households supplied with clean electricity	0 households	1833 households	1833 households	VVB has reviewed the MR /01/ and consumer database /07/. The same has been verified during remote audit /12/ and found the value appropriate.
	08	Number of jobs created	0 jobs	4 jobs	4 jobs	VVB has reviewed the Employment records /09/. The same has been verified during remote audit /12/ and found the value appropriate.
13	Certified Emissions Reductions/Removals	615 tCO ₂ e/y	0 tCO ₂ e	615 tCO ₂ e	VVB has reviewed the ER sheet /02/, consumer database /07/	

						and generation records /06/. The same has been verified during remote audit /12/ and found the value appropriate.
VVB confirms that monitoring of all the sustainable development monitoring parameters during this monitoring period is in line with the SD monitoring plan and are consistent with remote audit /12/ observations.						

E.10. Global stakeholder consultation

Means of verification	Not Applicable.
Findings	Not Applicable.
Conclusion	Not Applicable.

SECTION F. Internal quality control

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The final verification report passed a technical review before being submitted to the client for forward submission to GS4GG. A technical reviewer qualified in accordance with CCIPL’s qualification scheme for CDM validation and verification performed the technical review.

SECTION G. Verification opinion

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Carbon Check (India) Private Ltd. (CCIPL) has performed the 5th periodic verification of the GS Project Activity “Energy for Mam Rahan” in India having GS reference number GS 6460.

The verification team assigned by the VVB concludes that the project activity as described in the registered PDD (version 5.0; dated 15/08/2019) /03/ and the monitoring report (version 1.5 dated 03/05/2024) /01-f/, meets all relevant GS4GG requirements for project activity. The verification has been conducted in-line with the GS4GG principle & requirements (version 1.2) /B01-a/ and GS4GG Validation and Verification standard (version 1.0) /B01-b/.

Verification methodology and process:

The verification team confirms the contractual relationship signed /11/ on 25/01/2024 between the VVB, Carbon Check (India) Private Ltd. and Project Participants (atmosfair gGmbH). The team assigned to the verification meets the CCIPL’s internal procedures including the UNFCCC requirements for the team composition and competence. The verification team has conducted thorough review as per GS4GG, and CCIPL’s procedures and requirements.

The verification has been performed as per the requirements described in the GS4GG principles & requirements /B01/ and constitutes the review and completion of the following steps:

- Reviewing the registered PDD (version 5.0; dated 15/08/2019) /03/;
- Receipt of the MR (initial version 1.0 dated 05/12/2023 /01-a/ and final version 1.5 of 03/05/2024) /01-f/;
- Desk review of the MR /01-f/ and other relevant documents;
- Review of the applied monitoring methodology (Suppressed Demand Methodology Micro- Scale Electrification and Energization, version 1.0) /B05/;
- Review of any CMP and EB decisions, clarifications and guidance;
- Remote assessment (11/03/2024) /12/;
- Resolution of CARs and CLs raised during verification;
- Issuance of Verification Report

The project activity was correctly implemented according to the selected monitoring methodology /B05/ and registered PDD /03/. Through document review and remote assessment, the verification team confirms that the project activity has resulted in 615 tCO₂e /02-c/ emission reductions during this fifth monitoring period.

The break-up of emission reduction from 01/10/2022 to 30/09/2023 is verified during the course of verification are as below:

Vintage	Emission reductions (tCO ₂ e)
01/10/2022 to 31/12/2022	131
01/01/2023 to 30/09/2023	484

CC IPL therefore pleased to issue a positive verification opinion expressed in the attached Certification statement.

SECTION H. Certification statement


>>

It is CC IPL’s opinion that the GHG emission reductions stated in the monitoring report, version 1.5 dated 03/05/2024 /01-f/ for project activity, “Energy for Mam Rashaan” for period 01/10/2022 to 30/09/2023 (Inclusive of both the dates) are fairly stated. The GHG emission reductions were calculated correctly based on the approved monitoring methodology, Suppressed Demand Methodology Micro- Scale Electrification and Energization, version 1.0 /B05/. Hence, CC IPL able to certify that the emission reductions from the project during the monitoring period 01/10/2022 to 30/09/2023 (Inclusive of both the dates) amount to 615 tCO₂e GS VERs.

Appendix 1. Abbreviations

Abbreviations	Full texts
B.R.H.A.	Board of Relief and Humanitarian Affairs
CDM	Clean Development Mechanism
CAR	Corrective Action Request
CC IPL	Carbon Check (India) Private Ltd.
CL	Clarification Request
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide Equivalent
DR	Desk Review
DVR	Draft Validation Report
EB	CDM Executive Board
EF	Emission Factor
EI	External individual
ER	Emission Reduction
FA	Final Approval
FAR	Forward Action Request
FVR	Final validation Report
GHG	Greenhouse gas(es)
GSF	Gold standard Foundation
GS4GG	Gold standard for Global Goals
I	Interview
IPCC	Intergovernmental Panel on Climate Change
IR	Internal resource
kWh	kilo Watt hours
PDD	Project Design Document
PP	Project Participant
OSV	On Site Visit
QC/QA	Quality control /Quality assurance
SS	Sectoral Scope
TA	Technical Area
TR	Technical Review
UNFCCC	United Nations Framework Convention on Climate Change
VER	Verified Emission Reduction
VVB	Validation and Verification Body
VVS	Validation and Verification Standard

Appendix 2. Competence of team members and technical reviewers



Carbon Check (India) Private Limited

Certificate of Competency

Mr. Amit Anand

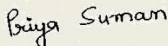

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), ISO/IEC14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

<input checked="" type="checkbox"/> Validator	<input checked="" type="checkbox"/> Verifier	<input checked="" type="checkbox"/> Team Leader	<input checked="" type="checkbox"/> Technical Expert
<input checked="" type="checkbox"/> Technical Reviewer	<input type="checkbox"/> Health Expert	<input type="checkbox"/> Gender Expert	<input checked="" type="checkbox"/> Plastic Waste Expert
<input checked="" type="checkbox"/> CCB Expert	<input type="checkbox"/> Legal Expert	<input checked="" type="checkbox"/> Financial Expert	<input type="checkbox"/> Environmental, Health and Safety financial matters
<input checked="" type="checkbox"/> SDG+	<input checked="" type="checkbox"/> Social no-harm(S+)	<input checked="" type="checkbox"/> Environment no-harm(E+)	
<input checked="" type="checkbox"/> Local Expert for India and RSA			

in the following Technical Areas:

<input checked="" type="checkbox"/> TA 1.1	<input checked="" type="checkbox"/> TA 1.2	<input type="checkbox"/> TA 2.1	<input checked="" type="checkbox"/> TA 3.1	<input type="checkbox"/> TA 4.1
<input type="checkbox"/> TA 4. n	<input type="checkbox"/> TA 5.1	<input type="checkbox"/> TA 5.2	<input type="checkbox"/> TA 7.1	<input checked="" type="checkbox"/> TA 8.1
<input type="checkbox"/> TA 9.1	<input type="checkbox"/> TA 9.2	<input type="checkbox"/> TA 10.1	<input checked="" type="checkbox"/> TA 13.1	<input checked="" type="checkbox"/> TA 13.2
<input checked="" type="checkbox"/> TA 14.1	<input checked="" type="checkbox"/> TA 15.1	<input type="checkbox"/> TA 16.1		

Issue Date 5 th December 2023  <hr/> Ms. Priya Suman Compliance Officer	Expiry Date 31 st December 2024  <hr/> Mr. Sanjay Kumar Agarwalla Technical Director
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Revision History of the document:

Revision date	Summary of changes
2022 ¹	Annual revision
Jan 2023	Annual revision
Dec 2023	Change in the template due to revision in TA and function

CCIPL_FM 7.9 Certificate of Competency_V4_0_112023
¹ Please refer to previous version of FM 7.9 for the revision history



Carbon Check (India) Private Limited

Certificate of Competency

Mr. Ezdo Khodeda Khader

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), ISO/IEC14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

- Validator
- Verifier
- Team Leader
- Technical Expert
- Technical Reviewer
- Health Expert
- Gender Expert
- Plastic Waste Expert
- CCB Expert
- Legal Expert
- Financial Expert
- Environmental, Health and Safety financial matters
- SDG+
- Social no-harm(S+)
- Environment no-harm(E+)
- Local Expert for Iraq

in the following Technical Areas:

- TA 1.1
- TA 1.2
- TA 2.1
- TA 3.1
- TA 4.1
- TA 4. n
- TA 5.1
- TA 5.2
- TA 7.1
- TA 8.1
- TA 9.1
- TA 9.2
- TA 10.1
- TA 13.1
- TA 13.2
- TA 14.1
- TA 15.1
- TA 16.1

Issue Date

12th March 2024

Expiry Date

11th March 2025

Priya Suman

Ms. Priya Suman
Compliance Officer

Sanjay Agarwalla

Mr. Sanjay Kumar Agarwalla
Technical Director

Revision History of the document:

Revision date	Summary of changes
March 2024	Initial Adoption

CCIPL_FM 7.9 Certificate of Competency_V4.0_112023

¹Please refer to previous version of FM 7.9 for the revision history



Carbon Check (India) Private Limited

Certificate of Competency

Ms. Indumathi C

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), ISO/IEC14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

- | | | | |
|--------------------------------------------------------------------------|--------------------------------------------------------|-------------------------------------------------------------|-----------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Validator | <input checked="" type="checkbox"/> Verifier | <input checked="" type="checkbox"/> Team Leader | <input checked="" type="checkbox"/> Technical Expert |
| <input checked="" type="checkbox"/> Technical Reviewer | <input type="checkbox"/> Health Expert | <input type="checkbox"/> Gender Expert | <input checked="" type="checkbox"/> Plastic Waste Expert |
| <input type="checkbox"/> CCB Expert | <input type="checkbox"/> Legal Expert | <input checked="" type="checkbox"/> Financial Expert | <input type="checkbox"/> Environmental, Health and Safety financial matters |
| <input checked="" type="checkbox"/> SDG+ | <input checked="" type="checkbox"/> Social no-harm(S+) | <input checked="" type="checkbox"/> Environment no-harm(E+) | |
| <input checked="" type="checkbox"/> Local Expert for India and Sri Lanka | | | |

in the following Technical Areas:

- | | | | | |
|--------------------------------------------|--------------------------------------------|----------------------------------|---------------------------------------------|---------------------------------------------|
| <input checked="" type="checkbox"/> TA 1.1 | <input checked="" type="checkbox"/> TA 1.2 | <input type="checkbox"/> TA 2.1 | <input checked="" type="checkbox"/> TA 3.1 | <input type="checkbox"/> TA 4.1 |
| <input type="checkbox"/> TA 4. n | <input type="checkbox"/> TA 5.1 | <input type="checkbox"/> TA 5.2 | <input type="checkbox"/> TA 7.1 | <input type="checkbox"/> TA 8.1 |
| <input type="checkbox"/> TA 9.1 | <input type="checkbox"/> TA 9.2 | <input type="checkbox"/> TA 10.1 | <input checked="" type="checkbox"/> TA 13.1 | <input checked="" type="checkbox"/> TA 13.2 |
| <input type="checkbox"/> TA 14.1 | <input type="checkbox"/> TA 15.1 | <input type="checkbox"/> TA 16.1 | | |

Issue Date

5th December 2023

Expiry Date

31st December 2024

Priya Suman

Ms. Priya Suman
Compliance Officer

Sanjay Agarwalla

Mr. Sanjay Kumar Agarwalla
Technical Director

Revision History of the document:

Revision date	Summary of changes
2022 ¹	Annual revision
Jan 2023	Annual revision
Dec 2023	Change in the template due to revision in TA and function

CCIPL_FM 7.9 Certificate of Competency_V4.0_112023

¹ Please refer to previous version of FM 7.9 for the revision history

Appendix 3. Documents reviewed or referenced.

No.	Author	Title	References to the document	Provider
01	atmosfair	a) Initial Monitoring report for the project activity. b) Revised Monitoring report for the project activity. c) Revised Monitoring report for the project activity. d) Revised Monitoring report for the project activity e) Revised Monitoring report for the project activity f) Final Monitoring report for the project activity	Version 1.0, dated-05/12/2023. version 1.1, dated- 20/03/2024. version 1.2, dated- 03/04/2024. version 1.3, dated- 08/04/2024 version 1.4, dated- 30/04/2024 version 1.5, dated- 03/05/2024	PD
02	atmosfair	a) Initial ER calculation spreadsheet for the project activity. b) Revised ER calculation spreadsheet for the project activity c) Final ER calculation spreadsheet for the project activity.	Version 01, Dated-11/07/2023. version 2.0, Dated- 20/03/2024. version 3.0, Dated- 03/04/2023.	PD
03	atmosfair	Registered PDD & Validation report	v5.0, 15/08/2019	PD
04	atmosfair & GS4GG	Monitoring report and its verification report of 4 th MP	v2.0, 13/07/2023 v02, 12/05/2022	PD
05	GS4GG	Objective observer Appraisal Report	v01, 06/07/2023	PD
06	atmosfair	Generation records	October 2022 to September 2023	PD
07	atmosfair	Consumers Database		PD
08	atmosfair	Grid Availability	October 2022 to September 2023	
09	atmosfair	Employment Records		PD
10	atmosfair	Maintenance Records		PD
11	CC IPL	Contract (CC IPL & atmosfair gGmbH)	25/01/2024	VVB
12	CC IPL	Remote audit records	11/03/2024	VVB
13	atmosfair	Technical Specification		PD
14	atmosfair	Agreement between atmosfair & B.R.H.A. (Carbon Credits waiver-paragraph 4.2)	26/04/2019	PD
15	atmosfair	O&M Contract	01/04/2020	PD
16	atmosfair	Construction Overview		PD

Background Documents

No.	Author	Title	References to the document	Provider
/B01/	GS4GG	a) GS4GG "Principles & Requirements", version 1.2 b) GS4GG "Validation and Verification standard", version 1.0	www.goldstandard.org	Publicly Available
/B02/	GS4GG	Gold Standard and Site visit and remote audit requirements & procedures v2.0	www.goldstandard.org	Publicly Available
/B03/	GS4GG	GS Monitoring Template v1.1	www.goldstandard.org	Publicly Available
/B04/	GS4GG	GS Community Activity Requirements v1.2	www.goldstandard.org	Publicly Available
/B05/	GS4GG	Suppressed Demand Methodology Micro-Scale Electrification and Energization v1.0	www.goldstandard.org	Publicly available
/B06/	UNFCCC	Guidelines: Sampling and surveys for CDM project activities and programmes of activities (version 04.0)	http://cdm.unfccc.int/	Publicly Available
/B07/	UNFCCC	Standard: Standard for sampling and surveys for CDM project activities and Programme of Activities (version 09.0)	http://cdm.unfccc.int/	Publicly Available

Appendix 4. Clarification requests, corrective action requests and forward action requests

Table 1. Remaining FAR from validation and/or previous verifications

No FAR from previous verification.

FAR ID	xx	Section no.		Date: DD/MM/YYYY
Description of FAR				
Project participant response				Date: DD/MM/YYYY
Documentation provided by project participant				
VVB assessment				Date: DD/MM/YYYY

Table 2. CL from this verification

CL ID	01	Section no.	E.3	Date: 12/03/2024
Description of CL				
<i>PD is requested to provide commissioning certificate of the project activity.</i>				
Project participant response				Date: 14/03/2024
<i>There is no commissioning certificate as the Plant is not connected to the grid. PD provided the as built documentation.</i>				
Documentation provided by project participant				
VVB assessment				Date: 26/03/2024
<i>PD has provided built documentation of dated 09/04/2020. However, in section B.1 of the MR, PD has mentioned that 605kWp PV plant was commissioned and operational by December 2020. PD is requested to provide appropriate documents to establish the same. Hence, CL is open.</i>				
Project participant response				Date: 03/04/2024
<i>PD provided a document describing the construction processes. Stating that final completion was in December 2020, as than the ESS system an the distribution boxes were installed and commissioned as well. Just the PV plant part was finalized earlier.</i>				
Documentation provided by project participant				
VVB assessment				Date: 08/04/2024
<i>The project is a stand-alone community project and not a grid connected project. thus, the commissioning certificate issued from government is not required. PD has provided "Construction Overview Document" /16/ to establish the completion and operational date of 605kWp PV plant. VVB has cross checked the as built documentation /13/ along with the Construction Overview document /16/ and established that the project was completed in December 2020. Hence, the CL is closed.</i>				

CL ID	02	Section no.	E.6.2	Date: 12/03/2024
Description of CL				
<ol style="list-style-type: none"> 1) <i>PD is requested to provide records maintained for the monitoring parameter 'Li-Ion Battery behaviour and reaction taken' for the current MP.</i> 2) <i>PD is requested to provide records maintained for monitoring parameter 'no. of Jobs created' for the current MP.</i> 3) <i>PD is requested to provide records maintained for monitoring parameter 'Equal pay for work of equal value. Average hourly earnings of female and male employees, by occupation, age and persons with disabilities' for the current MP.</i> 4) <i>PD is requested to provide database for the monitoring parameter 'Number of units in a type of consumer group connected to a specific renewable energy system (N_i)' for the current MP.</i> 5) <i>PD is requested to provide records maintained for the monitoring parameter 'Measured net amount of renewable electricity produced in kWh (E_{m,y}) in a year (y) by the renewable energy generation system (E_{m,y})' for the current MP.</i> 				

6) PD is requested to provide records maintained for monitoring parameter 'Grid Availability' for the current MP.	
Project participant response	Date: 14/03/2024
<ol style="list-style-type: none"> 1) The battery behaviour is monitored within the software and can be demonstrated within the remote audit. The battery temperature is also noted within the O&M reports. As the battery temperature is partly higher than recommended, the batterie conditions was tested extra on the 16th of June 2023. The test showed that everything is fine 2) PD provided the list from he O&M team. The O&M team can be interviewed within the remote audit. 3) PD provided the salary scheme for all employees and some payslips 4) PD provided the overview of the camp structure and a list of the consumer groups. 5) The generation data is tracked through the monitoring system, which can be demonstrated during the remote audit. The data is loaded down and summarized in the monthly reports provided. 6) PD provided the data tracked within the monitoring system regarding grid availability. 	
Documentation provided by project participant	
VVB assessment	Date: 26/03/2024
<ol style="list-style-type: none"> 1) PD has provided maintenance records of monitoring parameter 'Li-Ion Battery behaviour and reaction taken' which VVB crosschecked and found appropriate. Hence, the CL point is closed. 2) PD has provided records for monitoring parameter 'no. of Jobs created' which VVB crosschecked and found appropriate. Hence, the CL point is closed. 3) PD has provided records for monitoring parameter "Equal pay for work of equal value. Average hourly earnings of female and male employees, by occupation, age and persons with disabilities" which VVB crosschecked and found appropriate. Hence, the CL point is closed. 4) PD has provided records for monitoring parameter "No. of consumers (Ni)" signed by Mam Rashan Camp management which VVB crosschecked and found appropriate. Hence, the CL point is closed. 5) PD has provided records (generated from monitoring software) for electricity generation for the current monitoring period which VVB crosschecked and found appropriate. Hence, the CL point is closed. 6) PD has provided records for grid availability for the current monitoring period which VVB crosschecked and found appropriate. Hence, the CL point is closed. <p>VVB found PD response appropriate. Hence, the CL is closed.</p>	

CL ID	03	Section no.	E.6.2	Date: 12/03/2024
Description of CL				
it is observed to VVB during desk review that 'no. of consumers' and 'type of consumers' connected to project activity in current MP is different than last MP. PD is requested to clarify the same.				
Project participant response				Date: 14/03/2024
PD reduced the amount of consumers to the current status, as provided through the picture from the camp management office. It was reported that the amount of consumers was higher during the monitoring period cause of an increase of IDPs but there is no evidence for it so PD decided to use the lower current amount.				
Documentation provided by project participant				
VVB assessment				Date: 26/03/2024
PD has revised the number and type of consumers based on data provided by camp management which VVB crosschecked and found appropriate. Hence, the CL is closed.				

CL ID	04	Section no.	E.3	Date: 08/04/2024
Description of CL				
The grid availability is indicated as an average 52% for the monitoring period. Please clarify as to how the same has been considered, given that the description of the parameter is "Measured and/or justified electricity supply through the national grid in average hours per day between 8am and 8pm. To assure that the average grid availability per day is less than 50%."				
In addition, PD shall clarify how the project still meet the requirement of the applied methodology which states that "The methodology is applicable to renewable energy-based electrification/energization activities for communities that do not have access to the national or regional grid or for communities who have less than 50% grid availability."				
Project participant response				Date: 08/04/2024

<p>The grid operator changed the supply schedule, so that the main grid supply is now from 6pm to 6 am and not between 8pm to 8am anymore, as it was at the time of the registration of the project. As the national grid has a priority in supplying the Mam Rashan camp the project has no influence at the grid availability. Based on the methodology the grid availability don't need to be measured annual, just for the beginning to determine the baseline. It is such kind of an extra parameter the PD included in its monitoring plan. As the emission reductions are just based on the PV electricity generated and supplied to the customers, PD hopes that this has no influence on the verification.</p>	
<p>Documentation provided by project participant</p>	
<p>VVB assessment</p>	<p>Date: 10/04/2024</p>
<p>With reference to the Table 1 of baseline service level under section 3 of the applied GS methodology, PD has followed the minimum service level approach for each eligible consumer group to meet the suppressed demand.</p> <p>Again, in line with the paragraph "Baseline Emission" under section 3 of the applied methodology, the baseline emission for the project activity is calculated based on amount of load connected (sum of minimum service level for all connected consumers multiplied by default emission factor).</p> <p>During the current MP, the grid schedule has been changed to 6am – 6pm by the grid national grid operator. With respect to this timing the grid availability is found to be 41% /08/, however, PD has opted the time of 8am – 8pm and calculated the grid availability as 52% /08/ in line with the registered PDD. Moreover, as per section 6 of the methodology it is not compulsory to monitor grid availability, however, PD has voluntarily considered this as monitoring parameter in the registered PDD.</p> <p>In line with the same approach, it is observed that the emission reductions are claimed only for the electricity supplied to the consumers and the grid availability would not make any impact on the ER claimed. It is also observed from the verification report of last MP that the project got issuance with more than 50% grid availability. Therefore, VVB has accepted grid availability of 52% for the current monitoring period. Hence, the CL is closed.</p>	

Table 3. CAR from this verification

CAR ID	01	Section no.	E.3	Date: 12/03/2024
Description of CAR				
<p>The capacity of installed PV plant mentioned in MR is not in line with registered PDD and submitted technical specification. PD is requested to maintain consistency for the capacity of installed PV plant in the project activity.</p>				
Project participant response				Date: 14/03/2024
<p>In section A.1 of the registered PDD it is mentioned that the system will be constantly increased starting by a minimum of 300kWp. PD changed the monitoring report and included the exact amount installed, with 387kWp in the first construction phase and 605 kWp in the second construction phase. See provided as built documentation.</p>				
Documentation provided by project participant				
VVB assessment				Date: 26/03/2024
<p>PD has made the required changes in the MR and included installed capacity of PV plants in section B.1 of the MR which is in line with registered PDD (for initial installation) and 4th monitoring and verification report (for extended installation). Hence, the CAR is closed.</p>				
CAR ID	02	Section no.	E.5	Date: 12/03/2024
Description of CAR				
<p>1) In KPI section of MR, under 'Activity requirements applied' mentioned activity is not in line with registered PDD. PD is requested to maintain consistency for the same.</p> <p>2) PD is requested to provide appropriate SDG impact in Table 1 and in section E.4 of the MR.</p> <p>3) PD is requested to maintain consistency for notation of parameters as per applied methodology across the MR.</p> <p>4) PD is requested to use standard notation of units throughout the MR.</p> <p>5) Coordinates of project activity mentioned in section A.2 of the MR is not consistent with registered PDD.</p>				

Project participant response			Date: 14/03/2024	
<ol style="list-style-type: none"> 1) PD changed it to community activity as stated in the PDD. 2) PD included the Impact criteria 3) PD corrected it accordingly 4) PD corrected accordingly 5) PD corrected accordingly 				
Documentation provided by project participant				
VVB assessment			Date: 26/03/2024	
<ol style="list-style-type: none"> 1) PD has made the required changes in KPI section of MR and appropriately selected the activity requirement mentioned under 'Activity requirements applied' in KPI section of the monitoring report. Hence, the CAR point is closed. 2) PD has made the required changes in the MR. Hence, CAR point is closed. 3) PD has not rectified notation of parameters in line with applied methodology. PD is requested to maintain subscript and superscript throughout the MR, in line with applied methodology. Hence, the CL point is open. 4) PD has made the required changes in the MR. Hence, the CAR point is closed. 5) PD has rectified the coordinates of the project activity and made in line with registered PDD. Hence, the CAR point is closed. 				
Project participant response			Date: 08/04/2024	
3) PD rectified the parameters				
Documentation provided by project participant				
VVB assessment			Date: 10/04/2024	
PD has made the required changes in the MR. Hence, the CAR is closed.				
CAR ID	03	Section no.	E.6.2	Date: 12/03/2024
Description of CAR				
<ol style="list-style-type: none"> 1) The value of $MSL_{ec,pa,y}$ mentioned in section E.1 of the MR is not in line with other section of MR. PD is requested to maintain the consistency for the same. 2) In section E.1 of the MR, the value of net amount of renewable electricity produced is not consistent with current MP. 				
Project participant response			Date: 14/03/2024	
<ol style="list-style-type: none"> 1) PD corrected the value 2) PD corrected the values 				
Documentation provided by project participant				
VVB assessment			Date: 26/03/2024	
<ol style="list-style-type: none"> 1) PD has not rectified the value of $MSL_{ec,pa,y}$ in section E.1 of the MR. Hence, the CAR point is open. 2) PD has made the required changes in section E.1 of the MR for $E_{d,y}$. Hence, the CAR point is closed. 				
Project participant response			Date: 28/03/2024	
1) PD has rectified it.				
Documentation provided by project participant				
VVB assessment			Date: 08/04/2024	
PD has made the required changes in the MR in section E.1 of the revised MR. Hence, CAR is closed.				
CAR ID	04	Section no.	E.8.1	Date: 12/03/2024
Description of CAR				
Documents submitted by PD for monitoring parameter 'Grid Availability' are not in line with the registered PDD. PD is requested to maintain consistency for the same.				
Project participant response			Date: 28/03/2024	
PD submitted grid availability data for 8am to 8 pm as well. Sometimes the data tracking was not functioning as one of the ESS containers were down or the internet connection was interrupted. But the overall data has been delivered.				
Documentation provided by project participant				

VVB assessment	Date: 08/04/2024
<i>PD has provided Grid availability data for the current monitoring period which VVB reviewed and found appropriate. Hence, the CAR is closed.</i>	

CAR ID	05	Section no.	E.8.2	Date: 12/03/2024
Description of CAR				
1) <i>The no. of consumer group (Ni) is not consistent in MR and ER calculation spreadsheet.</i>				
2) <i>In ER sheet under sub-sheet 'Mam Rashan method A' calculation provided is not appropriate as per mentioned calculation.</i>				

Project participant response	Date: 14/03/2024
1) <i>Ni was always stated as 1874, and the amount of households as 1870 which is SDG 7</i>	
2) <i>PD deleted the sub-sheet.</i>	
Documentation provided by project participant	

VVB assessment	Date: 26/03/2024
1) <i>The value of Ni mentioned in response is not in line with values mentioned in MR. PD is requested to rectify the response. Hence, the CAR point is open.</i>	
2) <i>PD has rectified the ER sheet and removed 'Mam Rashan method A' calculation which VVB found appropriate in line with registered PDD. Hence, the CAR point is closed.</i>	

Project participant response	Date: 28/03/2024
<i>PD corrected it.</i>	
Documentation provided by project participant	

VVB assessment	Date: 08/04/2024
<i>PD has rectified the value of Ni in response to CAR raised and maintained the consistency for the same in the MR, which VVB found appropriate. Hence, the CAR point is closed.</i>	

CAR ID	06	Section no.	E.8.5	Date: 12/03/2024
Description of CAR				
<i>The ex-ante value of ER under SDG 13 in section E.5 is not consistent with registered PDD.</i>				
Project participant response	Date: 14/03/2024			
<i>PD corrected the value</i>				
Documentation provided by project participant				

VVB assessment	Date: 26/03/2024
<i>PD has rectified the ex-ante estimated value of ER under SDG 13 in section E.5 of the MR. Hence, the CAR is closed.</i>	

CAR ID	07	Section no.	E.5	Date: 12/03/2024
Description of CAR				
<i>PD is requested to include grievance mechanism in section G.1 of the MR.</i>				
Project participant response	Date: 14/03/2024			
<i>PD explained the grievance mechanism.</i>				
Documentation provided by project participant				

VVB assessment	Date: 26/03/2024
<i>PD has included the grievance mechanism in section G.1 of the MR which VVB found appropriate. Hence, the CAR point is closed.</i>	

Table 4. FAR from this verification

FAR ID	xx	Section No.		Date: DD/MM/YYYY
Description of FAR				
Project participant response	Date: DD/MM/YYYY			
Documentation provided by project participant				

VVB assessment	Date: DD/MM/YYYY