Validation Report

Validation of Noritake Lanka Porcelain Rooftop Solar Project

Report No: SLCCS/VDR/2025/02
Version : 01

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Client	Noritake Lanka Porcelain (Pvt) Ltd.
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Summary of the validation report

Validation Division of Sri Lanka Climate Fund has conducted the validation of the Noritake Lanka Porcelain Rooftop Solar Project which is located in Matale of Sri Lanka, on the basis of Sri Lanka Carbon Crediting Scheme (SLCCS) eligibility criteria and CDM methodologies, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The project activity aims at reducing GHG emissions by installing roof top solar PV systems at the facilities owned by Noritake Lanka Porcelain (Pvt) Ltd. The annual estimated emission reduction to be achieved through the implementation of this project is 135 tCO_2e.

Validation Division of Sri Lanka Climate Fund confirms that the project correctly applies the baseline and monitoring methodology AMS I.D Version 18 and meets all relevant SLCCS requirements. Validation Division of Sri Lanka Climate Fund thus requests the registration of the project as a SLCCS project activity.

Project Title	Noritake Lanka Porcelain Rooftop Solar Project
Report No	SLCCS/VDR/2025/02
Work carried out by	Ms.Mananda Wijayanayake Project Executive Project Division Sri Lanka Climate Fund (Pvt) Ltd.
Work Approved by	Ms. Yashoda Lekamge Project and Quality Manager Sri Lanka Climate Fund (Pvt) Ltd.

CONTENT

1 INTRODUCTION

1.1 Objective

The purpose of a validation is to have an independent review of the Carbon Management Assessment (CMA). In particular the project's baseline, the monitoring plan (MP), and the project's compliance with SLCCS standard are validated in order to confirm that the Carbon Management Assessment is sound and reasonable and meets the stated requirements and identified criteria. Validation is seen as necessary to provide assurance to stakeholders on the quality of the project and its intended generation of Sri Lankan Certified Emission Reductions (SCERs).

The information included in the CMA and the supporting documents were reviewed against the requirements as set out by the SLCCS. The validation team has, based on the requirements in the Validation and Verification Standard, carried out a full assessment of all evidences to assess the compliance of the project with the SLCCS. The validation is not meant to provide any consulting to the project participants. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the Carbon Management Assessment.

1.2 Scope and Criteria

The validation scope is given as an impartial independent and objective assessment of the project design including especially the correct application of the methodology, the project's baseline study, local stakeholder commenting process, environmental impacts and monitoring plan, which are included in the CMA and other relevant supporting documents, to ensure that the proposed SLCCS project activity meets all relevant and applicable SLCCS criteria.

1.3 Involved Parties and Project Participant

Title of the Project Activity	*Noritake Lanka Porcelain Rooftop Solar Project*
Project Participant(s)	*Noritake Lanka Porcelain (Pvt) Ltd*
Host Party(ies)	*Sri Lanka*
Consultant of the Project	-

1.4 Summary description of the project

The main purpose of the project activity is to generate electricity using solar power at facilities owned By Noritake Lanka Porcelain (Pvt) Ltd and register this project as a renewable energy generation project under Sri Lanka Carbon Crediting Scheme (SLCCS). The project activity involves the installation of a 402 kW solar photovoltaic (SPV) system at the site of Noritake Lanka Porcelain (Pvt) Ltd, with the excess electricity exported to the national grid operated by the Ceylon Electricity Board (CEB). Net metering is a billing mechanism where producers (consumers) generate electricity for their own consumption and export any excess electricity to the grid. The estimated annual power generation output of this solar power plant is 487.56 MWh. This replaces an equal amount of fossil fuel dominated power in the National Grid. The crediting period set for the project activity runs for seven (07) years starting from 1st of September 2023 to 31st of August 2030.

The project is intended to be registered as a renewable energy project complying the methodological requirements of Sectoral scope 1, Type I, AMS-I.D, Grid connected renewable electricity generation, Version 18.0, EB 81,2014 The expected annual GHG emission reduction resulting in the operation of the project is 135 tCO_2e and the expected total GHG emission reductions in first crediting period is 945 tCO_2e.

2 GHG PROJECT DISCRIPTION

2.1 Project Characteristics

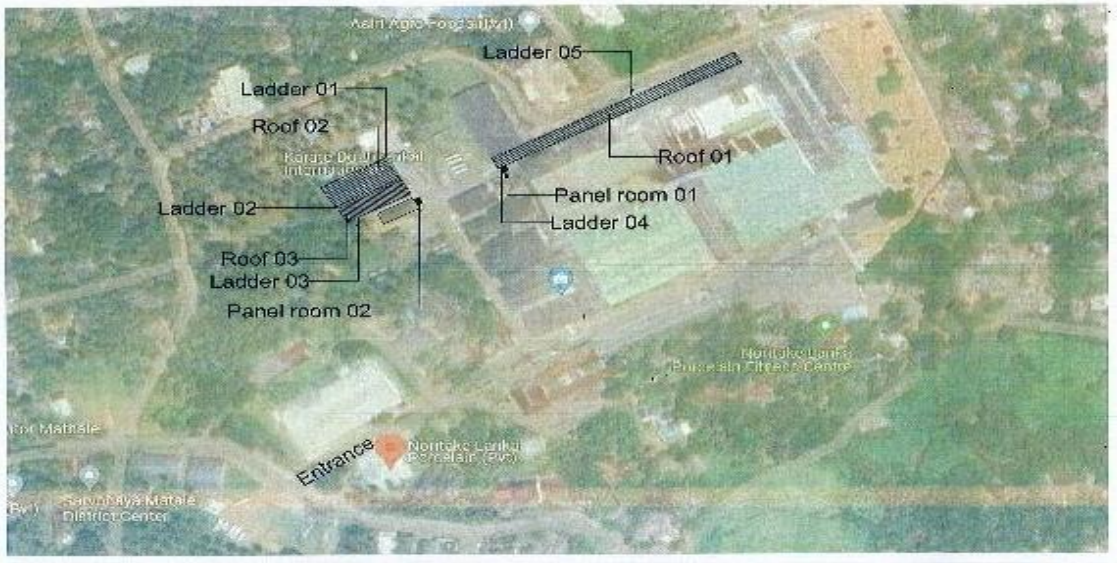
Essential data of the project is presented in the following table.

Item	Data		
Project Title	Noritake Lanka Porcelain Rooftop Solar Project		
Project size	⊡ Large Scale ☒ Small Scale ⊡ Small Scale Bundle Project		
Project Scope *(According to UNFCCC sectoral scope numbers for CDM)*	1	Energy industries (Renewable)	☒
	2	Energy distribution	⊡
	3	Energy demand	⊡
	4	Manufacturing industries	⊡
	5	Chemical industries	⊡
	6	Chemical industry	⊡
	7	Construction	⊡
	8	Transport	⊡
	9	Mining / Mineral production	⊡
	10	Fugitive emissions from fuels (solid, oil and gas)	⊡
	11	Fugitive emissions from production and consumption of halocarbons and hexafluoride	⊡
	12	Solvents use	⊡
	13	Waste handling and disposal	⊡
	14	Afforestation and Reforestation	⊡
	15	Agriculture	⊡
Applied Methodology	*AMS-I.D ver.18.0, EB 81, 2014*		
Technical Area(s)	Renewable Energy (Solar Power)		
Crediting period	Renewal crediting Period (7 years)		
Start Date of crediting period	1st September of 2023		

2.2 Project Location

Location of Project Activity	*Noritake Lanka Porcelain (Pvt) Ltd*
Province	*Central Province*
District	*Matale*
DS Division	*Warakamura*
City/Town	*Matale*
Community	*Warakamura,*
Coordinates	*7°26'25"N 80°37'16"E*

2.2.1 Locations of the sites are indicating in the following maps,



2.3 Technical Project description

Total Capacity 402 kW

Billing System-Net Metering

Item	Parameter	Value
PV Panel	Manufacturer/Made by	JA Solar
	Model	JAM72S30 550/MR/1500V JAM72S30 545/MR/1500V
	No of Panels Installed	550W – 720 Nos
		545 W – 12 Nos
	Peak Wattage	402.5 kW
	Output voltage under rated conditions	49.90
Inverter	Manufacturer/Made by	SMA Energy
	Model and amount	STP 110-60 – qty 3 STP 50-40 – qty 1
	Total capacity	380 kWp
Cabling	DC Side Cables	4 sqmm
	AC Side Cables (inverter out cables)	70 sqmm
	AC Cables to main breaker	95 sqmm
	DC Side surge arrestor make	In built in SMA Invertor
	DC side Surge arrestor response current	
	AC side surge arrestor make	Schinder
	AC side Surge arrestor response current	20 kA
Earthing	Earth resistance	FCC Building - 7.22 ohms
		Raw material building - 2.38 ohms
	Solar panel earth cables	1.5 sqmm
	Cables to earth rods	35 sqmm
Over- Current	DC Fuse make	SMA Energy
Protection Device	Dc Fuse ratings	32 A
	AC side breaker make from inverter to panel	schneider
	AC side breaker rating from inverter to panel	250 A – 3 Nos 100A – 1 No
	Main breaker makes and model at the CEB connection point	schneider NXS400F
	Main breaker rating at the CEB connection point	400 A – 2 nos
Documents and Drawings	Complete final drawings	Available
	Datasheet and Manuals	Available
	Warranty certificates	Available
	Test certificates if any	Charted Engineer certificate available

3. VALIDATION METHODOLOGY

3.1 Method and Criteria

The validation of the project consisted of the following steps:

- Appointment of team members and technical reviewers
- Publication of the Carbon Management Assessment (CMA)
- Desk review of the CMA and supporting documents
- Validation planning
- On-Site assessment
- Background investigation and follow-up interviews with personnel of the project developer and its contractors
- Draft validation reporting
- Resolution of corrective actions (if any)
- Final validation reporting
- Technical review
- Final approval of the validation

3.1.1 Appointment of team members and technical reviewers

On the basis of a competence analysis and individual availabilities, a validation team, consisting of team leader, team member as well as the one technical review personnel was appointed.

The list of involved personnel and their qualification status are summarized in the section

Name	Company	Function	Task Performed
Ms. Yashoda Lekamge	Sri Lanka Climate Fund	TL	☒DR ☒SV ☒RI ☐TR
Ms. Mananda Wijayanayake	Sri Lanka Climate Fund	TM	☒DR ☒SV ☐RI ☐TR
Mrs. Madhubhashini Gunathilaka	Sri Lanka Climate Fund	TM	☒DR ☒SV ☐RI ☐TR
Ms. Wageesha Alankara	Sri Lanka Climate Fund	ITR	☐DR ☐SV ☐RI ☒TR

TL -Team Leader TE- Technical Expert TM- Team Member ITR- Internal Technical Reviewer DR- Document Review SV- Site Visit RI- Report Issuance TR- Technical Review

3.1.2 Publication of the Carbon Management Assessment for Public Review

According to the SLCCS requirement the draft CMA, as received from the project participants, has been made publicly available on the dedicated SLCCS website prior to the validation activity commenced. Stakeholders have been invited to comment on the CMA within the 30 (05th December – 04th January) days public commenting period.

Several comments were received regarding emission reductions under the net metering mechanism, with a primary focus on concerns related to double counting. Issues related to the billing process were thoroughly reviewed, and multiple meetings were held with the Ceylon Electricity Board (CEB) and the Sustainable Energy Authority to address these concerns. All issues raised regarding emission reductions under the net metering mechanism have been resolved through this collaborative effort.

3.1.3 Desk Review of CMA and supporting documents

Desk review was conducted on 25 – 28 th November 2024 at the office of Sri Lanka Climate Fund. The objective of desk review is to confirm the accuracy and validity of information provided in the CMA against the respective supporting documents. As part of desk review, following documents were reviewed by the validation team.

1. Carbon Management assessment report
2. Contract agreements entered into with suppliers
3. Completion / taking over certificate
4. Compliance certificates issued to the equipment manufactures
5. Power purchasing agreements, Testing and Commissioning certificates,
6. Data management systems adopted by individual facilities
7. Competency of personnel engaged in the defined monitoring process

3.1.4 On- Site Inspection

As part of the validation process, a site visit was conducted by the validation team on 19th December 2024. The purpose of this visit was to assess whether the design of the project aligns with the description provided in the CMA. Moreover, the site inspection aimed to verify that the project description, as stated in the CMA, accurately reflects the actual implementation on the rooftop.

During the site visit, the validation team thoroughly examined the proposed monitoring plan, monitoring parameters (Ex: baseline, technical specification, data gathering) and the responsibilities assigned to the project monitoring team. This assessment allowed for the validation team to review and confirm the validity and appropriateness of these aspects in line with the project's monitoring requirements and objectives. The insights gained from this on-site inspection contributed significantly to the overall evaluation and validation process.

3.1.5. Background investigation and follow-up interviews

Personnel and stakeholders relating to the project activities were interviewed to confirm the background information of issues raised by the validation team. A summary of information resulted in the interviews are given in the following tabulated format

Name	Designation	Organization /Entity	Method (Face to face/ Telephone)	Main topics covered
Mr. Pradeep Vithanaarachchi	Electrical Engineer	Noritake Lanka Porcelain (Pvt) Ltd	Face to Face	Technical Specifications of Solar Project, Online Monitoring System, Incident reporting and failures
Mr. Sanka Samaraweera	Factory Engineer	Noritake Lanka Porcelain (Pvt) Ltd	Face to Face	Data Gathering (QA/QC procedure), reporting and emission reduction calculations, Disaster recovery,
Ms. Poorna Jayasekara	Manager-Integrated Management System	Noritake Lanka Porcelain (Pvt) Ltd	Face to Face	Regular Maintenance and operations personnel engaged in monitoring Activities. Training Details

3.2 Definition of Clarification Request, Forward and Corrective Action Request

A **Clarification Request (CL)** will be issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.

A **Corrective Action Request (CAR)** will be issued where:

- mistakes have been made in assumptions, application of the methodology or the project documentation which will have a direct influence on the project results,
- the requirements deemed relevant for validation of the project with certain characteristics have not been met or

A **Forward Action Request (FAR)** will be issued when certain issues related to project implementation should be reviewed during the first verification.

3.3 Draft Validation

After reviewing all relevant documents and taken all other relevant information into account, the validation team issues all findings in the course of a draft validation report and hands this report over to the project proponent in order to respond on the issues raised and to revise the project documentation accordingly.

3.4 Resolutions of findings

The findings of validation process are summarized in the tables below,

Type of the Finding	☐ CL ☒ CAR ☐FAR
Finding No	CAR-1
Ref. To CMA	Section 1.11
Action requests by validation team	In Section 1.11 of the CMA (Version 01), the first crediting period is set for seven years, from 1st September 2023 to 31st August 2030. However, the year-wise estimated emission reductions, total estimated emission reduction, and average annual emission reduction have been reported incorrectly. Additionally, the Project Proponent (PP) has not calculated the average export percentage of solar energy, which is critical for determining the portion of total solar energy generation submitted to the grid. Under the net metering system, a significant portion of generated energy is consumed on-site, and only the excess is exported. The absence of this calculation impacts the accuracy of emission reduction estimates. It is recommended that the PP calculate and incorporate the average export percentage to ensure precise and reliable emission reduction calculations.
Summary of Project owner response	The project owner acknowledged that, due to an oversight, the year-wise estimated emission reductions, total estimated emission reductions, and average annual emission reductions were inaccurately reported and calculate the average export percentage and incorporate it into the emission reduction calculations to enhance the precision and reliability of the reported emission reductions. Following a thorough review of the SLCCS Guidance, the estimated emission reductions for the crediting period were recalculated. The corrected figures are now accurately reflected in CMA Version 02.
Validation team Assessment	The validation team has reviewed the updated CMA Version 02 and verified the recalculated estimated emission reductions for the crediting period. The year-wise estimated emission reductions are consistent across all seven years, with a value of 135tCO_2e per year. The total estimated emission reductions for the crediting period amount to 945tCO_2e, and the average annual estimated emission reductions are reported as 135tCO_2e. These figures align with the SLCCS guidelines and have been accurately reported in the updated CMA version 02.

Conclusion	⊡To be checked during the first periodic verification ⊡Additional action should be taken (finding remains open) ⊡Project documentation was corrected correspondingly ☒ **Appropriate action was taken. The finding CAR-1 is closed**

Type of the Finding	⊡ CL ☒ CAR ⊡FAR
Finding No	CAR-2
Ref. To CMA	Section 6.4
Action requests by validation team	In Section 6.4, Net GHG Emission Reductions and Removals of the CMA (Version 01), the project capacity was reported incorrectly. Additionally, the summary of the emission reduction calculation table, including the plant factor, average energy output, and average annual emission reductions, was inaccurately reported.
Summary of Project owner response	The project owner acknowledged that the project capacity, plant factor, average energy output, and average annual emission reductions were incorrectly reported in Section 6.4 of CMA Version 01. To address this, a detailed review and recalculation were conducted. The corrected values have been updated and are accurately reflected in CMA Version 02.
Validation team Assessment	The validation team has reviewed the updates in CMA Version 02 and verified the corrections to the project capacity, plant factor, average energy output, and average annual emission reductions. The recalculated values are accurate, align with the SLCCS guidance, and have been correctly reflected in the updated CMA.
Conclusion	⊡To be checked during the first periodic verification ⊡Additional action should be taken (finding remains open) ⊡Project documentation was corrected correspondingly ☒ Appropriate action was taken. The finding CAR-2 is closed

Type of the Finding	⊡CL ☒CAR ⊡FAR
Finding No	CAR-3
Ref. To CMA	Section 7.2
Action requests by validation team	In Section 7.2, Data and Parameters Monitored of the CMA (Version 01), the average energy output value was reported incorrectly.
Summary of Project owner response	The project owner acknowledged that errors in project capacity and plant factor calculations led to the incorrect reporting of the average energy output value in Section 7.2 of CMA Version 01. A thorough review and recalculation were conducted, and the corrected values have been updated and accurately reflected in CMA Version 02.

Validation team Assessment	The validation team reviewed the latest version of the CMA to confirm the accuracy and applicability of the revised average energy output value. As indicated by the project proponent, the revised average energy output value is 487.56 MWh/year. This value has been verified and accepted by the validation team.
Conclusion	☐To be checked during the first periodic verification ☐Additional action should be taken (finding remains open) ☐Project documentation was corrected correspondingly ☒ Appropriate action was taken. The finding CAR-3 is closed

In the following table the findings from the desk review of the published CMA, Site visits, interviews and supporting documents are summarized**:**

Table: Summary of CARs, CLs and FARs issued

Validation Category	**Specific section**	**No. of CAR**	**No. of CL**	**No. of FAR**
General description of project activity	General description Project Location Project boundary			
	Involved Parties and Project Participants			
	Project specification			
	Start date /Commissioning date			
	Technical project description			
	Contribution to sustainable development			
	Technology employed			
Project Baseline, Additionality and Monitoring Plan	Application of the Methodology			
	Baseline identification			
	Calculation of GHG emission reductions Project emissions Baseline emissions Leakage	03		
	Additionality determination			
	Monitoring Methodology			
	Monitoring Plan			
	Project management planning			
Duration of the Project / Crediting Period				
Environmental impacts				
Stakeholder Comments				
SUM		**03**		

3.5 Final Validation

The final validation starts after issuance of the proposed corrective action (CA) of the CARs CLs and FARs by the project proponent. The project proponent has replied on those and the requests are "closed out" by the validation team in case the responses were assessed as sufficient. In case of raised FARs the project proponent has to respond on this, identifying the necessary actions to ensure that the topics raised in this finding are likely to be resolved at the latest during the first verification. The validation team has assessed whether the proposed action is adequate or not.

In case the findings from CARs and CLs cannot be resolved by the project proponent or the proposed action related to the FARs raised cannot be assessed as adequate, no positive validation opinion can be issued by the validation team. In this project activity positive validation opinion is granted by validation team.

3.6 Internal Technical Review

Carbon Management Assessment (CMA) and additional background documents related to the project design submitted by Noritake Lanka Porcelain (Pvt) Ltd. And baseline was reviewed. Furthermore, the validation team has used additional documentation by third party legislation, technical reports referring to the project design or to the basic conditions and technical data.

Technical data was reviewed by technical team based on information given in the CMA, supporting documents and observations on validation site visit. Before submission of the final validation report a technical review of the whole validation procedure was carried out. The technical reviewer is a competent GHG auditor being appointed for the scope this project falls under. As a result of the technical review process the validation opinion and the topic specific assessments as prepared by the validation team leader may be confirmed or revised. Furthermore, reporting improvements might be achieved.

3.7 Final approval

After successful technical review of the final report an overall assessment of the complete validation was carried out validation team of SLCCS and final approval is granted by EB.

4. DATA FOR VALIDATION PROCESS

4.1 Project Details

4.1.1 General Description

The primary objective of the project activity is to generate electricity using rooftop solar photovoltaic power in facilities owned by Noritake Lanka Porcelain (Pvt) Ltd and register this project as a renewable energy generation project under Sri Lanka Carbon Crediting Scheme (SLCCS). Project activities operating in the facilities located in Central province have been consolidated into a project activity and project capacity so declared is 402 kW. Renewable energy generated through the system, Excess amount is delivered to national CEB grid under single billing system, Net Metering.

Prior to this project activity, there was no solar power plant belonging to project. This project involves building a new photovoltaic power plant to supply electricity to the grid. Without this project, the same amount of electricity would have been generated by the national grid, which mainly relies on fossil fuels. Therefore, the baseline scenario for this project can be considered as electricity generation from grid-connected power plants.

4.1.2 Employed Technology

Under project activity, different capacities of solar PV modules have been installed in roof top of the Two facilities owned by Noritake Lanka Porcelain (Pvt) Ltd as follows.

Pannels (W)	Nos	
550	324	178200
545	12	6540
Total DC Capacity Inverter room 1 (kW)		184.74
550	396	217800
545	0	0
Total DC Power Inverter room 2 (kW)		217.8
Total DC Capacity (kW)		402.54

The modules in each array are connected in parallel and/or series in order to get the preferred current & voltage which match with the rated input parameters of the inverter. The estimated annual power generation output of this small solar photovoltaic based power plant is 487.56 MWh which is exported to the national electricity grid of Ceylon Electricity Board.

Project activity produces electricity from the solar radiation. Hence it eliminates the generation of carbon dioxide which was happening earlier due to the fossil fuel burning from thermal power plants sites in the National Grid. Thus, the technology eliminates use of fossil fuel for generation of electricity, uses solar radiation and helps in avoidance of CO_2 emissions. The expected annual GHG emission reduction is 135 tCO_2e. Therefore, the technology employed can be said to be environmentally safe.

Validation team has confirmed the accuracy of the project description through a combination of steps consisting of review of purchase agreement related to the project activity, commissioning and taking

over certificate for the project, physical site visit and interview of the project participant and their representatives. The confirmation that the Excess electricity is exported to the grid is available through Standard Power Purchasing Agreement (SPPA) with Ceylon Electricity Board. The Project will result in annual emission reductions of 135tCO_2e. The processes undertaken by the validation team to validate the accuracy and completeness of the CMA include conducting a physical site inspection, sampling, reviewing available designs and feasibility studies, conducting comparison analysis with equivalent projects. SLCF Validation Division hereby confirms that the project description in the final CMA is accurate and complete in all respects.

4.2 Approvals

Project Proponent has obtained all approvals regarding the projects activities from related institutions operating under Government of Sri Lanka and validation team checked those approvals during site visit.

4.3 Application of Methodology

4.3.1 Title and reference

Since CDM methodologies are applicable to SLCCS registration, Type I: Renewable Energy Projects and rightly applies the approved methodology AMS-I.D. Grid connected renewable electricity generation, Version 18.0, 2014

4.3.2 Applicability

All criteria for applicability of selected methodology are fulfilled. The project is a grid connected renewable solar power project which is confirmed from the validation site visit. The project activity is Greenfield projects activity and there will not be any significant emissions related to project as no fossil fuels are used and leakage, no equipment is transferred.

The project activity is renewable energy project and the capacity is less than 15 MW supplying power to the grid and the project activity fulfils the conditions of small-scale project. Hence the project activity fulfils all the criteria of the small-scale methodology AMS-ID Version 18, 2014 "Grid connected renewable energy generation.

Table: Applicability of selected methodology

No	Applicability Criteria	Project Activity	Applicability Criteria Met?
1	This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass: (a) Supplying electricity to a national or a regional grid; or (b) Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling.	The project activity involves renewable energy generation through a solar power system operating under the net metering mechanism. Excess electricity is supplied to the CEB grid, which is predominantly powered by fossil fuel-based generating units. The developer has confirmed that there are no plans to increase the project capacity beyond 402 kW during the selected crediting period.	Yes
2	Illustration of respective situations under which each of the methodology (i.e. AMS-I.D, AMS-I.F and AMS-I.A)	The project is solar power project supplying excess electricity to the national grid, so methodology AMS I.D is applicable.	Yes
3	This methodology is applicable to project activities that: (a) Install a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity (Greenfield plant); (b) Involve a capacity addition; (c) Involve a retrofit of (an) existing plant(s); or (d)Involve a rehabilitation of (an) existing plant(s)/unit(s) or(e)Involve a replacement of (an) existing plant(s).	The project was concerned with the installation of new solar power plant and there was no renewable energy power plant operating prior to the implementation of the project activity (Greenfield plant)	Yes

4	Hydropower plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology: • The project activity is implemented in an existing reservoir with no change in the volume of reservoir; • The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the project emissions section, is greater than 4 W/m^2; • The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the project emissions section, is greater than 4 W/m^2	No reservoir is built for this power plant.	Not applicable
5	If the new unit has both renewable and non-renewable components (e.g. a wind/diesel unit), the eligibility limit of 15 MW for a small- scale project activity applies only to the renewable component. If the new unit co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW.	The project comprises of only renewable components. The capacity of the entire unit is 402 kW which is less than limit of 15 MW. The developer has no intention to increase the plant capacity during the crediting period,	Not applicable
6	Combined heat and power (co-generation) systems are not eligible under this category.	This is not a co-generation system and project activity comprises solar electricity generation only.	Not applicable
7	In the case of project activities that involve the addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units.	Project activity does not involve any addition of renewable energy generation units at an existing renewable power generation facility.	Not applicable
8	In the case of retrofit, rehabilitation or replacement, to qualify as a small-scale project, the total output of the retrofitted or replacement unit shall not exceed the limit of 15 MW.	As a project activity is a greenfield project. There was no retrofit or replacement of existing power plant. PP has no intention to increase the capacity of power plant beyond 402 KW during the chosen crediting period. Therefore, the project shall not exceed the limit of 15 MW.	Not applicable

9	In the case of landfill gas, waste gas, wastewater treatment and agro-industries projects, recovered methane emissions are eligible under a relevant Type III category. If the recovered methane is used for electricity generation for supply to a grid then the baseline for the electricity component shall be in accordance with procedure prescribed under this methodology. If the recovered methane is used for heat generation or cogeneration other applicable Type-I methodologies such as "AMS-I.C.: Thermal energy production with or without electricity" shall be explored.	No recovered methane used for this project activity.	Not applicable
10	In case biomass is sourced from dedicated plantations, the applicability criteria in the tool "Project emissions from cultivation of biomass" shall apply.	No biomass used for this project activity	Not applicable

4.3.3 Project Boundary

The project boundary of the Noritake Lanka Porcelain Rooftop Solar Project encompasses the physical, geographical site of the power plant and associated physical structure. This includes the solar PV arrays, inverters, transformers, and metering/substation systems.

4.3.4 Baseline Identification

This project activity is grid connected solar power generation and purpose of the project is to generate electricity through renewable resources (solar) and displace equivalent amount of electricity in the national grid which is predominantly fossil fuel based. In the absence of the project activity, equivalent amount of power would have been drawn from the grid which is the baseline scenario.

The baseline emission for the project activity is power generated from renewable energy source multiplied by the grid emission factor of the National grid which is published by Sri Lanka Sustainable Energy Authority.

The grid emission factor for year 2021 calculated and published by SLSEA has used for determining emission reductions.

4.3.5 Formulas used to determine Emission Reductions

The baseline under the adopted methodology AMS I.D Version 18.0,EB 81, 2014 is the product of energy baseline $EG_{BL,y}$ expressed in MWh of electricity produced by the renewable generating unit multiplied by an emission factor (tCO_2e/MWh)

4.3.6 Quantification of GHG Emission Reductions and Removal

Calculation of baseline emission factor

As per AMS I.D, Version 18.0, EB 81, 2014, the grid emission factor was calculated using the latest approved version of "Tool to calculate the emission factor for an electricity system" CDM methodology. The grid emission factor calculated and published by the Sustainable Energy Authority in Sri Lanka is used.

Grid Emission Factor ($EF_{CM,Grid,y}$)	0.7079	tCO_2e/MWh	Published by SLSEA (2021)

Plant factor

GHG emission reduction achieving through the project activity is purely determined by the average annual energy output from the system. Project proponent has accounted average energy output in a conservative approach using valid plant factor which is about 14%. Plant factor calculation given in annex 01

Annual Emission Reduction Calculation

Project proponent has set crediting period for seven year (07) starting from 01st September 2023 to 31st August 2030. Baseline emission was calculated complying with the requirements provided in AMS-1.D "Grid connected renewable electricity generation" Version 18.0, 2014. The summary of emission reduction calculation validated by validation team is as follows;

Baseline Emission

Parameter	Value	Unit	Source
Project Capacity	0.402	MW	Proposed capacity
Plant Factor	14	%	Calculated
Export Percentage of Solar Energy to the Grid	38.84	%	Calculated
Average Energy Output	493.01		Calculated
Average Energy Output for the Export Energy	**191.49**	MWh/year	Calculated
Grid Emission Factor (EFCM,Grid,y)	0.7079	tCO2e/MWh	Energy Balance-2021, SLSEA
Emission Reduction (ERy)	135	tCO2e/year	Calculated

*Emission reduction for the project

Note: Export Percentage of Solar Energy to the Grid
The export percentage determines the portion of solar energy submitted to the grid, as under net metering, only excess energy after on-site consumption is exported. Calculating this percentage ensures accurate emission reduction estimates, reflecting the project's true contribution to offsetting fossil fuel-based energy.

Project Emission

The project does not involve project emissions as per AMS I.D. Version 18.0. Project emissions are thus zero tonnes of CO_2e, and no relevant formulas need to be considered.

$PE_y = 0$

Leakage Emission

The current project activity does not involve any leakage emissions as per AMS I.D. Version 18.0.

$LE_y = 0$

Estimated net emission reduction

Year	Estimated baseline emissions or removals (tCO2e)	Estimated project emissions or removals (tCO2e)	Estimated leakage emissions (tCO2e)	Estimated net GHG emission reductions or removals (tCO2e)
2023 Sep - 2024 Aug	135	0.00	0.00	135
2024 Sep - 2025 Aug	135	0.00	0.00	135
2025Sep - 2026 Aug	135	0.00	0.00	135
2026 Sep - 2027 Aug	135	0.00	0.00	135
2027 Sep - 2028 Aug	135	0.00	0.00	135
2028 Sep - 2029 Aug	135	0.00	0.00	135
2029 Sep - 2030 Aug	135	0.00	0.00	135
Total	945	0	0	945
Total number of crediting years	7 years			
Annual average over the crediting period				
	135	0	0	135

4.3.7 Methodology deviations

Applied methodology was AMS-1.D "Grid connected renewable electricity generation" Version 18.0. The project activity is a Greenfield solar power which is in operational stage. This project does not imply no any methodology deviations observed in validation process

4.3.8 Monitoring Plan

Validation team assessed the compliance with the requirements of monitoring plan, as follows:

i) Compliance of the monitoring plan with the approved methodology:

- Project proponent has identified data and parameters to be monitored within the project activity. The available data and parameter identified and reported in the CMA is grid emission factor. It was published at the point of validation by the national responsible entity; Sri Lanka Sustainable Energy Authority. As data and parameters to be monitored in the due monitoring period has been identified as average annual energy output. These parameters satisfy the requirements of selected approved methodology, AMS I.D. AMS I.D, Version 18

- Validation team confirmed that the monitoring plan contains all necessary parameters, that they are clearly described and that the means of monitoring described in the plan complies with the requirements of the applied methodology AMS I.D, Version 18. The project involves measuring, recording, reporting, monitoring and controlling of various key parameters of the solar systems. These monitoring and controls would be the part of the Control Systems proposed for the project activity.

  It was evident that project proponent has identified and taken adequate measures to put the proposed monitoring plan into action. The project has employed qualified and experienced persons for undertaking monitoring activities. The project maintains standard log sheets and formats to record the monitoring parameters. The parameters to be monitored during the crediting period is provided in a tabular format to the designated person. The Plant operators are provided with necessary training with respect to maintenance of the relevant monitoring records to enable him/her to deal the monitoring independently.

ii) Implementation of the plan:

- The monitoring arrangements described in the monitoring plan are feasible within the project design;
- The means of implementation of the monitoring plan, including the data management and quality assurance and quality control procedures, are sufficient to ensure that the emission reductions achieved by/resulting from the project activity can be reported and verified.

The assessment has been conducted by the validation team by means of reviewing of the documented procedures, interviewing with relevant personnel, project plans and physical inspections of the project activity site.

4.4 Carbon Management Assessment

Sri Lanka Climate Fund Validation Division hereby confirms that the CMA complies with the latest forms of the guidance documents for completion of CMA is comply with Sri Lanka Carbon Crediting Scheme.

4.5 Changes of the Project Activity

The project has already commissioned and did not change the project activity during crediting period.

4.6 Environment Impact

The installation of solar PV on roof structures does not pose severe impacts on the environment.

4.7 Comments of Stakeholders

The project was carried out within the company premises rather than at the community level, which defined the scope of the stakeholder consultation process. As a result, the consultation was focused on engaging company employees who would be directly or indirectly impacted by the project. A representative cross-section of employees from various departments was consulted to gather diverse perspectives. All employees who participated in the consultation expressed positive feedback, emphasizing their support for the project and its potential benefits to the company's sustainability goals and operational efficiency.

5. VALIDATION OPINION

Noritake Lanka Porcelain (Pvt) Ltd has granted the SLCF Validation Division to conduct the validation of Solar PV Project with regard to the relevant requirements of the SLCCS for GHG reduction project activities, as well as criteria for consistent project operations, monitoring and reporting. The validation team confirmed that the project is a small-scale project applied AMS-I.D version 18 and the project is bundled small scale project.

The validation consisted of the following phases:

i. Desk review of the CMA and additional background documents;
ii. Follow-up interviews with project stakeholders;
iii. Issue of checklist with corrective action requests (CARs) and the draft validation report
iv. Desk review of revised CMA applying AMS.I.D Version 18
v. Review of proposed corrections and clarifications
vi. Issue of the final validation report and opinion
vii. Resolution of outstanding issues and the issuance of the final validation report and opinion.

In the course of the validation, three (03) Corrective Action Requests (CARs) were raised and all were successfully closed.

In detail the conclusions can be summarized as follows:

- The project is in line with all relevant SLCCS requirements for carbon credits. Further the project activity is in compliance with the requirements set up by the applied approved CDM methodology AMS-I.D ver.18
- The monitoring plan is transparent and adequate.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions are most likely to be achieved within the crediting period.

The conclusions of this report show that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation.

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Ms. Wageesha Alankara	**Ms. Yashoda Lekamge**
Internal Technical Reviewer	Team Leader / Technical Expert
Date : 09.01.2025	Date : 09.01.2025

6. REFERANCES

Documents referred by the validation team that relate directly to the project

1. Grid emission factor
https://energy.gov.lk/images/energy-balance/energy-balance-2021.pdf

2. SRI LANKA ELECTRICITY ACT, No. 20 OF 2009
http://powermin.gov.lk/english/wp-content/uploads/2017/11/2009-Act-No.-20-Sri-Lanka-Electricity-Act-E.pdf

http://powermin.gov.lk/english/wp-content/uploads/2017/11/2013-Act-No.-31-Amendment-to-Act-No.-20-Sri-Lanka-Electricity-Act-E.pdf

3. CEB LONG TERM GENERATION EXPANSION PLAN 2015-2034
https://www.ceb.lk/front_img/img_reports/1532408363CEB_LONG_TERM_GENERATION_EXPANSION_PLAN_2015-2034.pdf

4. CDM Validation and Verification Manual
https://cdm.unfccc.int/public_inputs/2008/VVM/vvm.pdf

5. IPCC guideline on national greenhouse gas inventories (2006)

6. AMS-I.D Grid connected renewable electricity generation --- (Version 18)
https://cdm.unfccc.int/filestorage/2/P/7/2P7FS6ZQAR84LG3NMKYUH50WI9ODBC/EB81_repan24_AMS-I.D_ver18.pdf?t=c2h8cHk0Y3k4fDC2EXQVmnso7VteREFAW8_M

7. CDM Methodology Booklet
https://cdm.unfccc.int/methodologies/documentation/meth_booklet.pdf#AMS_I_D

7. APPENDIX

Appendix 01: Validation Team

Ms.Yashoda Lekamge	**SLCF**	**Team Leader** Ms. Yashodha Lekamge BSc Honors in EcoBusiness Management and Successfully Completed the course on ISO 14001:2015 Environment Management System, University of Peradeniya, completed corporate GHG emissions accounting, verification and reporting conducted by Accelerating Industries' Climate Response Sri Lanka, completed the Training Programme on Carbon Footprint Assessment for Sustainable Process Industry conducted by University of Moratuwa, engaged over 25 greenhouse gas verifications conducted by SLCF with 2 years of experience.
Ms. Mananda Wijayanayake	**SLCF**	**Team Member** Ms. Mananda Wijayanayake has a B.Sc. (Hons) degree in Agriculture specializing in Plantation Product Development Technology. She has worked as an environment and climate change consultant at Smallholder Agribusiness Partnership Program. She has conducted over one verification under the Greenhouse Gas Emissions Reporting with one year of experience and completed NDA Direct Access Accreditation Support Helpdesk Training conducted by the 2nd NDA Readiness Project in collaboration with Ministry of Environment.
Ms. Madhubhashini Gunathilaka	**SLCF**	**Team Member** Ms. Madhubhashini Gunathilaka has a degree in Bachelor of Science in Plantation Management and completed a Higher National Diploma in Agriculture (HNDT). She has worked as an Agricultural Instructor - Department of Agriculture. She is a Registered Assessor - Tertiary and Vocational Education Commission. She has conducted over two verifications under the Greenhouse Gas Emissions Reporting with one year of experience and completed NDA Direct Access Accreditation Support Helpdesk Training conducted by the 2nd NDA Readiness Project in collaboration with Ministry of Environment.

Ms. Wageesha Alankara	**SLCF**	**Internal Technical Reviewer** Ms. Wageesha Alankara has a B.Sc. (Hons) degree in Agriculture specializing in Postharvest Horticulture and completed the Training Programme on Carbon Footprint & Water Footprint Assessment for Sustainable Process Industry conducted by University of Moratuwa. She has engaged over 15 verification assessments of annual GHG inventories as a verifier for different industries and over 7 validation and verification of Sri Lanka Carbon Crediting Scheme Projects with 2 years of experience.

8. Annex 1

Plant Factor calculation

Project Capacity	402 kw
Months	Total Energy (solar) Generated
	kWh
Monitoring Period Sep 2023- Aug 2024	
September	35,499
October	40,050
November	35,927
December	29,922
January	40,749
February	45,623
March	52,489
April	44,361
May	39,174
June	40,584
July	40,867
August	42318
Total	**487,563**
Plant Factor (%)	14

$$\text{Plant Factor} = \frac{\text{Actual Generation}}{\text{Install capacity (Kwh) *24*365}} \times 100$$

Document Information

Title of document	**Validation Report**
Document No	SLCCS-VAR-FRM
Document Type	Form
Business Function	Validation of Project Activity
Version	03.0

Revisions

Version	***Date***	***Description***
01.0	21-08-2019	Initial issuance
02.0	20-10-2019	Editorial changes
03.0	02-02-2021	Editorial changes