Validation report for inclusion of GS Voluntary Project Activity (VPA)	
Complete this form in accordance with the instructions attached at the end of this form.	
BASIC INFORMATION	
Title of the GS VPA	**Title**: GivePower ~~Foundation~~ Kenya Solar Water Farms **GS reference number**: GS10987
Title of the GS PoA	**Title:** International Programme for Safe Water Access and Efficient Cookstoves **GS reference number:** GS7591
Scale of the project activity	☐ Large-scale ☒ Small-scale
GS Version applicable	**GS4GG**
Version number of the validation report	03~~2~~
Completion date of the validation report	11/09/2021~~20/07/2021~~
Date and Version number of the VPA-DD to which this report applies	Version ~~7~~8, dated 10/09/2021~~20/07/2021~~
Coordinating/managing entity	CO2balance UK Ltd
VPA Implementer (s)	CO2balance UK Ltd GivePower Foundation
Host Party	The Republic of Kenya
Applied methodology	Methodology applied: Technologies and Practices to Displace Decentralized Thermal Energy Consumption, Version 3.1
Activity Requirements applied:	GS4GG: Community Services Activity Requirements
Product Requirements applied:	GHG Emissions Reduction & Sequestration
Regular/Retroactive:	Retroactive
Mandatory sectoral scopes	Sectoral scope 1: Energy industries (renewable - / non-renewable sources) Sectoral scope 3: Energy demand
Conditional sectoral scopes, if applicable	N/A
Estimated amount of SDG Impact Certified	SDG 13 Climate Action (mandatory): 60,000 VERs~~tCO2e~~ (Emissions Reductions) SDG 6 Clean Water and Sanitation: 75,330 Number of additional persons having access to safe water in the project activity compared to the baseline scenario~~Additional people with access to safe water~~ SDG 5 Gender Equality: 0.5 Hours (Total reduction time spent collecting firewood for project activity in year y

	(hours))~~(Variation of time spent on firewood collection)~~ SDG 3 Good Health and Wellbeing: 62,775 Number of additional persons having access to safe water in the project activity compared to the baseline scenario~~Additional people consuming safe water~~
Name and UNFCCC reference number of the DOE	4K Earth Science Private. Limited UNFCCC Ref No. CDM-E-0069
Name, position and signature of the approver of the validation report	 S. Jagajothi Director

SECTION A. Executive summary

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4K Earth Science Private Limited has been contracted by 'CO2balance UK Ltd.' to perform a validation of the proposed Gold Standard for the Global Goals VPA 'GivePower ~~Foundation~~ Kenya Solar Water Farms' (GS10987) in Kenya.

The scope of the validation is defined as an independent and objective review of the Voluntary Project Activity (VPA) design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against the requirements of 'Gold Standard for Global Growth' in conjunction with the CDM Validation and Verification Standard for Project Activities (version 02), Project Cycle Procedure for Project Activities (version 02), Project Standard for Project Activities (version 02), Kyoto Protocol requirements and UNFCCC rules.

The report is based on the assessment of the Voluntary Project Activity (VPA) design document, application of standard auditing techniques including but not limited to desk review, follow up actions (e.g., electronic (Zoom and Telephonic) interviews) and also the review of the applicable approved methodological and relevant tools, GS4GG guidance and CDM decisions.

The purpose and goal of the VPA is to reduce emissions from burning of non-renewable biomass for water treatment. The use of non-renewable biomass such as wood and charcoal for water boiling, leads to the emission of greenhouses gases, deforestation and poor indoor climate. The project will support the provision of safe water using photovoltaic cells to power desalination technology to thousands of households in coastal Kenya. By providing safe water, the project will ensure that households consume less firewood and charcoal during the process of water purification and as a result there shall be a reduction of carbon dioxide emissions from the combustion process.

The review of the VPA design documentation and the subsequent follow-up interviews have provided 4KES with sufficient evidence to determine the VPA fulfilment of all the stated criteria. In our opinion, the VPA meets all applicable GS4GG requirements along with UNFCCC requirements for the CDM.

☒The VPA is recommended with a request for inclusion.
☐The VPA is not recommended for request for inclusion.

SECTION B. Validation team, technical reviewer and approver

B.1. Validation team member

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interviews	Validation findings
1.	Team Leader and Technical expert (TA 1.1, 3.1)	IR	Sharma	Chetan Swaroop	Central Office	x		x	x
2.	Local Expert	EI	Luther King Okore	Martin	Central Office	x		x	

B.2. Technical reviewer and approver of the validation report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer & Expert (TA 1.1, 3.1)	IR	Puratchikkanal	Ma Paa	Central office
2.	Approver	IR	Jagajothi	S	Central Office

SECTION C. Means of validation

C.1. Desk/document review

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The report is based on the assessment of the Voluntary Project Activity (VPA) design document, application of standard auditing techniques including but not limited to desk review, follow up actions (e.g., electronic (Zoom and telephonic) interviews), and also the review of the applicable approved methodological and relevant tools, GS4GG guidance and CDM decisions.

All the documents used for arriving validation conclusion are listed in Appendix 03 and referenced accordingly in validation report.

C.2. Remote audit

As a result of the COVID-19 pandemic, taking into account the rules of relevant national and local authorities (local to the DOE offices as well as to locality of the site visits), World Health Organization (WHO) recommendations, policies of the DOE and other relevant travel restrictions and guidance (for example, a requirement to self-isolate upon return from specific countries), the DOE has skipped the on-site visit. However as per the COVID-19 Interim Measures by GS4GG, the DOE has used alternative measures for auditing like remote audits.

Considering the current COVID-19 world situation, Site visit is not expected to happen in near future. Hence the DOE has skipped the on-site visit.

As per para 4.1.1 (b) of COVID 19 Interim Measures /28/, Validation team has used the following alternative means for its assessment and to justify that they are sufficient for the purpose of validation.

- Complete desk review of the final VPA-DD (Version ~~7~~8, dated 10/09/2021~~20/07/2021~~) /02/ as well as all applicable country legal requirement /17/, /25/ and supportive evidences have been checked by the Validation team.
- During the desk review, technical specification and maintenance manual of project technology /06/, Baseline survey /08/, Training of staff /09/, supportive for the start date /14/ and other relevant background documents were provided and assessed. The project description in the GS-PDD was verified from these documents.
- By taking follow up actions by conducted interview with CME/CPA Implementer representative to gather information about knowledge of VPA design, implementation, management system of the VPA, project technology, Baseline assessment, monitoring plan, start date, Methodology applicability, SDG impact etc. via Zoom interview. Cross-checked evaluation under the scope of all information and references provided in VPA-DD.
- Local expert has performed telephonic interviews with randomly selected baseline households to check the baseline practices and usage pattern. Total 6 users were interviewed over telephone in order to assess the baseline and the usage patterns.
- Cross checks between information provided by interviewed personnel (i.e. by checking sources) to ensure that no relevant information has been omitted.

Details of interviewees, topics covered and additional information presented in the below section "C.3 Interviews".

C.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Devesa	Mr. Thomas	Project Manager, CO2balance UK Ltd	22/04/2021 (Zoom interview)	1. Baseline assessment 2. Issues in the VPA-DD 3. Roles and responsibilities 4. Applicability of the methodology 5. Emission reduction 6. Monitoring requirement 7. Monitoring procedure 8. Data collection 9. Start date 10. Carbon Rights 11. Sustainable Development parameters 12. Grievance Mechanism 13. Environmental impacts etc.	Mr. Chetan Swaroop Sharma
2.	Ndung'u	Ms. Ruthie	Site Operations Manager (Likoni site), GivePower Foundation	22/04/2021 (Zoom interview)		
3.	-	Ms. Belina	YWCA branch manager (landlord and a partner)	22/04/2021 (Zoom interview)		
4.	Savané	Ms. Magbè	Senior Director of Global Water Distribution, GivePower Foundation	23/04/2021 (Zoom interview)		
5.	Hassan	Mwanahamisi	Chairlady (WASH Organization)	13/07/2021 (Email interview)	Safeguarding principles, baseline, project scenario, sustainable development etc.	Mr. Chetan Swaroop Sharma
6.	Rashid Kombo	Salma	Secretary (WASH Organization)	13/07/2021 (Email interview)		
7.	Musembi	Alphonce	Households in the project area	22-23/06/2021 (Telephonic interview)	Baseline practice and usage etc.	Mr. Martin Luther King Okore
8.	Rashid	Abdallah				
9.	Akinyi Otieno	Christine				

10.	Juma	Asha				
11.	Muli	Rosemary				
12.	George	Mwanasiti				

Some of the questions asked from the baseline technology users with summary of their responses:

Questions	Responses
What is the main source of water the members of your household use for drinking, food washing, basic personal hygiene?	As per the responses provided by the stove users, Some of them use well and others buy from the vendors.
Do you purify your water and for what purpose. ?	As per the responses provided by the stove users, Most of people don't purify.
What type of fuel is used for the purification. ?	As per the responses provided by the stove users, mostly they don't purify.
From where do you collect water and purpose. Distance from household.?	As per the responses provided by the stove users, Some of them use well near to house and others buy from the vendors.

C.4. Sampling approach

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Not Applicable

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

During the validation, 03 CL and 04 CAR were raised and successfully closed. 02 FAR were raised during this validation. Refer Appendix 4 of this report for more details.

SECTION D. Validation findings

D.1. Compliance with PDD form

Means of validation	Validation team checked the VPA Design Document /02/ with latest version of VPA-DD template available in the GS website (i.e., version 1.1) /29/.
Findings	CAR-01 is raised and successfully closed. Refer Appendix 4 of this report for more details.
Conclusion	The validation team confirms that the proposed VPA meets the requirement of GS4GG and the VPA-DD is completed using the valid version of the VPA-DD form.

D.2. Description of project activity

Means of validation	The VPA will support the provision of safe water using photovoltaic cells to power desalination technology to thousands of households in coastal Kenya. By providing safe water, the VPA will ensure that households consume less firewood and charcoal during the process of water purification and as a result there shall be a reduction of carbon dioxide emissions from the combustion process. The project will aim to reach peri-urban to rural communities on the coast of Kenya which is also confirmed from CME/VPA implementer during the remote interview. People's fuel use is typically related to their income and location with a typical mix between using wood fuel and charcoal on inefficient three stone fires and inefficient traditional charcoal stoves to purify drinking, cleaning and washing water. This process results in the release of greenhouse gas emissions from the combustion of fuels – this is avoided as the VPA technology does not require fuel (wood or fossil) to supply clean water desired by households. The communities involved in the project will all be low to middle income in areas with salty groundwater across coastal Kenya. Water access varies by community and income level, with a large market for unpotable water. This results in communities collecting water from unsafe sources such as rivers, streams, lakes, unprotected springs and open wells. This has been confirmed from the baseline

	study conducted by VPA Implementer in the project regions /08/ and also checked from the remote interviews of the baseline users. The number of desalination plants per VPA will be limited by the amount of pure water supplied by each unit; based on ex ante calculations, the maximum number of desalination plants that can be installed in one VPA to achieve 60,000 tCO2e is approximately 9 MAXI model solar desalination plants, given the baseline fuel use mix identified by the baseline study. However, the exact number will be determined once actual project survey data has been collected. The emission reduction from each VPA will be limited to 60,000 tCO2e as per small scale threshold as verified from the ER calculation sheet /04/. GivePower Foundation (VPA Implementer) will install the solar desalination plants and deliver the maintenance programme for all the desalination plants included in the VPA to ensure that the quality of the water delivered by the plants is fit for human consumption for the entire length of the project, which will be a minimum of 5 years. The same was discussed with the VPA implementer during the remote audit and found OK. GivePower Foundation have provided all upfront funding for the plants. Income generated by the sale of carbon credits will ensure ongoing maintenance and operation of the technologies while setting water prices at the necessary price point for local communities to benefit which has been confirmed during the remote audit of VPA representative. There is no public funding involved for the implementation which will result in a diversion of Official developmental Assistance as confirmed from the signed declaration for the VPA /21/. The VPA will ensure that the quality of the water delivered by the project technology is fit for human consumption for the entire length of the project. Quarterly water quality test will be done as per the national standard /17/. As per the requirement of the applied methodology TPDDTEC /05/, the Water quality must be tested every quarter, with the first test within 6 months of the stated project start date. CAR-02 has been raised in this respect and successfully closed. Validation team has checked the first test for the water quality by Kenya Bureau Standard /15/ and found to be as per the methodology requirement. Validation team has checked the signed CTF (Carbon transfer form) for the first project site i.e. Likoni site /14/ which is signed by the site manager. The process of the signing of the carbon right transfer form has been confirmed during the remote interview of VPA Implementer and found appropriate. The project boundary lies in the coastal region of Kenya, within which solar desalination plants could be installed. This project boundary is clearly indicated under section A.2 of the VPA-DD /02/. The target area and the fuel collection area are defined as being contained within the project boundary, with the outer limits of the project boundary being clearly defined below. As the majority of beneficiaries that collect or buy their wood fuel and charcoal do so locally, the wood fuel collection area and charcoal collection area and target area are considered the same. The same has been checked from the remote interview of baseline households and VPA Implementer. As discussed during the remote audit of VPA implementer, to avoid double-counting, GPS coordinates for each desalination plant will be provided along with recording their location. This will include the host party, county, ward, city/town/community, and street name and number, if applicable. Currently, there is one solar desalination plant in operation and all the required information has been captured in the signed CTF /14/. Validation team has checked the technical description /06/ of the project technology as mentioned below: GivePower Foundation have developed a revolutionary solar-powered clean water

solution. The containerized solar-powered desalination units provide sustainable and scalable safe water supply.
There are two different models of solar desalination plant currently intended for use within the project: the MAXI and Mobi+. The project may also include other models of GivePower's solar desalination plants.

Technical Specifications:

Model	**MAXI**	**Mobi+**
Treatment Capacity (litres per day)	70,000	15,000
Water storage capacity (litres)	90,000	10,000
Operational Power requirements (kW of solar energy)	50	7.7
Energy storage capacity (kWh)	135	27
Targeted water consumption (litres per person per day)	10-15	10-15
Maximum targeted population to serve	20,000	4,250
Expected Lifespan	20 years	20 years

The VPA falls under GS4GG Community Services Activity Requirements. The eligibility of VPA under GS4GG Principles & Requirements version 1.2 and Community Services Activity Requirements version 1.2 /23/ is as follows:

GENERAL ELIGIBILITY CRITERIA	**VVB Justification**
(a) Types of Project	The project involves the installation of safe water sources, hence the project falls under '(b)&(d)' of section 3.1.1 of COMMUNITY SERVICES ACTIVITY REQUIREMENTS version 1.2 as confirmed during the remote audit and from the supportive document /06/. Hence, the VPA meet the eligibility criteria of section 3.1.1 of GS4GG Principles & Requirements version 1.2.
(b) Location of Project	The host country and location of this VPA is specified in Section A.2 of the VPA-DD /02/, in line with the locations outlined in Section A.3 of the POA-DD /30/ as checked during the remote audit. Hence, the VPA meet the eligibility criteria of section 3.1.1 of GS4GG Principles & Requirements version 1.2.
(c) Project Area, Project Boundary and Scale	The project boundary, including GPS co-ordinates and maps are included in Section A.2 of the VPA-DD /02/. This VPA is not included by any other carbon standard and will be capped at the type (iii) projects small-scale threshold of 60,000 ERs per year.~~will be capped at an energy output of 60Gwh (180Gwhth) per year as per CDM small-scale requirements~~ as checked during the remote audit with CME/VPA implementer. It is pertinent here to confirm that the project activity is not registered with under any other compliance, voluntary or any other scheme pertaining to emissions reductions and the benefits generated from the ERs as well as other SDG parameters as confirmed from VPA implementer during the remote audit. Hence, the VPA meet the eligibility criteria of section 3.1.1 of GS4GG Principles & Requirements version 1.2.
(d) Host Country	The compliance of the VPA with host country requirements

	Requirements	/17/, /25/ has been checked and the validation team confirms that VPA meet all the requirements of host country. Hence, the VPA meet the eligibility criteria of section 3.1.1 of GS4GG Principles & Requirements version 1.2.
	(e) Contact Details	GivePower Foundation is the VPA Implementer and CO2balance UK Ltd is the CME. Validation team has checked the company registration certificate /12/ for the VPA implementer. The details of CME has been checked from Appendix 2 of the VPA-DD /02/. Validation team confirms that the CO2balance UK Ltd. is the CME of the PoA and solely responsible communication with the Gold Standard. Hence, the VPA meet the eligibility criteria of section 3.1.1 of GS4GG Principles & Requirements version 1.2.
	(f) Legal Ownership	Implementation of the proposed project doesn't involve any activity that causes alteration of any resource; therefore, acquiring any specific legal right to do so is not applicable. However, the entitlement of the emission reductions generated by the project shall be transferred to the VPA implementer. Validation team has checked the signed CTF (Carbon transfer form) for the first project site i.e. Likoni site /14/ which is signed by the site manager. The process of the signing of the carbon right transfer form has been confirmed during the remote interview of VPA Implementer and found appropriate. Hence, the VPA meet the eligibility criteria of section 3.1.1 of GS4GG Principles & Requirements version 1.2.
	(g) Other Rights	During the remote audit, it has been confirmed from VPA implementer, CME and other stakeholders, that there are no disputes or contested rights relevant to the project activity. Hence, the VPA meet the eligibility criteria of section 3.1.1 of GS4GG Principles & Requirements version 1.2.
	(h) Official Development Assistance (ODA) Declaration	ODA declaration /21/ of VPA has been checked. The validation team has also confirmed during the remote audit interviews with the representatives of CME that there is no diversion of ODA for VPA. Hence, the VPA meet the eligibility criteria of section 3.1.1 of GS4GG Principles & Requirements version 1.2.
	(i) Fraction of Non-Renewable Biomass	NRB has been calculated in accordance with CDM Tool 30 i.e. "Calculation of the fraction of non-renewable biomass version 03.0" and found OK.
	(j) Test for Wb,y parameter	The VPA has applied the default Wb,y values for wood and charcoal of 0.4 kg/litre and 0.1 kg/litre, respectively which is found OK.
	(k) Water Project Treatment Capacity	The VPA actively monitors quantity of water produced/sold as confirmed from the VPA-DD.
	(l) Cookstove Project Theoretical	Does not apply to this VPA.

Savings	
(m) Double Counting	The project boundary is clearly identified as described in section B.3 of the VPA DD /02/. Each project technology will have GPS coordinates and Unique ID to avoid double counting of emission reductions & thus are distinguishable. The same is verified from the signed CTF for the 1st project plant /14/. Project is not registered with any other voluntary market as confirmed during the remote interview with CME/VPA implementer. Regular project surveys together with distribution records will ensure that the technologies included in the project are not double counted which is also discussed during the remote interview and found OK.
(n) Technical Specification	Technical Specifications are provided in Section A.3 of the VPA-DD as confirmed from technical specification of the VPA technology /06/.
(o) Start Dates	The start date of the VPA is 31/08/2020, as evidenced by the Carbon Transfer Form signed at point of installation of the first project technology at Likoni site /14/.
(p) Applicability	Explained under Section B.2 of the VPA-DD and found OK.
(q) Additionality	Explained under Section B.5 of the VPA-DD and found OK.
(r) LSC and EIA	LSC is postponed due to Covid-19 Interim measures as mentioned under section D.5 of this report. Further, the VPA has no adverse environmental impact.
(s) Target Group	Target Group: Domestic in rural/peri-urban locations and Distribution Mechanism: Centralised Site which is confirmed over the remote interview.
(t) Sampling	Set out in Section B.7.2 of the VPA-DD which is found ok.
(u) Crediting Period	The crediting period start date of the VPA has been considered as 01/09/2020, which 1 day after the installation of the first site as confirmed from the signed CTF for 1st site /14/ and is therefore, acceptable, to the validation team

Eligibility as per section 2 of Community Services Activity Requirements version 1.2	
GENERAL ELIGIBILITY CRITERIA	**VVB Justification**
2.1.2 Projects shall lead to climate change mitigation and/or adaption by providing or improving access to services/resources at household or community or institution level. Eligible services include electricity and energy, water and sanitation, waste management, housing, etc.	By providing a safe water source, the safe water project will improve access to safe water services/resources at community level as confirmed during the remote audit and technical specification of the VPA technology /06/. Water quality test report /15/ has been checked to confirm that the implementation of VPA provides safe water to the communities. The implemented project technology reduces the household firewood consumption, by eliminating the need of purification of water through boiling and thereby reduces CO2 emissions. Hence, the VPA meet the eligibility criteria of section 2 of Community Services Activity Requirements version 1.2.
2.1.3 In relation to the above all Projects shall therefore confirm to Gold Standard for the Global Goals Principles & Requirements (and associated documents)	The project conforms with GS4GG Principles and Requirements as confirmed during the remote audit and also from the documents review. Hence, the VPA meet the eligibility criteria of section 2 of Community Services Activity Requirements version 1.2.

	General Eligibility Criteria as per section 2 of Community Services Activity Requirements version 1.2	
	3.1.1 **Types of Project** b) End-Use Energy Efficiency: Project activities that reduce energy requirements as compared to baseline scenario without affecting the level and quality of services or products where the end user of the products and services are clearly identified and when the physical intervention is required at the user end.	By providing safe water, the project activity reduces the energy requirements compared to the baseline scenario by ensuring that households consume less firewood through no longer needing to purify their water. Water quality test report /15/ has been checked to confirm that the implementation of VPA provides safe water to the communities. The implemented project technology reduces the household firewood consumption, by eliminating the need of purification of water through boiling and thereby reduces CO2 emissions. The validation team confirms that the VPA is an End-use energy efficiency project and reduces energy requirements as compared to baseline scenario. Hence, the VPA meet the eligibility criteria of section 3 of Community Services Activity Requirements version 1.2.
	3.1.2 **Project Area, boundary and scale** Project Area and Boundary shall be defined in line with the applicable Methodologies or Product Requirements. The definition of small-scale is a project issuing emission reductions less than or equal to the maximum savings equivalent of 60GWh per year.	The project boundary, including GPS co-ordinates and maps are included in Section A.2 of the VPA-DD /02/. The project is a Small-scale project issuing emission reductions which will be capped at 60,000 ERs per year. Hence, the VPA meet the eligibility criteria of section 3 of Community Services Activity Requirements version 1.2.
	3.1.3 **Suppressed Demand baseline** Certain Impact Quantification methodologies allow projects to account Suppressed Demand scenario when establishing a baseline. In such cases, the application of Supressed Demand baseline is limited to Small-Scale and Microscale Projects. Where a Suppressed Demand baseline is applied, it is not possible to 'stack' Gold Standard Certified Impact Statements or Products as the definition of the baseline may be	The VPA is a Small-Scale project, therefore it is eligible to allow for suppressed demand in the baseline scenario. The validation team has checked the Baseline Survey results /08/ and confirms that the fixed suppressed demand determined by PP is reasonable and correct. Hence, the VPA meet the eligibility criteria of section 3 of Community Services Activity Requirements version 1.2.

	contradictory.	
	3.1.4 Legal ownership: a) Projects involving the distribution of a large number of devices for services such as heating, cooking, lighting, electricity generation, water treatment technology such as water filter etc. shall provide a clear description of the ownership of the Products that are generated under Gold Standard Certification all along the investment chain. In line with FPIC requirement, the proofs that end-users are aware of and willing to give up their rights on Products shall be provided. b) The transfer of Product ownership shall be discussed during the local stakeholder consultations for regular cycle projects.	CO2balance is the Co-ordinating/Managing Entity which communicates with the Gold Standard, and the project is managed in the Host Country by GivePower Foundation. GivePower Foundation have legal ownership of the carbon credits produced as result of the project. Both parties maintain the right to operate the projects in the host country, the Republic of Kenya. Solar Desalination Plants are managed by local GivePower Foundation employees, with plant managers in place at each solar desalination plant. Local communities are recognised as the main users of the desalination plants in the project. The project will ensure that it complies with the host countries' legal, environmental, ecological and social regulations. There are no disputes or contested rights that have been identified in relation to rights relevant to the project activity. At the point of technology installation/repair, a Carbon Transfer Form (CTF) will be signed and uploaded to CME database stating that the rights to the carbon credits will lie with GivePower Foundation. The site manager of each project technology will sign a CTF on behalf of all users thereof. As confirmed from the CME/VPA Implementer during remote audit interviews, the transfer of ownership is clear as per the signed CTF form /14/ and lies with VPA implementer. Local stakeholder consultation is not yet conducted due to Covid-19 and will be conducted as soon as the condition improves. Hence, the VPA meet the eligibility criteria of section 3 of Community Services Activity Requirements version 1.2.
	CME has chosen a renewable crediting period of 5 years which is renewable twice i.e 15 years in total. The crediting period start date of the VPA has been considered as 01/09/2020, which 1 day after the installation of the first site as confirmed from the signed CTF for 1st site /14/ and is therefore, acceptable, to the validation team. It can be concluded that the project activity will contribute to GHG emission reduction along with direct environmental, social and economic benefits to the users and supporting staff.	
Findings	CL-01, CL-03 are raised and successfully closed. Refer Appendix 4 of this report for more details.	
Conclusion	The assessment team confirms that GS PDD contains a transparent and accurate description of the project activity and provides reader a clear understanding of the project activity	

D.3. Application and selection of methodologies and standardized baselines

D.3.1. Application of methodologies and standardized baselines

Means of validation	The VPA utilizes the Gold Standard methodology 'Technologies and Practices to Displace Decentralized Thermal Energy Consumption V.3.1' /05/. Under section B.2 of the VPA DD /02/, project has been assessed for all the applicability conditions of the applied methodology.

Sr.No.	Condition	Justification	VVB Justification
1	The project boundary can be clearly identified, and the technologies counted in the project are not included in another voluntary market or CDM project activity.	The project area has been clearly demarcated using political boundaries recognized in Kenya. Each technology will be recorded using GPS coordinates and individually tagged with an identification code which is stored securely in the project database. Regular project surveys together with distribution records will ensure that the technologies included in the project are not double counted.	The project boundary is clearly identified as described in section B.3 of the VPA DD /02/. Each project technology will have GPS coordinates and Unique ID to avoid double counting of emission reductions & thus are distinguishable. The same is verified from the signed CTF for the 1st project plant /14/. Project is not registered with any other voluntary market as confirmed during the remote interview with CME/VPA implementer. Regular project surveys together with distribution records will ensure that the technologies included in the project are not double counted which is also discussed during the remote interview and found OK.
2	Technologies have a continuous useful energy output of less than 150kW per unit (defined as total energy delivered usefully from start to end of operation of a unit divided by time of operation). For technologies or practices that do not deliver thermal energy in the project scenario but only displace thermal energy supplied in the baseline scenario, the 150kW threshold applies to the displaced baseline technology.	The project technology does not deliver thermal energy; the installation of solar desalination plants displace energy supplied in the baseline as they eliminate the need to purify water through boiling; the 150kw threshold therefore applies to the baseline technology. Solar desalination plants displace energy supplied in the baseline as they eliminate the need to purify water through boiling. The estimated energy output of the baseline technology is 3.83 and 1.81 kW per wood and charcoal users respectively, which is well within	Clarification provide by the CME is found OK. The project technology does not deliver thermal energy; the installation of solar desalination plants displace energy supplied in the baseline as they eliminate the need to purify water through boiling; the 150kw threshold therefore applies to the baseline technology. The estimated energy output of the baseline technology is 3.83 and 1.81 kW per wood and charcoal users respectively, which is well within the methodological limit of 150kW.

			the methodological limit of 150kW. This has been proven via calculation found in the Ex-ante excel.	Validation team has cross-checked the same from the energy output calculation in the ER sheet /04/ and found OK.
	3	The use of the baseline technology as a backup or auxiliary technology in parallel with the improved technology introduced by the project activity is permitted as long as a mechanism is put into place to encourage the removal of the old technology and the definitive discontinuity of its use.	As noted in the Gold Standard Methodology p.5. 'the removal and continued non-use of three stone fires and other easily constructed traditional devices (the baseline technology replaced by this project activity) is in many cases unlikely and impractical to monitor.' However, local people will be educated on the health and environmental benefits of abandoning inefficient use of the baseline technology. Furthermore, a WASH program will be carried out parallel to the project which will help to increase awareness regarding water use, health and hygiene among local communities. This education programme will act as a mechanism to encourage the removal of old technology.	The justification provided by the CME is convincing and hence in compliance with the applied methodology. The same was confirmed during the remote interviews with the CME/VPA Implementer.
		a) The project documentation must provide a clear description of the approach chosen and the monitoring plan must allow for a good understanding of the extent to which the baseline technology is still in use after the introduction of the improved technology, whether the existing baseline technology is not surrendered at the time of the introduction of the improved technology,	Overall use of the baseline technology will be monitored in conjunction with that of the project technology, as will the emergence of any other baseline technology by targeted end users. As per the Methodology kitchen surveys will be carried out at regular intervals to determine any changes in baseline technology use. The baseline survey is yet to be completed but	

		or whether a new baseline technology is acquired and put to use by targeted end users during the project crediting period.	initial scoping activities indicate the majority of households in the targeted areas were using either a traditional wood fire to boil water which consists of a three-stone fire, or a traditional charcoal stove.	
		b) The success of the mechanism put into place must therefore be monitored, and the approach must be adjusted if proven unsuccessful. If an old technology remains in use in parallel with the improved technology, corresponding emissions must of course be accounted for as part of the project emissions.	Parallel baseline technology use (three stone fires or traditional equivalent) will be revealed during monitoring and its effect on emissions reductions will be captured in the parameter Q, p, clean boil, y and in the usage surveys. The uptake rate U will also be determined by surveys and hence used to account for parallel baseline and project technology use.	
	4	The project proponent must clearly communicate to all project participants the entity that is claiming ownership rights of and selling the emission reductions resulting from the project activity. This must be communicated to the technology producers and the retailers of the improved technology or the renewable fuel in use in the project situation by contract or clear written assertions in the transaction paperwork. If the claimants are not the project technology end users, the end users should be notified that they cannot claim for emission reductions from the project.	A full explanation will be given to solar desalination plant managers that GivePower Foundation, in agreement with CO2balance, have committed to provide them with a solar desalination plant that is fully maintained using carbon finance revenues on the basis that the emissions reductions will be transferred to GivePower Foundation, in agreement with CO2balance. This will be recorded using a Carbon Transfer Form, which is signed by project technology site managers.	Clarification provided by the CME is acceptable. It has been clearly communicated to the users through plant managers that VPA Implementer will claim emission reduction ownership rights through Carbon rights transfer form /14/.

	5	Project activities making use of a new biomass feedstock in the project situation (e.g. shift from non-renewable to green charcoal, plant oil or renewable biomass briquettes) must comply with relevant Gold Standard specific requirements for biomass related project activities, as defined in the latest version of the Gold Standard rules.	As the technology used in this project has been specifically designed to displace baseline feedstock use via fuelwood and charcoal, rather than a new biomass feedstock, this criterion is not applicable to this project. The emission reductions from this project will result from a change in quantity of fuel consumed, rather than change of fuel type.	The project activity does not make use of new biomass feed stock hence this para is not applicable.
		a) Adequate evidence is supplied to demonstrate that indoor air pollution (IAP) levels are not worsened compared to the baseline, and greenhouse gases (as listed in section 2.1) emitted by the project fuel/stove combination are estimated with adequate precision. The project fuel/stove combination may include instances in which the project stove is a baseline stove.	The fuel used in both the project and baseline scenario is the same, as such there are no additional harmful gases released in the project scenario. The baseline technology has also not changed; rather its use for boiling will have been eliminated.	Clarification provided by the CME is acceptable.
		b) Records of renewable fuel sales may not be used as sole parameters for emission reduction calculation, but may be used as data informing the equations in section 2.0 of this methodology if correlated to data on distribution and results of field tests and surveys confirming (a) actual use of the renewable fuel and usage patterns such as	Renewable fuels are not sold as part of this project therefore this point is not applicable.	Clarification provided by the CME is acceptable.

		average fraction of non-renewable fuels used in mixed combustion or seasonal variation of fuel types, (b) GHG emissions, (c) evidence of CO levels not deteriorating (d) any further factors effecting emission reductions significantly.		

It can be concluded by the assessment team that the project meets all the applicability criteria established in the methodology. Validation team has verified the same from the remote interviews.

Findings	CAR-02 and CAR-03 are raised and successfully closed. Refer Appendix 4 of this report for more details.
Conclusion	The applied baseline and monitoring methodology and relevant tool are valid and applicable to the project activity. The assessment team concludes that on the basis of observations made during remote auditing and review of the documents, the project activity meets the requirement of the applied methodology /05/.

D.3.2. Project boundary, sources and GHGs

Means of validation

As per the applied methodology, Project proponents must provide clear definitions of project boundary and the target area:

a. The project boundary is the physical, geographical sites of the project technologies i.e. project plants. The project boundary lies in the coastal region of Kenya, within which solar desalination plants could be installed as described under section A.2 of the VPA-DD /02/. The physical address of each solar desalination plant will be provided. This will include the host party, county, ward, city/town/community, and street name and number, if applicable.

b. The target area is clearly defined under the project activity. The target area and the fuel collection area are defined as being contained within the project boundary, with the outer limits of the project boundary being clearly defined under section A.2 of the VPA-DD /02/. As the majority of beneficiaries that collect or buy their wood fuel and charcoal do so locally as confirmed during the remote interview of baseline households, the wood fuel collection area and charcoal collection area and target area are considered the same.

The location and project boundary co-ordinates of VPA are as given below:

Project Area Extremities		
	Latitude	Longitude
North	0.95092	39.4953
South	-4.71569	39.37513
East	-1.65802	41.56236
West	-4.71569	39.37513

The emissions accounted from the various sources in the physical boundary of the project activity are as follows:

	Source		GHGs	Included?	Justification/Explanation
	Baseline scenario	Combustion of wood fuel to boil water	CO_2	Yes	Important source of emissions
			CH_4	Yes	Important source of emissions
			N_2O	Yes	Gas included in the calculations. Emissions factors for fuel in stationary combustion by the IPCC
		Combustion of charcoal fuel to boil water	CO_2	Yes	Important source of emissions
			CH_4	Yes	Important source of emissions
			N_2O	Yes	Gas included in the calculations. Emissions factors for fuel in stationary combustion by the IPCC
	Project scenario	Combustion of wood fuel to boil water	CO_2	Yes	Important source of emissions
			CH_4	Yes	Important source of emissions
			N_2O	Yes	Gas included in the calculations. Emissions factors for fuel in stationary combustion by the IPCC
		Combustion of charcoal fuel to boil water	CO_2	Yes	Important source of emissions
			CH_4	Yes	Important source of emissions
			N_2O	Yes	Gas included in the calculations. Emissions factors for fuel in stationary combustion by the IPCC
	The information was validated during the remote auditing conducted by the validation team and same has been demonstrated in section B.3 of the VPA-DD.				
Findings	No finding raised.				
Conclusion	The project boundary confirmed during the remote auditing along with the documentary evidence was found in conformance with the applied baseline methodology. All sources of GHG emissions required by the methodology have been included in the project boundary and are justified in reference to the project activity. There are no project emissions/leakage emissions of any sort which are not addressed by the applied methodology occurring because of the project activity.				

D.3.3. Baseline scenario

Means of validation	The applied methodology requires the project participant to follow the following guidance: *A baseline scenario is defined by the typical baseline fuel consumption patterns in a population that is targeted for adopting the new project technology. Hence, this "target population" is a representative baseline for the project activity.* CME has not defined the baseline scenario at POA level because of the implementation of VPAs in different host countries. In Kenya, rural and peri-urban people typically use wood and charcoal fuels on inefficient traditional technologies, such as the three stone fire in the case of wood fuel, for cooking and water purification. A large proportion of Kenyan nationals do not have access to safe water[1], many of whom depend on boiling as the only

[1] https://www.who.int/water_sanitation_health/publications/jmp-2019-full-report.pdf

	treatment method available or are forced to drink dirty water due to suppressed demand factors such as lack of access to fuel, time and financial resources. Validation team has checked the same from the remote interview of the baseline households, CME/VPA implementer and documents review /08/. The baseline situation is not expected to change significantly during the next years considering the current situation in Kenya, its economic development of the last years and predictions for the future. Kenya is a developing country (LMIDC) and is among the poorest countries in the world with a Human Development Index ranking of 143 out of 189 countries worldwide.[2] In this project, GivePower Foundation, in partnership with CO2balance, will install solar desalination plants and manage them so that they deliver clean and safe water to local communities. The number of solar desalination plants per VPA will be limited by the amount of pure water supplied by each unit and the unit model. Based on ex ante calculations, the maximum number of desalination plants that can be installed in one VPA to achieve 60,000 tCO2e is approximately between 6-9. However, the exact number will be determined once actual survey data has been collected. GivePower Foundation and CO2balance will install and deliver a maintenance programme for each solar desalination plant to ensure that the quality of the water delivered is fit for human consumption for the entire length of the project, which will be a minimum of 5 years. The same is also discussed during the remote interview of the CME/VPA implementer. The baseline scenario is assessed through use of the Baseline Survey /08/. In accordance with the GS4GG Methodology "Technologies and Practices to Displace Decentralized Thermal Energy Consumption" (TPDDTEC), baseline surveys are carried out using representative and random sampling. The sample size is determined in line with the methodological minimum sample size and confidence requirements. As the project technology is installed at the start of the project, the baseline scenario is considered fixed throughout the crediting period. The Baseline Survey was conducted across four districts representative of the project area: Likoni, Bamburi, Makindu and Kibwezi West. These took place between 17th and 25th February 2021. Default values of 0.4 and 0.1 kgs of wood and charcoal respectively per litre of water boiled have been used for parameters Wb,y. In line with Gold Standard requirements the Baseline Survey provide critical information on target population characteristics, water and fuel consumption needed to purify water, suppressed demand and leakage. According to the relevant Gold Standard methodology the following information captured in the surveys: • Address or location • Telephone number (where possible) • Number of people served by baseline technology(ies) • Typical baseline technology usage patterns and tasks (commercial, institutional, domestic etc) • Types of baseline technology used and estimated frequency • Types of fuels used and estimated quantities • Seasonal variations in baseline technology and fuel use • Sources of fuels and prices paid or effort made to collect fuels Suppressed demand is determined through a set of questions in the Baseline Survey that establish the method households use to purify their water, if any, and how they would choose to purify if they were not subject to monetary and access barriers.

[2] United Nations Development Programme (2019) 'Human Development Indicators' http://hdr.undp.org/en/countries/profiles/KEN

The fixed parameters from the Baseline Survey are:

Parameter	Description	Value
Cj	Proportion of users who consume safe water in the baseline scenario	7.0%
Xboil	Proportion of users that would use other non-GHG emitting technologies in absence of project activities	17.4%
Supressed Demand Users	Proportion of users who are unable to boil or treat unsafe water in the baseline scenario due to limited resources, but who would boil as a treatment method if it was available to them	56.9%
Pb,boil	Proportion of users that boil water as a treatment method in the baseline scenario	24.6%

Default values shall be used in place of the BWBT, in accordance with TPDDTEC v3.1. The Baseline Survey shows that 24% of users' primary cooking device is a traditional wood stove, and 72% use a charcoal stove. 1% and 2% use LPG and kerosene, but this is regarded as *de minimis* and will not be accounted for in the Project.

The default values for wood fuel and charcoal are as follows:

Fuel Type	**% of users' primary fuel**	**Value**	**Unit**
Wood Fuel	24%	0.4	Kg/L
Charcoal	72%	0.1	Kg/L

Validation team has checked the baseline survey scans, excel sheet and photos /08/ and found the reported information correct. Minimum sample size has been met as per the GS applied methodology /05/.

The VPA will use the calculated fNRB value for Kenya /19/. fNRB calculation has been done in accordance with the TOOL 30, version 3.0 /27/ which is still valid. Validation team has checked the fNRB calculation and found in accordance with the tool.

In-line with Gold Standard requirements the Baseline Survey provides critical information on target population characteristics, fuel consumption, suppressed demand and leakage.

The baseline survey results provided to the validation team and same was also confirmed by interviewing the baseline households and other stakeholders during the remote auditing.

Findings

No finding raised.

Conclusion

The assessment of the applied baseline suggests that the baseline methodology has been correctly applied and the most appropriate and conservative baseline scenario has been selected:

a) All data and values used by the project proponent have been listed and referenced in the PDD indication their sources;

b) Relevant documents have been used for the establishment of baseline scenario, interpreted appropriately;

c) All the relevant national and sectoral policies and circumstances have been considered;

d) The applied methodology's applicability has been found in accordance and the

	baseline identification has been found appropriate by the assessment team. e) Justification has been provided in the revised VPA-DD /02/ and found OK.

D.3.4. Demonstration of additionality

Means of validation

The VPA falls under GG4GG Community Services Activity Requirements. As demonstrated in the Gold Standard for the Global Goals Community Services Activity Requirements section 4.1.9 /23/ - Projects that meet any of the following criteria are considered as deemed additional and therefore are not required to prove Financial Additionality at the time of Design Certification:

1. (a) Positive list (Annex B)
2. (b) Projects located in LDC, SIDS, LLDC
3. (c) Micro-scale projects

As per section B.2 of the PoA DD /30/, For any activities that don't qualify with the above criteria will be subject to a full additionality assessment using the CDM "Tool for the demonstration of additionality." This will be conducted at VPA level in the VPA-DD.
In the case of any retroactive projects being included under the PoA, additionality will be demonstrated using the most up to date UNFCCC-approved or a Gold Standard-approved additionality tool to demonstrate project additionality.

Hence for this VPA, Additionality is demonstrated using the UNFCCC Tool for the demonstration and assessment of additionality (Version 7) which shows that the project would not be possible without VER revenues. Validation team has checked the additionality demonstration under section B.5 of the VPA DD /02/ and found acceptable. Hence the VPA is additional.

Step selection for the additionality tool and justification	**Outcome**	**VVB review**
Step 0: First of its kind project activities. Is the proposed project activity the first-of-its-kind?	No, the project activity is not the first-of-its-kind.	The justification provided by PP is acceptable.
Step 1: Identification of alternatives to the project activity consistent with current laws and regulations. Sub-step 1a: define alternatives to the project activity:	Three realistic and credible alternatives to the project activity have been identified. **Alternative 1:** Solar Desalination Plants are installed without registering as a Gold Standard VER project. Under this alternative scenario, the project would proceed as laid out in this document. This would provide the same displacement of thermal energy, result in the biomass savings, improved livelihoods and other contributions to sustainable development identified. **Alternative 2:** The distribution of chlorine tablets for the treatment of unsafe water. Under this alternative scenario, the project would not occur as described in this document and instead, chlorine tablets would	The validation team confirms that all the alternatives considered by the PP are realistic and credible alternatives, as without registering VPA as a Gold Standard VER project, the project would still continue to provide benefits to the Local communities. Under the alternative 1 and 2, the implementation of the project would provide safe water access to the users, thereby reducing the need to boil water for

		be distributed for the treatment of water collected from unsafe sources. This would provide the same displacement of thermal energy and result in the biomass savings for the beneficiaries. **Alternative 3:** Continuation of the current situation – use of boiling to purify water on traditional 3-stone fireplaces and charcoal stoves as well as the consumption of unsafe water. Without the intervention of the project and use of carbon finance it is unlikely that the status quo will change.	purification. This will also lead to the same displacement of thermal energy and result in the biomass savings for the beneficiaries and hence result is reduction of emissions. However, alternative 1 and 2 would not be financially feasible as both requires additional cost for installation/maintenance of VPA plants, as well as providing chlorine tablets. Alternative 3 would be Continuation of the current situation – use of boiling to purify water on traditional 3-stone fireplaces and charcoal stoves as well as the consumption of unsafe water, which will not provide any benefit to the community or the environment.
	Sub-step 1b: Consistency with mandatory laws and regulationsory	Three realistic and credible alternative scenarios to the project activity that are in compliance with mandatory legislation and regulations, taking into account the enforcement in the region and national and/or sectoral policies and regulations.	The entire three alternatives to the project activity are consistent with mandatory laws and regulations and hence acceptable to the validation team. Validation team has confirmed the same by the local expert and during the remote interviews.
	Step 3: Barrier Analysis		
	Sub-step 3a: Identify barriers that would prevent the implementation of the proposed GS VER project activity:	Barriers have been identified that may prevent one or more alternative scenarios to occur. a. Investment barrier The project technology is not widespread throughout the Host Country and Region. Kenya's energy mix for electricity generation, which demonstrates prevalence of solar photovoltaic technology, shows that solar PV electricity generation makes up a small	Investment and technological barrier have been identified by the PP. the demonstration given by the PP seems reasonable. **Investment and Technological Barrier**: The justification given by the PP is acceptable.

			proportion of the total electricity generated and is likely to stay relatively low[3]. Previous research on solar desalination has highlighted the difficulty in accessing renewable energy sources for desalination[4]. Desalination is also highly energy-intensive with UNFCCC default energy intensity figures for brackish water desalination averaging at 1.4233 kWh/m3[5]. High energy requirements for production imply high costs in producing clean water via desalination. Other research focusing on small-scale solar desalination units found average production of clean water at 2.35L – 5.9L water per day[6], although this technology is very different from the project technology which produces up to 70,000 litres of water per day for communities to use; rather than individual people and/or households. In addition, alternatives undertaken by private enterprises have also utilized GS VERs as a funding source[7]. Without the revenue provided by GS VERs, implementation of Solar Desalination Plant technology by private entities has not occurred. In summary, investment barriers to implementation exist due to high costs, energy intensity and exclusivity of technology at this scale. b. Technological barrier Low rate of access to improved drinking water facilities in Kenya has been well documented[8]. This suggests Macro-level factors are acting as barriers to safe water access, even of more basic safe water provision sources such as handpumps and basic water filtration systems. The project technology is designed and created outside of the Host Country, meaning that the technology is not widely available in the host country and region. This acts as a technological barrier as the technology has not dispersed into the host country and	The links and sources have been checked and found the PP justification convincing.

[3] IEA, Kenya electricity generation by technology in the Stated Policies Scenario, 2010-2040, IEA, Paris https://www.iea.org/data-and-statistics/charts/kenya-electricity-generation-by-technology-in-the-stated-policies-scenario-2010-2040

[4] Leijon, J., Salar, D., Engström, J., Leijon, M., & Boström, C. (2020). Variable renewable energy sources for powering reverse osmosis desalination, with a case study of wave powered desalination for Kilifi, Kenya. Desalination, 494, 114669.

[5] https://unfccc.int/sites/default/files/resource/AHSA-004_Default%20Energy%20Intensity%20Factors%20for%20Water%20Supply%20Systems_v1.pdf

[6] Mwamburi, E. K. (2013). Factors affecting access of water supply in Kisauni area, Mombasa County, Kenya (Doctoral dissertation).

[7] https://registry.goldstandard.org/projects/details/2753

[8] https://washdata.org/data

	appropriately skilled/trained labour does not exist to maintain the project technology. Any project technology installation requires the VPA Implementer to specifically train site staff to ensure adequate operation and maintenance for example. This presents a significant barrier to implementation without the anticipated VER carbon credits.	
Sub-step 3b: Show that the identified barriers would not prevent the implementation of at least one of the alternatives (except the proposed project activity):	Both sub-steps 3a – 3b are satisfied. Due to the investment needed to provide chlorination tablets in the 'Alternative 2' scenario identified in sub-step 1a, this scenario would also be prevented from occurring by the barriers identified in sub-step 3a and has been eliminated from consideration. 'Alternative 3' is not affected by any of the barriers identified in sub-step 3a.	The alternative 3 "Continuation of the current situation – use of boiling to purify water on traditional 3-stone fireplaces and charcoal stoves as well as the consumption of unsafe water" would not be prevented by any of the identified barriers and hence the criterion for this step is met.
Step 4: Common practice analysis		
Sub-step 4a: The proposed CDM project activity(ies) applies measure(s) that are listed in the definitions section above.	The proposed project activity is defined by the Gold Standard Community Services Activity Requirements as a Water, sanitation and hygiene (WASH) project. Therefore, the proposed project activity does not apply a measure listed in the definitions section of the additionality tool.	The proposed project activity does not apply a measure listed in the definitions section of the additionality tool, hence proceed to 4b as per the additionality tool.
Sub-step 4b: The proposed project activity(ies) does not apply any of the measures that are listed in the definitions section [in the CDM Tool for the demonstration and assessment of additionality]:	Project is considered additional. The project technology is distinctly unique and is only being implemented by the VPA Implementer. Containerised Solar Desalination Units from other private and public entities are not available in the host country or region. The project has supplied 'datasheets' of the project technology to support this.	There are currently no other similar project activities being implemented or currently underway in project boundary of VPA. Project is considered additional. The same has been verified from the review of GS website.

Prior consideration of the carbon revenues:

As the VPA is retroactive, hence the prior consideration is applicable for the VPA. The start date of the VPA is 31/08/2020, as evidenced by the Carbon Transfer Form signed at point of installation of the first project technology at Likoni site /14/. As per GS4GG rule for retroactive projects, project documents need to submit to GS within one year of the project start date to meet prior consideration.

CME has submitted the initial project documents to GS within 1 year of the VPA start date as verified from the GS review closure mail on 05/03/2021 /10/. Therefore, the VPA meets the

	prior consideration requirements.
Findings	CAR-01 is raised in this regard. Refer appendix 4 of this report for more details.
Conclusion	Based on the local and sectoral expertise, the assessment team confirms that the VPA is additional and also fulfil the prior consideration requirement.

D.3.5. Sustainable Development Goals (SDG) outcomes

Means of validation

Specific contributions to be determined at VPA level are:

SDGs	Targets & Relevant Indicator
SDG 3 – Good Health and Well-being	3.9 – By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases.
SDG 5 - Gender Equality	5.4 – Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate.
SDG 6 - Clean Water and Sanitation	6.1 – By 2030, achieve universal and equitable access to safe and affordable drinking water for all.
SDG 13 - Climate Action	13.B – Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.

Methodological choice/ approaches for estimating the above mentioned SDG outcomes are as follows:

Outcomes for SDG 3 (Good Health and Wellbeing)

The outcome for SDG 3 is quantified as the additional number of persons consuming safe water in the project activity compared to the baseline scenario (P_{safe}). The number of persons using each project technology is determined in WASH gatherings conducted under the project. The percentage of users who were already consuming safe water in the baseline without boiling it (C_j) is determined through the baseline survey and deducted. Additionally, the percentage of users who consumed safe water by boiling it in the baseline ($P_{b,\ boil}$) is deducted. Calculations are as follows:

$$P_{safe} = P_y * (1 - C_j) * (1 - P_{b,boil})$$

Where:

P_{safe} Number of additional persons having access to safe water in the project activity compared to the baseline scenario~~Number of additional persons having access to safe water in the project activity compared to the baseline scenario.~~

P_y Number of persons having access to safe water in the project activity.

C_j Expressed as a percentage, the portion of users of the project technology j who in the baseline were already consuming safe water without boiling it.

	$P_{b, boil}$ Percentage of persons boiling water for purification in the baseline scenario. **Outcomes for SDG 5 (Gender Equality)** are calculated as follows: Women and girls perform the majority of unpaid domestic work[9]. This leaves them with less time to rest, study and realise their economic potential, leaving them in time poverty. In regard to time, women are poorer than men as unpaid domestic duties, such as collecting firewood and water, must be added to their market productive work, making time much scarcer[10]. Women are widely recognised as being principally responsible for natural resource collection[11]. These trends demonstrate that reducing the amount of firewood required by households has the potential to reduce the time poverty of women, because the time burden of collecting firewood, which falls disproportionately on women, will be reduced. The decrease per household in time spent gathering firewood will be taken as a proxy contribution towards the SDG target. The overall reduction in time spent collecting firewood by the project activity are then calculated as follows:the TRy = Tb,y - Tp,y Where: TRy Total reduction time spent collecting firewood for project activity in year y (hours)~~Total reduction time spent collecting firewood for project activity in year y~~ (hours) Tb,y Baseline time spent collecting firewood per household per day (hours) Tp,y Project time spent collecting firewood per household per day (hours) **Outcomes for SDG 6 (Clean Water and Sanitation)** are calculated as follows: The outcome for SDG 6 is quantified as the additional number of persons having access to safe water in the project activity compared to the baseline scenario (P_{access}). The number of persons using each solar desalination plant is determined in the sensitization process during the installation. The percentage of users who already had access to a safe water source will be determined through the baseline survey. Calculations are as follows (parameters from sections B.6.3 and B.7.1 of the VPA-DD will be applied): $P_{access} = P_y * (1 - C_j) * U_{p,y}$ Where: P_{access} Number of additional persons having access to safe water in the project activity compared to the baseline scenario~~Number of additional persons having access to safe water in the project activity compared to the baseline scenario.~~ P_y Number of persons having access to safe water in the project activity. C_j Expressed as a percentage, the portion of users of the project technology j who in the baseline were already consuming safe water without boiling it. $U_{p,y}$ Usage rate in project scenario p during year y

[9] UN (2017) 'Progress towards the Sustainable Development Goals (E/2017/66)'. Available at https://unstats.un.org/sdgs/files/report/2017/secretary-general-sdg-report-2017--EN.pdf

[10] Charmes, J 'A Review of Empirical Evidence on Time Use in Africa from UN-Sponsored Surveys', in Word Bank (2006) 'Gender, Times Use, and Poverty in Sub-Saharan Africa'. World Bank Working Paper No. 73

[11] Nankhuni (2004) 'Environmental Degradation, Resource Scarcity and Children's Welfare in Malawi: School Attendance, School Progress, and Children's Health'

Outcomes for SDG 13 (Climate Action) are calculated as follows:

The outcome for SDG 13 (Climate Action), GHG emission reductions, is calculated using the parameters in Section B.6.2 in the VPA-DD.

Baseline emissions

$$BE_{b,y} = B_{b,y} * \left(\left(fNRB_y * EF_{b,fuel,co2} \right) + EF_{b,fuel,nonco2} \right) * NCV_{b,fuel}$$

Where:

$BE_{b,y}$	Emissions for baseline scenario b during the year y in tCO_2e
$B_{b,y}$	Quantity of fuel consumed in baseline scenario b during year y, in tons, as per by-default factors
$fNRB_y$	Fraction of biomass used during year y for the considered scenario that can be established as non-renewable biomass
$NCV_{b,fuel}$	Net calorific value of the fuel that is substituted or reduced (IPCC default for wood fuel, 0.0156 TJ/ton)
$EF_{b,fuel,co2}$	CO2 emission factor of the fuel that is substituted or reduced. 112 tCO2/TJ for Wood/Wood Waste
$EF_{b,fuel,nonco2}$	Non-CO2 emission factor of the fuel that is substituted or reduced

Project emissions

$$PE_{p,y} = B_{p,y} * \left(\left(fNRB_y * EF_{p,fuel,co2} \right) + EF_{p,fuel,nonco2} \right) * NCV_{p,fuel}$$

Where:

$PE_{p,y}$	Emissions for project scenario p during the year y in tCO_2e
$B_{p,y}$	Quantity of fuel consumed in project scenario p during year y, in tons, as derived from the statistical analysis conducted on the data collected during the project performance field tests (cases when no baseline performance field test are performed, e.g. by-default baseline factors)
$fNRB_{,y}$	Fraction of biomass used during year y for the consid ered scenario that can be established as non-renewable biomass
$NCV_{p,fuel}$	Net calorific value of the project fuel (IPCC default for wood fuel, 0.0156 TJ/ton). This is equal to the baseline fuel NCV in projects which use the same fuel
$EF_{p,fuel,co2}$	CO2 emission factor of the project fuel. This is equal to the baseline fuel EF in projects which use the same fuel, 112 tCO2/TJ for Wood/Wood Waste
$EF_{p,fuel,nonco2}$	Non-CO2 emission factor of the project fuel. This is equal to the baseline fuel EF in projects which use the same fuel

Where:

$$B_{p,y} = (1 - C_j) * N_{p,y} * W_{b,y} * (Q_{p,rawboil,y} + Q_{p,cleanboil,y})$$

C_j	Expressed as a percentage, the portion of users of the project technology j who in the baseline were already consuming safe water without boiling it.
$N_{p,y}$	Project technology-days in the project database for project scenario p through year y
$W_{b,y}$	Quantity of wood fuel or fossil fuel required to boil 1 litre of water using technologies representative of baseline scenario b during year y

$Q_{p,rawboil,y}$ per day	Quantity of raw water boiled in the project scenario p per person
$Q_{p,cleanboil,y}$ per day	Quantity of safe water boiled in the project scenario p per person

$$ER_y = \left(\left((\Sigma BE_{b,y} - \Sigma PE_{p,y}) * Up,y\right) - LEp,y\right) * (1 - XBoil)$$

Where:

LEp,y	Leakage for project scenario p in year y (tCO_2e)
Up,y	Cumulative usage rate for technologies in project scenario p in year y, based on culmulative adoption rate and drop off rate evealed by usage surveys (fraction)
$XBoil$	Percentage of premises that would have used other non-GHG emitting technologies like chlorine treatment techniques, if available, in the absence of the project activity

Validation team has checked the formula used and found in compliance with the applied methodology /05/. Hence the same is found OK.

Validation team has checked the ex-ante estimation of SDG impact under section B.6.3 of the VPA-DD /02/ and found OK.

The summary of ex-ante estimation of each SDG outcome is as follows:

SDG 3

Year	Baseline estimate	Project estimate	Net benefit
Year 1	27,225 people consuming safe water	90,000 people consuming safe water	62,775 additional people consuming safe water
Year 2	27,225	90,000	62,775
Year 2	27,225	90,000	62,775
Year 4	27,225	90,000	62,775
Year 5	27,225	90,000	62,775
Total	27,225	90,000	62,775
Total number of crediting years	5		
Annual average over the crediting period	**27,225**	**90,000**	**62,775**

SDG 5

Year	Baseline estimate	Project estimate	Net benefit
Year 1	2.4 hours per day collecting	1.9 hours per day collecting	0.5 hours saved per

	water	water	day
Year 2	2.4	1.9	0.5
Year 2	2.4	1.9	0.5
Year 4	2.4	1.9	0.5
Year 5	2.4	1.9	0.5
Total	2.4	1.9	0.5
Total number of crediting years	5		
Annual average over the crediting period	**2.4**	**1.9**	**0.5**

SDG 6

Year	Baseline estimate	Project estimate	Net benefit
Year 1	14,670 people with access to safe water	90,000 people with access to safe water	75,330 additional people with access to safe water
Year 2	14,670	90,000	75,330
Year 2	14,670	90,000	75,330
Year 4	14,670	90,000	75,330
Year 5	14,670	90,000	75,330
Total	14,670	90,000	75,330
Total number of crediting years	5		
Annual average over the crediting period	**14,670**	**90,000**	**75,330**

SDG 13

Year	Baseline estimate	Project estimate	Net benefit
Year 1	84,815 ~~89,175~~ tCO2e	0 tCO2e	60,000 tCO2e
Year 2	84,815 ~~89,175~~ tCO2e	0 tCO2e	60,000 tCO2e
Year 2	84,815 ~~89,175~~ tCO2e	0 tCO2e	60,000 tCO2e
Year 4	84,815 ~~89,175~~ tCO2e	0 tCO2e	60,000 tCO2e

	Year 5	84,815 ~~89,175~~ tCO2e	0 tCO2e	60,000 tCO2e
	Total	84,815 ~~89,175~~ tCO2e	0 tCO2e	60,000 tCO2e
	Total number of crediting years	5		
	Annual average over the crediting period	**84,815 ~~89,175~~ tCO2e**	**0 tCO2e**	**60,000 tCO2e**

The details ER calculation is demonstrated in the separate ER spreadsheet /04/ by the PP and validated by the validation team with respect to correctness of all parameters and their sources.

Findings	No finding raised.
Conclusion	The assessment team confirms that: a) The selection of the equations of the applied methodology is appropriate. b) The assumptions used by the project have been clearly referenced and listed in the VPA-DD/02/. c) The data included in the VPA-DD has been adopted from authentic sources based on appropriate assumptions. d) Appropriate values are reasonably used relating to the project activity. e) The baseline methodology has been correctly applied for the calculation of emission reductions. f) The calculations are traceable and the values can be replicated using the data provided in the VPA-DD.

D.3.6. Monitoring of SDGs

Means of validation

The monitoring plan for VPA is provided in Section B.7 of the VPA-DD /02/, based on the approved monitoring methodology. The monitoring plan is being correctly applied to the project activity and is in compliance with the requirements of the applied methodology.

Parameters available at the time of validation (ex-ante) are:

Relevant SDG Indicator	Parameters	Description	Value	Source/Justification
SDG13	$EF_{b,co2}$	CO_2 emission factor arising from use of wood fuel in baseline scenario	112 tCO_2 /TJ	Values taken from Table 2.5, Chapter 2, Volume 2 of the 2006 IPCC Guidelines and found consistent. https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf
SDG13	$EF_{b,co2}$ Charcoal	CO_2 emission factor arising from use of charcoal in	336 tCO_2 /TJ	Values taken from Table 2.5, Chapter 2, Volume 2 of the 2006 IPCC Guidelines and found consistent. https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf

			baseline scenario		A wood to charcoal ratio of 3 has been applied, in line with IPCC guidelines: https://www.ipcc-nggip.iges.or.jp/public/gl/guidelin/ch1ref3.pdf page 1.46
	SDG13	$EF_{b,non\ co2}$	Non-CO_2 (CH_4 and N_2O) emission factor arising from use of wood fuel in baseline scenario	9.460 tCO_2/TJ	Values taken from the below sources. Validation team has found the value correct. IPCC Default emissions factor – https://www.ipcc-nggip.iges.or.jp/public/gp/bgp/2_2_Non-CO2_Stationary_Combustion.pdf GWP – https://www.ghgprotocol.org/sites/default/files/ghgp/Global-Warming-Potential-Values%20%28Feb%2016%202016%29_1.pdf
	SDG13	$EF_{b,non\ co2}$ Charcoal	Non-CO_2 (CH_4 and N_2O) emission factor arising from use of charcoal in baseline scenario	28.38 tCO_2/TJ	Values taken from the below sources. Validation team has found the value correct. IPCC Default emissions factor – https://www.ipcc-nggip.iges.or.jp/public/gp/bgp/2_2_Non-CO2_Stationary_Combustion.pdf GWP – https://www.ghgprotocol.org/sites/default/files/ghgp/Global-Warming-Potential-Values%20%28Feb%2016%202016%29_1.pdf
	SDG13	$EF_{p,co2}$	CO_2 emission factor arising from use of wood fuel in project scenario	112 tCO_2/TJ	Values taken from Table 2.5, Chapter 2, Volume 2 of the 2006 IPCC Guidelines and found consistent. https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf
	SDG13	$EF_{p,co2}$ Charcoal	CO_2 emission factor arising from use of charcoal in project scenario	336 tCO_2/TJ	Values taken from Table 2.5, Chapter 2, Volume 2 of the 2006 IPCC Guidelines and found consistent. https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf A wood to charcoal ratio of 3 has been applied, in line with IPCC guidelines: https://www.ipcc-nggip.iges.or.jp/public/gl/guidelin/ch1ref3.pdf page 1.46
	SDG13	$EF_{p,non\ co2}$	Non-CO_2 (CH_4 and N_2O) emission factor	9.460 tCO_2/TJ	Values taken from the below sources. Validation team has found the value correct. IPCC Default emissions factor – https://www.ipcc-nggip.iges.or.jp/public/gp/bgp/2_2_Non-CO2_Stationary_Combustion.pdf

			arising from use of wood fuel in project scenario		GWP – https://www.ghgprotocol.org/sites/default/files/ghgp/Global-Warming-Potential-Values%20%28Feb%2016%202016%29_1.pdf
	SDG13	$EF_{p,non\ co2}$ Charcoal	Non-CO_2 (CH_4 and N_2O) emission factor arising from use of charcoal in project scenario	28.38 tCO_2/TJ	Values taken from the below sources. Validation team has found the value correct. IPCC Default emissions factor – https://www.ipcc-nggip.iges.or.jp/public/gp/bgp/2_2_Non-CO2_Stationary_Combustion.pdf GWP – https://www.ghgprotocol.org/sites/default/files/ghgp/Global-Warming-Potential-Values%20%28Feb%2016%202016%29_1.pdf
	SDG13	NCV_b	Net calorific value of the wood fuel used in the baseline	0.0156 TJ/ton	IPCC default value for NCV of wood-fuel has been applied. Validation team has checked the value from the source and confirms that it is consistent. 2006 IPCC Guidelines for National Greenhouse Gas Inventories volume 2, chapter 1 https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf
	SDG13	NCV_b Charcoal	Net calorific value of the charcoal used in the baseline	0.0295 TJ/ton	IPCC default value for NCV of charcoal has been applied. Validation team has checked the value from the source and confirms that it is consistent. 2006 IPCC Guidelines for National Greenhouse Gas Inventories volume 2, chapter 1 https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf
	SDG13	NCV_p	Net calorific value of the wood fuel used in the project	0.0156 TJ/ton	IPCC default value for NCV of wood-fuel has been applied. Validation team has checked the value from the source and confirms that it is consistent. 2006 IPCC Guidelines for National Greenhouse Gas Inventories volume 2, chapter 1 https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf
	SDG13	NCV_p Charcoal	Net calorific value of the charcoal used in the project	0.0295 TJ/ton	IPCC default value for NCV of charcoal has been applied. Validation team has checked the value from the source and confirms that it is consistent. 2006 IPCC Guidelines for National Greenhouse Gas Inventories volume 2, chapter 1 https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1

					_Introduction.pdf
	SDG13	$f_{NRB,i,y}$	Non-renewability status of woody biomass fuel in scenario i during year y	0.92 ~~7~~	Validation team has verified the calculation for fNRB /19/ and found correct. The validation team confirms that the calculation of fNRB is in line with the TOOL 30: Calculation of the fraction of non-renewable biomass, Version 03.0 /27/ which is still valid as verified from the UNFCCC website https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-30-v3.0.pdf/history_view. The Calculation is found correct. The steps of calculation for fNRB are in accordance with the tool 30. Hence the value is found correct. For conservativeness, CME has decided to use the lower value i.e. 92%. https://cdm.unfccc.int/DNA/fNRB/index.html This value was also used by other Kenya VPA under this PoA. Hence accepted to the validation team.
	SDG13	**$W_{b,y}$**	Quantity of wood fuel that is used to treat 1 litre of water in the baseline scenario b during year y	0.0004 T/litre	Default values as per TPDDTEC v3.1 will be used rather than conducting a full baseline water boiling test
	SDG13	**$W_{p,y}$**	Quantity of wood fuel that is used to treat 1 litre of water in the project scenario b during year y	0.0004 T/litre	Default values as per TPDDTEC v3.1 will be used rather than conducting a full baseline water boiling test
	SDG13	**$W_{b,y}$ Charcoal**	Quantity of charcoal that is used to treat 1 litre of water in the baseline scenario b during year y	0.0001 T/litre	Default values as per TPDDTEC v3.1 will be used rather than conducting a full baseline water boiling test

	SDG13	**$W_{p,y}$ Charcoal**	Quantity of charcoal that is used to treat 1 litre of water in the project scenario b during year y	0.0001 T/litre	Default values as per TPDDTEC v3.1 will be used rather than conducting a full baseline water boiling test
	SDG13	**Cj**	Portion of users of project safe water supply who were already in baseline using a non-boiling safe water supply	7%	The value has been taken from baseline survey. Validation team has checked the value from the source /08/ and confirms that it is consistent.
	SDG13	**Xboil Non-Suppressed Demand**	Percentage of premises that in the absence of the project activity would have used non-GHG emitting technologies like chlorine treatment techniques (if available) in the project boundary,.	17.4 %	Suppressed demand was determined through a set of questions in the Baseline Survey /08/ that establish the method that households use to purify their water, if any, and how they would choose to purify if they were not subject to monetary and access barriers. Validation team has checked the value from the source /08/ and confirms that it is consistent.

SDG 3	**$P_{b, boil}$**	Percentage of persons boiling water in the baseline	24.6 %	The value has been taken from Baseline survey. Validation team has checked the Baseline Survey /08/ and confirms that the value has been sourced from the survey.
SDG 5	**Tb,y**	Time spent collecting water per household per day prior to project	2.4 Hours	The value has been taken from Baseline survey. Validation team has checked the Baseline Survey /08/ and confirms that the value has been sourced from the survey.

Parameters that will be monitored (ex-post) are:

Relevant SDG Indicator	Parameter	Description	Unit	Monitoring
SDG 3	**Py**	Number of persons having access to safe water from the project activity	Number	Data on total volumes of water produced and sold during the monitoring period by project technologies will be divided by the value for Qp,y (default value). The source of the data would be Water point Project Database and default Value. The Monitoring frequency would be annual. Validation team has found the Monitoring acceptable.
SDG 5	**TP,y**	Project time spent collecting water per household per day.	Hours	Actual value to be provided in time for each verification. The data shall be sourced from Project Survey. Established through questions in the project survey on a representative sample of the end users. The Monitoring frequency would be annual. Validation team has

					found the Monitoring acceptable.
	SDG 6	**Qp,cleanboil,y**	Quantity of safe water boiled in the project scenario p during the year y using the zero or low emissions clean water supply technology	Litres per person per day	Actual value to be provided in time for each verification. The data shall be sourced from Project Survey. Measured through questions in the Project Survey. The Monitoring frequency would be annual. Validation team has found the Monitoring acceptable.
	SDG 6	Qp,rawboil, y	The raw unsafe water that is still boiled after installation of the water treatment technology	Litres per person per day	Actual value to be provided in time for each verification. The data shall be sourced from Project Survey. Measured through questions in the Project Survey. The Monitoring frequency would be annual. Validation team has found the Monitoring acceptable.
	SDG 6	**Quality of Treated Water**	Performance of the treatment technology	Parameters as per national standards	As confirmed during the remote interviews, quality of the treated water will be assessed quarterly by an accredited laboratory to ensure that it is fit for human consumption. The requirement for the first test within 6 months of 1st project plant installation has already met as checked from the test report /15/. It will be assessed in accordance with the host country requirements /17/. The monitoring shall be on quarterly basis. Validation team has found the Monitoring

					acceptable.
	SDG 6	Hygiene campaigns	Hygiene campaigns carried out among project technology users	Outcome of WASH meetings	Actual value to be provided in time for each verification. The data shall be sourced from Annual hygiene campaign results. The Monitoring frequency would be annual. Validation team has found the Monitoring acceptable.
	SDG 13	**LEp,y**	Leakage in project scenario p during year y.	tCO2e per year	Actual value to be provided in time for each verification. The data shall be sourced from baseline and monitoring survey. A monitoring survey shall be conducted every 2 years. Validation team has found the Monitoring acceptable.
	SDG 13	**Np,y [Wood]~~Np,y~~**	Number of persons consuming water supplied by project scenario p through year y	Project Technology Days	Actual value to be provided in time for each verification. It would be calculated as Sum of the total number of people using each project technology multiplied by the number of days crediting each project technology earns in the monitoring period Validation team has found the Monitoring acceptable.
	SDG 13	**Np,y [Charcoal]**	Number of persons consuming water supplied by project scenario p through year y	Project Technology Days	Actual value to be provided in time for each verification. It would be calculated as Sum of the total number of people using each project technology multiplied by the number of days crediting each project technology earns in the monitoring period

				Validation team has found the Monitoring acceptable.
SDG 13	**Up,y**	Usage rate in project scenario p through year y	Percentage	Actual value to be provided in time for each verification. The data shall be sourced from annual usage survey. The monitoring shall be on annual basis, in all cases on time for any request for issuance. Validation team has found the Monitoring acceptable.
SDG 13	**Qp,y**	Quantity of safe water supplied in the project scenario p during the year y using the zero or low emissions clean water supply technology	Litres per person per day	Default value will be used for this parameter as per the applied methodology which is accepted to the validation team.

It can be concluded that the monitoring plan has provisions for the real measurement of the parameter to reach to the achieved emission reductions.

After an intensive document review of the VPA-DD and remote audit assessment by interviews with representatives about the monitoring procedures and structure, the validation team confirms that verification of emission reductions would be feasible. Also quality assurance and quality control procedures identified in the PDD will lead to accuracy and lesser uncertainty.

Sampling Plan:

The monitoring plan talks about the relevant data to be monitored, collected, assessed and archived according to the methodology.

A representative sample of technologies in the VPA will be sampled according to 90/30 confidence/precision (90% confidence interval and 30% margin of error) in accordance with the TPDDTEC v3.1 methodology. Out of the technologies selected, households will be randomly sampled, complying with the minimum sample size for the survey/test.

The solar desalination plants included in the project rely on water resellers to reach communities. For example, roughly 10-15 jerrycans per day are sold to customers who visit the solar desalination plants directly. The resellers are independent entrepreneurs who are not GivePower Foundation employees. The project cannot and should not enforce the collection of user lists on water resellers. In addition, directly recording information from customers at their homes could cause harm to the reputation of GivePower Foundation. The project will therefore collect user lists via the WASH gatherings implemented once Covid-19 situation in the host country enables.
WASH gatherings will be implemented in communities that are actively served by the project, i.e., in the immediate vicinity of the project technologies and in communities where project technology-associated water sellers travel to. At each gathering, attendees will be asked if they are project users. If so, they will be asked if they agree to be included in the project user list and agree to be contacted for the duration of the crediting period for annual monitoring.

Individual participants will be selected from the project user database using the random selection process outlined in the monitoring plan. Sample sizes will be in line with the Gold Standard requirements. The surveys below will be monitored under the approach stated:

- Project Survey – completed annually
- Usage Surveys – Completed annually

The surveys will be conducted so as to ensure that they are within the end date of the respective monitoring periods for each VPA. Surveys will be conducted electronically by field teams.

Installation Record

A comprehensive installation record will record the following information:

- Date of installation
- GPS location of the technology
- Quantity of plants installed
- The total volume of water being sold by each plant
- Mode of use: commercial/domestic

The installation record will be backed up electronically, with original documentation being stored in a centralised location.

Project Database

The project database will be derived from the Installation Record, with project technologies differentiated by different project scenarios (if required).

All data collected in relation to the project will be held in the local office and/or on the Project Database for the entire life cycle of the project and a period of 2 years afterwards. The data may be archived during the project in order to maintain clarity and security.

Ongoing Monitoring Studies

The following ongoing monitoring studies are conducted for each project scenario following verification of the associated initial project studies.

a) *Project Survey* – Completed annually in time for 1st verification

The project survey is conducted on representative end users of the project technology. The survey asks questions on household characteristics, water use, ~~and~~ woodfuel use and WASH. Also, the survey asks questions to determine the following parameters for SDG impact; $TP_{,y}$ (SDG 5) and Qp,cleanboil,y (SDG 6). The project survey is conducted on a minimum sample size of 100 households.

b) Usage Survey – Completed annually, on time for any request of issuance

The usage survey provides a single usage parameter Up,y that is weighted based on drop off rates that are representative of the age distribution for project technologies in the installation record. The annual usage survey is conducted on a minimum sample size of 100 households.

c) Quality of the treated water - Completed quarterly, the first within 6 months of repair and in time for 1st verification

The quality of the treated water is assessed to ensure that it is fit for human consumption. It will be assessed in accordance with the Kenya Water Standards[12]. The parameters used to assess the

[12] KS EAS 12:2018; ICS 13.060.20 Second Edition 2018

	water quality will be in line with Kenya Water Standards for potable water and all parameters will be shown to be within levels considered acceptable for domestic human consumption. *d) Leakage Assessment* – Completed every other year The potential sources of leakage will be investigated (LEp,y). If the assessment quantifies an increase in fuel consumption by the non-project households attributable to the project activity, then calculations will be adjusted to account for this. *e) Non-renewable Biomass Assessment Update* - Reassessed at renewal of crediting period In accordance with the methodology, the NRB assessment will remain fixed for the entire crediting period, although the project proponent may choose to reexamine the assessment at any time. *f) Np,y Project Technology Days* Number of persons consuming water supplied by project scenario p through year y. Sum of the total number of people using each solar desalination plant in the project multiplied by the number of days crediting each project technology earns in this monitoring period. The total number of households using each solar desalination plant will be determined through information supplied by GivePower Foundation and in house field teams. Using this method, a proxy for the total number of people using each solar desalination plant will be known and hence a figure for person days can be calculated. All monitoring tasks will be selected at random. *g) Hygiene Campaign* A hygiene campaign is conducted annually in the format of Water, Sanitation and Hygiene (WASH) training at the community level. Once the Covid-19 pandemic and related laws against gatherings ease in the host country, small gatherings in communities around each solar desalination plant will be held. The trainings will act to promote best WASH practices in the communities. A WASH report will be completed annually to evaluate the success of the hygiene campaign. WASH gatherings will also be used to collect user lists for the project. Hygienic handling of clean water will be assessed through WASH-related questions in the Project Survey. Questions in the Project Survey will also include reporting on instances of water borne diseases/stomach illnesses. Outbreaks of water-borne diseases in areas surrounding each project technology shall be reported on for each monitoring period.
Findings	CAR-04 is raised and successfully closed. Refer Appendix 4 of this report for more details.
Conclusion	The assessment team confirms that the monitoring plan: a) Is in compliance with the requirements stated in the applied approved monitoring methodology /05/. b) Is feasible and can be implemented in the case of the project activity c) Can be implemented by the VPA Implementer.

D.4. Start date, crediting period type and duration

Means of validation	The start date of the VPA has been considered as 31/08/2020 /14/ i.e. the date of installation of the first plant under the VPA at Likoi site. Validation team has checked the 1st Carbon transfer form /14/ and found the mentioned start date correct. PP has chosen a renewable crediting period of 5 years which is renewable two times. The crediting period start date of the project activity has been considered as 01/09/2020 which is found acceptable.

Findings	No finding raised.
Conclusion	Validation team confirm that start date and crediting period start date have been chosen correctly according to the GS4GG requirements. Also the chosen crediting period is as per the GS4GG requirements.

D.5. Local stakeholder consultation

Means of validation	Under the PoA-DD /30/, it is mentioned that LSC will be done at VPA level however section E of the VPA-DD is not filled. CL-02 has been raised in this respect and successfully closed. PP does not find it risk-appropriate to be conducting large gatherings until there is a significant reduction in risk. Section E of the VPA-DD will be completed once the LSC is carried out. Clarification provided by the CME was accepted. As per para 2.1.1 of COVID 19: Interim Measures /28/, project developer may postpone physical stakeholder consultation meetings and the Stakeholder Feedback Round (SFR) for Gold Standard project/POA/VPAs until the COVID-19 situation eases. CME/CPA implementer need to carry out the physical stakeholder consultation meeting and SFR at a later stage as soon as the situation allows. FAR-01 has been raised in this regard.
Findings	CL-02 raised and successfully closed. Refer Appendix 4 of this report for more details.
Conclusion	As per para 2.1.1 of COVID 19: Interim Measures /28/, project developer may postpone physical stakeholder consultation meetings and the Stakeholder Feedback Round (SFR) for Gold Standard project/POA/VPAs until the COVID-19 situation eases. CME/CPA implementer need to carry out the physical stakeholder consultation meeting and SFR at a later stage as soon as the situation allows. FAR-01 has been raised in this regard.

D.6. Safeguarding Principles Assessment

Means of validation

CME has done the safeguarding principles assessment analysis and presented assessment in the VPA-DD /02/. The assessment has been performed in accordance to requirements prescribed in the GS4GG Principles & Requirements, Version 1.2 & Safeguarding Principles & Requirements, Version 1.2.

The detailed assessment of safeguarding principle is provided below:

Assessment Questions/ Requirements	Justification of Relevance (Yes/potentially /no)	How Project will achieve Requirements through design, management or risk mitigation.	Mitigation Measures added to the Monitoring Plan (if required)	VVB Justification
Principle 1. Human Rights				

	1. The Project Developer and the Project shall respect internationally proclaimed human rights and shall not be complicit in violence or human rights abuses of any kind as defined in the Universal Declaration of Human Rights 2. The Project shall not discriminate with regards to participation and inclusion	No	The project adheres to all human rights requirements including respecting internationally proclaimed human rights and Universal Declaration of Human Rights and does not discriminate in any way.	During all trainings, it is emphasised that project beneficiaries should support vulnerable or less mobile community members to access water.	The justification provided by CME/VPA Implementer was found adequate based on the sectoral expertise of validation team. Further CME/VPA Implementer representative/employee and stakeholders were interviewed during the remote audit to confirm the same.
	Principle 2. Gender Equality				
	1. The Project shall not directly or indirectly lead to/contribute to adverse impacts on gender equality and/or the situation of women 2. Projects shall apply the principles of nondiscrimination, equal treatment, and equal pay for equal work 3. The Project shall refer to the country's national gender strategy or equivalent national	No	The project increases women's access to resources such as water by making safe water available in the community. The burden on the whole community of travelling far to collect water and gather firewood (or purchase charcoal) for water purification is reduced. This also		The justification provided by CME/VPA Implementer was found adequate based on the sectoral expertise of validation team. Further CME/VPA Implementer representative/employee and stakeholders were interviewed during the remote audit to confirm the same.

		commitment to aid in assessing gender risks 4. (where required) Summary of opinions and recommendations of an Expert Stakeholder(s)		helps to mitigate the social isolation of spending a long time collecting these resources. Both women and men benefit from the project activities, no group is excluded from participating in the project activities and the water sources are open to the whole community. The project decreases the workload of women in collecting water and firewood (and/or charcoal), thereby allowing more time to engage in other activities. The project increases women's ability to use,		

			develop, and protect natural resources by making safe water more readily available and enabling women to participate in project decision-making. No further risks or hazards for women and girls have been identified.		
	Principle 3. Community Health, Safety and Working Conditions				
	1. The Project shall avoid community exposure to increased health risks and shall not adversely affect the health of the workers and the community	No	The project reduces the community exposure to water borne illness through the provision of a safe water source and reduces the risk of household air pollution by removing the need for households to boil water for purification.	Incidences of water borne illnesses are monitored through the annual Monitoring Project Survey. A WASH programme is carried out by the project, including WASH training at the beginning of the project, and subsequent annual WASH trainings.	The justification provided by CME/VPA Implementer was found adequate based on the sectoral expertise of validation team. Further CME/VPA Implementer representative/employee and stakeholders were interviewed during the remote audit to confirm the same.

Principle 4.1 Sites of Cultural and Historical Heritage				
Does the Project Area include sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture?	No	The project area does not include cultural and historic sites. The focus of the project is on installing and maintaining water point infrastructure only.		The justification provided by CME/VPA Implementer was found adequate based on the sectoral expertise of validation team. Further CME/VPA Implementer representative/employee and stakeholders were interviewed during the remote audit to confirm the same.
Principle 4.2 Forced Eviction and Displacement				
Does the Project require or cause the physical or economic relocation of peoples (temporary or permanent, full or partial)?	No	The project does not impact the physical or economic relocation of peoples. The focus of the project is on installing and maintaining water point infrastructure only.		The justification provided by CME/VPA Implementer was found adequate based on the sectoral expertise of validation team. Further CME/VPA Implementer representative/employee and stakeholders were interviewed during the remote audit to confirm the same.
Principle 4.3 Land Tenure and Other Rights				

	Does the Project require any change, or have any uncertainties related to land tenure arrangements and/or access rights, usage rights or land ownership?	Yes	Land tenure rights are agreed in order to set up and operate project technologies.	Plants will only be installed in areas where land tenure rights are agreed in advance.	The justification provided by CME/VPA Implementer was found adequate based on the sectoral expertise of validation team. Further CME/VPA Implementer representative/employee and stakeholders were interviewed during the remote audit to confirm the same.
	Principle 5. Corruption				
	1. The Project shall not involve, be complicit in or inadvertently contribute to or reinforce corruption or corrupt Projects	Yes	The project ensures that all forms of corruption are avoided. Project beneficiaries are able to contact the project developer and implementer through the continuous grievance mechanism to report any form of corruption.	Water pricing will be transparently communicated with local users. A continuous grievance mechanism will be set up for people to voice concerns relating to corruption, among other issues. This will be set up before validation in accordance with the Covid-19 Interim Measures.	The justification provided by CME/VPA Implementer was found adequate based on the sectoral expertise of validation team. Further CME/VPA Implementer representative/employee and stakeholders were interviewed during the remote audit to confirm the same.
	Principle 6.1 Labour Rights				
	1. The Project Developer shall ensure	No	The project adheres to all labour		The justification provided by CME/VPA

		that all employment is in compliance with national labour occupational health and safety laws and with the principles and standards embodied in the ILO fundamental conventions 2. Workers shall be able to establish and join labour organisations 3. Working agreements with all individual workers shall be documented and implemented and include: a) Working hours (must not exceed 48 hours per week on a regular basis), AND b) Duties and tasks, AND c) Remuneration (must include provision for payment of overtime), AND d) Modalities on health insurance,		laws and requirements		Implementer was found adequate based on the sectoral expertise of validation team. Further CME/VPA Implementer representative/employee and stakeholders were interviewed during the remote audit to confirm the same.

	AND e) Modalities on termination of the contract with provision for voluntary resignation by employee, AND f) Provision for annual leave of not less than 10 days per year, not including sick and casual leave. 4. No child labour is allowed (Exceptions for children working on their families' property requires an Expert Stakeholder opinion) 5. The Project Developer shall ensure the use of appropriate equipment, training of workers, documentation and reporting of accidents and incidents, and emergency preparedness and response				

	measures				
	Principle 6.2 Negative Economic Consequences				
	1. Does the project cause negative economic consequences during and after project implementation?	No	The project is not expected to have any negative economic impacts or cause any risks.		The justification provided by CME/VPA Implementer was found adequate based on the sectoral expertise of validation team. Further CME/VPA Implementer representative/employee and stakeholders were interviewed during the remote audit to confirm the same.
	Principle 7.1 Emissions				
	Will the Project increase greenhouse gas emissions over the Baseline Scenario?	No	The project reduces greenhouse gas emissions compared to the baseline scenario		The justification provided by CME/VPA Implementer was found adequate based on the sectoral expertise of validation team. Further CME/VPA Implementer representative/employee and stakeholders were interviewed during the remote audit to confirm the same.
	Principle 7.2 Energy Supply				
	Will the Project use energy from a local grid or power supply (i.e., not connected to a national or regional grid) or fuel resource (such as wood, biomass) that provides for other local users?	No	The project uses solar photovoltaic cells that are not connected to any local grid or power supply.		The justification provided by CME/VPA Implementer was found adequate based on the sectoral expertise of validation team. Further CME/VPA Implementer representative/employee and

					stakeholders were interviewed during the remote audit to confirm the same.
	Principle 8.1 Impact on Natural Water Patterns/Flows				
	Will the Project affect the natural or pre-existing pattern of watercourses, ground-water and/or the watershed(s) such as high seasonal flow variability, flooding potential, lack of aquatic connectivity or water scarcity?	No	There will be no significant change in the volume of water consumed by the households.		The justification provided by CME/VPA Implementer was found adequate based on the sectoral expertise of validation team. Further CME/VPA Implementer representative/employee and stakeholders were interviewed during the remote audit to confirm the same.
	Principle 8.2 Erosion and/or Water Body Instability				
	Could the Project directly or indirectly cause additional erosion and/or water body instability or disrupt the natural pattern of erosion?	No	Water provision is for household usage. Therefore it is extremely unlikely that there is additional erosion and/or water body instability or disruption of the natural pattern of erosion.		The justification provided by CME/VPA Implementer was found adequate based on the sectoral expertise of validation team. Further CME/VPA Implementer representative/employee and stakeholders were interviewed during the remote audit to confirm the same.
	Principle 9.1 Landscape Modification and Soil				
	Does the Project involve the use of land and soil for production of crops or other products?	No	No crops or other products are produced in the project.		The justification provided by CME/VPA Implementer was found adequate based on the sectoral expertise of

					validation team. Further CME/VPA Implementer representative/employee and stakeholders were interviewed during the remote audit to confirm the same.
	Principle 9.2 Vulnerability to Natural Disaster				
	Will the Project be susceptible to or lead to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions?	No	There is no impact by the project to natural disasters.		The justification provided by CME/VPA Implementer was found adequate based on the sectoral expertise of validation team. Further CME/VPA Implementer representative/employee and stakeholders were interviewed during the remote audit to confirm the same.
	Principle 9.3 Genetic Resources				
	Could the Project be negatively impacted by or involve genetically modified organisms or GMOs (e.g., contamination, collection and/or harvesting, commercial development, or take place in facilities or farms that include GMOs in their processes and production)?	No	No GMOs are used in the project and the solar desalination plants would not be affected by GMOs as they are all protected.		The justification provided by CME/VPA Implementer was found adequate based on the sectoral expertise of validation team. Further CME/VPA Implementer representative/employee and stakeholders were interviewed during the remote audit to confirm the same.
	Principle 9.4 Release of pollutants				

	Could the Project potentially result in the release of pollutants to the environment?	No	The project provides clean safe water and thus there is no risk of releasing pollutants to the environment.		The justification provided by CME/VPA Implementer was found adequate based on the sectoral expertise of validation team. Further CME/VPA Implementer representative/employee and stakeholders were interviewed during the remote audit to confirm the same.
	Principle 9.5 Hazardous and Non-hazardous Waste				
	Will the Project involve the manufacture, trade, release, and/ or use of hazardous and non-hazardous chemicals and/or materials?	No	The project does not deal with hazardous or non-hazardous chemicals and/or materials.		The justification provided by CME/VPA Implementer was found adequate based on the sectoral expertise of validation team. Further CME/VPA Implementer representative/employee and stakeholders were interviewed during the remote audit to confirm the same.
	Principle 9.6 Pesticides & Fertilisers				
	Will the Project involve the application of pesticides and/or fertilisers?	No	No pesticides and/or fertilisers are used in the project.		The justification provided by CME/VPA Implementer was found adequate based on the sectoral expertise of validation team. Further CME/VPA Implementer representative/employee and stakeholders were interviewed during the remote audit to confirm the same.
	Principle 9.7 Harvesting of Forests				

	Will the Project involve the harvesting of forests?	No	As the project reduces the consumption of firewood, there is a positive impact on forests.		The justification provided by CME/VPA Implementer was found adequate based on the sectoral expertise of validation team. Further CME/VPA Implementer representative/employee and stakeholders were interviewed during the remote audit to confirm the same.
	Principle 9.8 Food				
	Does the Project modify the quantity or nutritional quality of food available such as through crop regime alteration or export or economic incentives?	No	The project has no impact on the quantity or nutritional quality of food.		The justification provided by CME/VPA Implementer was found adequate based on the sectoral expertise of validation team. Further CME/VPA Implementer representative/employee and stakeholders were interviewed during the remote audit to confirm the same.
	Principle 9.9 Animal husbandry				
	Will the Project involve animal husbandry?	No	The project does not involve animal husbandry.		The justification provided by CME/VPA Implementer was found adequate based on the sectoral expertise of validation team. Further CME/VPA Implementer representative/employee and stakeholders were interviewed during the remote audit to confirm the same.
	Principle 9.10 High Conservation Value Areas and Critical Habitats				

	Does the Project physically affect or alter largely intact or High Conservation Value (HCV) ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified?	No	The project installs solar desalination plants and decreases the consumption of firewood, having a positive impact on conserving forest ecosystems.		The justification provided by CME/VPA Implementer was found adequate based on the sectoral expertise of validation team. Further CME/VPA Implementer representative/employee and stakeholders were interviewed during the remote audit to confirm the same.
	Principle 9.11 Endangered Species				
	Are there any endangered species identified as potentially being present within the Project boundary (including those that may route through the area)? AND/OR Does the Project potentially impact other areas where endangered species may be present through transboundary affects?	No	There are several endangered species in Kenya. The project is not envisaged to have any impact on their habitat as it only affects solar desalination plant infrastructure. The project does not impact other areas where endangered species are present.		The justification provided by CME/VPA Implementer was found adequate based on the sectoral expertise of validation team. Further CME/VPA Implementer representative/employee and stakeholders were interviewed during the remote audit to confirm the same.
Findings	No finding raised.				
Conclusion	Validation team has carried out remote auditing to cross check the safeguarding principle assessment. GS VVB has also reviewed the initial GS local stakeholder consultation report and GS4GG VPA DD and found that the PP has assessed all the required critical safeguarding principle of United Nations in project activity. It has been found that the VPA fulfil all the principles like Human Rights, Labor standards, environment protection, and anti-corruption.				

D.7. Stakeholder Inputs & Grievance Mechanism

Means of validation	Discussion of continuous input /grievance mechanism

	As per para 2.1.1 of COVID 19: Interim Measures /28/, project developer may postpone physical stakeholder consultation meetings and the Stakeholder Feedback Round (SFR) for Gold Standard project/POA/VPAs until the COVID-19 situation eases. CME/CPA implementer need to carry out the physical stakeholder consultation meeting and SFR at a later stage as soon as the situation allows. FAR-01 has been raised in this regard. As per para 2.2.2 of COVID 19: Interim Measures /28/, VPA implementer set up a continuous input and grievance mechanism before starting the validation of the project (i.e., official submission of project design documents to the validating VVB), in line with the requirements prescribed in Section 7 of the GS Stakeholder Consultation and Engagement Requirements. The stakeholders, especially communities around the project site, were informed about the grievance mechanism and available methods for sharing inputs and concerns as checked during the remote interview of the CME/VPA Implementer and stakeholders. Firstly, posters at the site and information on delivery trucks have communication channels for any stakeholder to contact the project, as well as verbal communication at the site /11/ by the plant manager. GivePower's first ever public event was on 17th July 2020 where they invited stakeholders (Government officials, Ywca, religious leaders, 'youth leaders', village elders and women representatives). This helped them understand the VPA. Channels of communication (i.e. for grievance purposes) were raised for awareness. GivePower also engage with customers quarterly, visiting them and engaging in dialogue. Throughout each of the processes and in day to day running of the technologies, the opportunity for feedback is brought up and methods for sharing feedback are disclosed. This can be from face to face, to email / phone. Valid and adequate mode of communication were adopted and verified during the remote interview by the validation team.
Findings	No finding raised.
Conclusion	The validation team confirms that the project activity meets the Gold Standard requirements for stakeholder feedback/ grievance mechanism

SECTION E. Internal quality control

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The validation report prepared by team leader is reviewed by an independent technical reviewer (having competence of relevant technical area himself/herself or through an independent technical area expert) to confirm the internal procedures established by 4KES are duly followed and the validation report/opinion is reached in an objective manner and complies with the applicable CDM requirements.

The technical review team is collectively required to possess the technical expertise of all the technical area/sectoral scope the project activity relates to. All team members of technical review team are independent of the validation team. The independent technical reviewer(s) may approve or reject the draft validation report. The findings may be identified even at this stage, which needs to be satisfactorily resolved, before submit final report to GS. The final approval decision is taken by the Head of the DOE/Director.

The final decision is authorized by the Director, 4KES, once the report is finalized by the Head of the DOE/DOE Manager.

SECTION F. Validation opinion

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4K Earth Science Private Limited has been contracted by 'CO2balance UK Ltd.' to perform a validation of the GS VPA "GivePower ~~Foundation~~ Kenya Solar Water Farms (GS10987)" inclusion under the Programme of Activity GS7591 in Kenya.

The validation was performed in accordance with the GS4GG in conjunction with UNFCCC criteria for the Clean Development Mechanism, latest version of Validation and Verification Standard for Project Activities and related Standards/Guidance and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The proposed voluntary project activities (VPA) will result in reductions of greenhouse gas (GHG) emissions that are real, measurable and give long-term benefits to the mitigation of climate change. In our opinion, the VPA meets all relevant UNFCCC, GS & CDM criteria and all relevant host country criteria.

The review of the VPA-DD and the subsequent follow-up interviews have provided validation team with sufficient evidence to validate the VPA. The VPA correctly applies Gold Standard methodology: "Technologies and Practices to Displace Decentralized Thermal Energy Consumption". Version 3.1 /05/. It is demonstrated that the project is not a likely baseline scenario. The emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

Based on the information seen and evaluated, 4KES confirms that the implementation of the VPA will result positive contribution to sustainable development as follows:
1. SDG 3: Good Health and Well-Being: 62,775 Additional people consuming safe water.
2. SDG 5: Gender Equality: 0.5 hours per household per day saved on firewood collection time.
3. SDG 6: Clean Water and Sanitation: 75,330 additional people gain access to safe water.
4. SDG 13: Climate Action: The total annual average emission reductions are estimated to be 60,000 tCO2e/year.

The above stated outcomes have been checked and it is deemed likely that the stated amount is achievable given the underlying assumptions do not change.

The monitoring plan provides for the monitoring of the SDG impact. The monitoring arrangements described in the monitoring plan are feasible within the project design, and it is validation team's opinion that the CME/VPA Implementer are able to implement the monitoring plan.

In summary, it is validation team's opinion that the VPA "GivePower ~~Foundation~~ Kenya Solar Water Farms (GS10987)" in Kenya meets all relevant GS & UNFCCC requirements. Hence, 4KES requests for the inclusion of the VPA under Programme of Activity GS7591 under GS4GG.

Appendix 1. Abbreviations

Abbreviations	Full texts
BE	Baseline Emission
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM EB	CDM Executive Board
CER	Certified Emission Reduction(s)
CL	Clarification request
CO2	Carbon dioxide
CO2e	Carbon dioxide equivalent
CP	Commitment Period
DOE	Designated Operational Entity
EB	Executive Board
EF	Emission factor
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
GS4GG	Gold standard for global goals
MP	Monitoring Plan
PP	Project Participant
SDG	Sustainable development goal
UNFCCC	United Nations Framework Convention on Climate Change

Appendix 2. Competence of team members and technical reviewers

Certificate of Competence							
Name	☒ Mr. ☐ Ms.	**Chetan Swaroop Sharma**					
Qualification Procedure		*Fulfils the requirement as per the appointment of personnel procedure of 4KES for Validation and Verification of CDM/VCS/GS/GHG Projects.*					
Appointed to work as:							
		CDM Validator/Verifier	**Team Leader**	**Team Member**	**Technical Expert**	**Technical Reviewer**	**Financial Expert**
Appointed		Yes	Yes	Yes	Yes	Yes	No
Appointed Date		27-04-2021					
Authorized to work as Technical Expert for:							
Authorized Technical Area		**Sectoral Scope**		**TA Code**	**Technical Area within the scope**		
		Energy industries (renewable - / non-renewable sources)		1.1	Thermal energy generation		
		Energy industries (renewable - / non-renewable sources)		1.2	Renewables		
		Energy distribution		2.1	Energy distribution		
		Energy demand		3.1	Energy demand		
		Waste handling and disposal		13.1	Solid waste and wastewater		
		Waste handling and disposal		13.2	Manure		

Authorized to work as Local Expert for:	
Country/Countries	India
Compliance check by: Anand S. R.	

Certificate of Competence							
Name	☒ Mr. ☐ Ms.	**Ma Paa Puratchikkanal**					
Qualification Procedure		*Fulfils the requirement as per the appointment of personnel procedure of 4KES for Validation and Verification of CDM/VCS/GS/GHG Projects.*					
Appointed to work as:							
		CDM Validator/Verifier	**Team Leader**	**Team Member**	**Technical Expert**	**Technical Reviewer**	**Financial Expert**
Appointed		Yes	Yes	Yes	Yes	Yes	No
Appointed Date		27-04-2021					
Authorized to work as Technical Expert for:							
Authorized Technical Area		**Sectoral Scope**		**TA Code**	**Technical Area within the scope**		
		Energy industries (renewable - / non-renewable sources)		1.1	Thermal energy generation		
		Energy industries (renewable - / non-renewable sources)		1.2	Renewables		
		Energy demand		3.1	Energy demand		
		Construction		6.1	Construction		
		Waste handling and disposal		13.1	Solid waste and wastewater		
		Waste handling and disposal		13.2	Manure		
		Agriculture		15.1	Agriculture		
Authorized to work as Local Expert for:							
Country/Countries		India					
Compliance check by: Anand S. R.							

Appendix 3. Documents reviewed or referenced

No.	Title	References to the document
1.	Initial VPA-DD	Version 2, dated 24/03/2021
2.	Final VPA-DD	Version ~~7~~8.0, dated 10/09/2021~~20/07/2021~~
3.	First GS ER Calculation Sheet	Corresponding to initial VPA-DD
4.	Final GS ER Calculation Sheet	Corresponding to final VPA-DD

5.	Methodology applied: Voluntary Gold Standard: "Technologies and Practices to displace decentralized thermal energy consumption" methodology". Version 03.1 https://globalgoals.goldstandard.org/407-ee-ics-technologies-and-practices-to-displace-decentrilized-thermal-energy-tpddtec-consumption/	-
6.	Technical specification and maintenance manual of the project technology	-
7.	Implementation status: Project plants operating procedure.	-
8.	Baseline Survey sample scans Baseline water project survey excel sheet Sample photos of the survey	
9.	Training of staff conducted baseline survey	Feb 2021
10.	GS preliminary review closure mail (for this VPA GS10987) from GS dated 05/03/2021	-
11.	Grievance mechanism A picture of the carbon poster has been provided which is posted publicly for each plant that is installed.	-
12.	Company registration certificate	-
13.	Organization structure with responsibilities	-
14.	Supportive for the start date of the project activity (Signed Carbon rights form)	31/08/2020
15.	Water quality test results WQT Results for chemical, inorganic and microbiological by Kenya Bureau Standard.	June 2020
16.	Templates: 1. Usage survey 2. Water project survey	-
17.	National standard on water quality testing: **Kenya Standard EAS 12:2018 (**ICS 13.060.20), Potable water Specification, Table 7. Parameters required for minimum monitoring (page 9)	-
18.	GS review closure mail from GS for PoA (PoA GS7591) dated 14/04/2021	-
19.	fNRB calculation as per tool "Calculation of the fraction of non-renewable biomass, Version 03.0"	-
20.	STAKEHOLDER CONSULTATION REPORT Version 2, dated 24/03/2021	-
21.	Declaration confirming that there is no diversion of ODA	08/02/2021
22.	CDM Project Standard for project activities CDM Validation and Verification Standard for project activities	Version 02 Version 02
23.	GS4GG Principles & Requirements, Version 1.2 dated October 2019 GS4GG-Stakeholder Consultation and engagement Requirements Guidelines, v1.2' GS4GG 'Community Services Activity-Requirements', v1.2 Safeguarding Principles & Requirements, v1.2 https://globalgoals.goldstandard.org/all-documents/	-
24.	"Tool for the demonstration and assessment of additionality (Version 7)" https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf	-
25.	Host country criteria (Rules & regulations) **Kenya:** 1. Kenya's Energy Act, 2019 – available at: http://kenyalaw.org:8181/exist/kenyalex/actview.xql?actid=No.%201%20of%202019 2. Kenya's Environmental Management and Co-ordination Act, 1999 – available at: http://kenyalaw.org:8181/exist/kenyalex/actview.xql?actid=No.%208%20of%201999	-

26.	2006 IPCC Guidelines for National Greenhouse Gas Inventories volume 2, chapter 1 https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf	-
27.	TOOL 30: Calculation of the fraction of non-renewable biomass, Version 03.0 https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-30-v3.0.pdf/history_view	-
28.	COVID 19 Interim measures https://globalgoals.goldstandard.org/ru-2020-covid-19-interim-measures-update/	PUBLICATION DATE v4-17/05/2021 (VALID UP TO 31/12/2021)
29.	VPA DESIGN DOCUMENT form https://globalgoals.goldstandard.org/t-prereview-vpa-design-document/	Version 1.1
30.	Registered PoA DD for the PoA 7591	-

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

Table 1. Remaining FAR from PoA-validation and/or VPA inclusions

No remaining FAR from PoA Validation.

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

Table 2. CL from this validation

CL ID	01	**Section no.**	D.2	**Date:** 08/04/2021
Description of CL				
Under section A.1.1 of the VPA-DD /01/, it is mentioned “At the point of technology installation/repair, a Carbon Transfer Form (CTF) will be signed and uploaded to our database stating that the rights to the carbon credits will lie with GivePower Foundation, in agreement with CO2balance.”. PP need to clarify ownership of the carbon rights.				
Project participant response				**Date:** 28/04/2021
PP has clarified ownership of the carbon rights lies with GivePower Foundation.				
Documentation provided by project participant				
-				
DOE assessment				**Date:** 04/07/2021
Clarification has been provided by the CME and found acceptable. Validation team has also checked the signed CTF (Carbon transfer form) for the first project site /14/ to confirm the same. Hence this CL is closed.				

CL ID	02	**Section no.**	D.5	**Date:** 08/04/2021
Description of CL				
Under the PoA-DD /30/, it is mentioned that LSC will be done at VPA level however section E of the VPA-DD /01/ is not filled.				
Project participant response				**Date:** 28/04/2021
Completion of the LSC is currently not possible due to Kenya’s Covid-19 situation. PP does not find it risk-appropriate to be conducting large gatherings until there is a significant reduction in risk. Section E of the VPA-DD will be completed once the LSC is carried out.				

Documentation provided by project participant	
-	
DOE assessment	**Date:** 04/07/2021
Clarification provided by the CME is accepted. As per para 2.1.1 of COVID 19: Interim Measures /28/, project developer may postpone physical stakeholder consultation meetings and the Stakeholder Feedback Round (SFR) for Gold Standard project/POA/VPAs until the COVID-19 situation eases. CME/CPA implementer need to carry out the physical stakeholder consultation meeting and SFR at a later stage as soon as the situation allows. FAR-01 has been raised in this regard. Hence this CL is closed.	

CL ID	03	**Section no.**	D.2	**Date:** 08/04/2021
Description of CL				
PP need to clarify the host country requirements applicable for the VPA.				
Project participant response				**Date:** 28/04/2021
PP has provided clarification on the applicable Host Country requirements within Section A.1.1 of the VPA-DD.				
Documentation provided by project participant				
Revised VPA-DD				
DOE assessment				**Date:** 04/07/2021
Corrections has been done in the revised VPA-DD /02/ and found OK. Validation team has checked the host country requirements /25/ and found the VPA-DD /02/ to be in compliance. Hence this CL is closed.				

Table 3. CAR from this validation

CAR ID	01	**Section no.**	D.1	**Date:** 08/04/2021
Description of CAR				
Requirement as per VPA-DD filling guidelines: 1. On page 1 of the VPA-DD /01/, "0" has been mentioned in place of Appendix 2 and Appendix 3. 2. Heading for section B.7.1 under VPA-DD is not mentioned. 3. PP need to fill "Time of First Submission Date", "GS ID and Title of applicable Design Certified VPA", "GS ID and Title of applicable Performance Certified VPA", "Other Requirements applied" 4. Under section A.1.1 of the VPA-DD /01/, the eligibility criteria are not as per the PoA-DD /30/. 5. Under section A.2 of the VPA-DD /01/, Physical address (host Party, region/state/province, city/town/community, street name and number) need to be mentioned. 6. Under section A.3 of the VPA-DD /01/, the average lifetime needs to be mentioned. 7. Under section B.5 of the VPA-DD /01/, CME need to demonstrate the VPA additionality. 8. Section B.5.1 of the VPA-DD /01/ is not filled as per the template requirements. 9. Under section B.7 of the VPA-DD /01/, the mentioned SDGs for the monitoring parameters are not consistent with the other sections of the VPA-DD.				
Project participant response				**Date:** 02/06/2021
1. PP has corrected. 2. PP has added the correct heading. 3. PP has filled the empty sections. 4. PP has corrected Section A.1.1 of the VPA-DD so that eligibility criteria match the PoA-DD. 5. PP has updated Section A.2. to provide the required information. Note that only one solar desalination plant has been installed to date. The information required will be provided for all plants following their installation and signing of CTF. 6. PP has included average lifetime data. GivePower MAXI plants are designed with an expected lifetime of 20 years. This lifespan was determined from the VPA implementer's assessment. 7. PP has revised Section B.5. The project is listed under the "Positive List" (Annex B) of the Community Services Activity Requirements. The project technology utilizes off-grid renewable electricity generation for water desalination in the form of photovoltaic energy generation and is therefore additional. 8. PP has updated Section B.5.1 in line with the VPA-DD template guide document. Prior Consideration requirements have been met. 9. PP has re-ordered table 1 of the VPA-DD so that it is consistent with Section B.7. and other sections of the VPA-DD. All relevant sections are now consistent.				
Documentation provided by project participant				
Revised VPA-DD				
DOE assessment				**Date:** 04/07/2021

1. Corrections have been done in the revised VPA-DD /02/ and found OK. Hence this part of CAR is closed.
2. Correction has been done in the revised VPA-DD /02/ and found OK. Hence this part of CAR is closed.
3. Corrections have been done in the revised VPA-DD /02/ and found OK. Hence this part of CAR is closed.
4. Eligibility criteria have been corrected in the revised VPA-DD /02/ and found as per the PoA-DD /30/. Hence this part of CAR is closed.
5. Correction has been done in the revised VPA-DD /02/ and found OK. Hence this part of CAR is closed.
6. Correction has been done in the revised VPA-DD /02/ and found OK. Hence this part of CAR is closed.
7. Corrections have been done in the revised VPA-DD /02/ and found OK. Hence this part of CAR is closed.
8. Correction has been done in the revised VPA-DD /02/ and found OK. Hence this part of CAR is closed.
9. Corrections have been done in the revised VPA-DD /02/ and found OK. Hence this part of CAR is closed.

CAR ID	02	**Section no.**	D.3.1	**Date:** 08/04/2021
Description of CAR				
As per the applied methodology page 41-42, for the Water quality testing and water quality standard. the following requirements: 1. Water quality testing: Water quality must be tested every quarter, with the first test within 6 months of the stated project start date. In addition, PPs shall ensure that water quality is tested at least once during seasons where there is a high chance of contamination, for example the rainy season……these national standards apply. PP need to clarify how complying with this meth requirement.				
Project participant response				**Date:** 28/04/2021
GivePower conduct full monthly tests to ensure the solar desalination plants are functioning as intended and that safe water produced is indeed safe. This testing schedule goes above and beyond the methodological requirements. Water Quality Test results do not need to be submitted until Verification.				
Documentation provided by project participant				
-				
DOE assessment				**Date:** 04/07/2021
Clarifcation provided by the CME is found in compliance with the PoA-DD /30/. Validation team has checked the first test for the water quality by Kenya Bureau Standard /15/ and found OK. Hence this CAR is closed.				

CAR ID	03	**Section no.**	D.3.1	**Date:** 08/04/2021
Description of CAR				
As per the page 35 of the applied methodology, “The water in its improved form should be available within 1 km walking / pedaling distance from the households. There is a two-year grace period (from date of registration) for any households falling outside of this distance, however once this period is over these households would not be included in the emission reduction calculation.”. PP need to clarify how he will comply with this requirement.				
Project participant response				**Date:** 28/04/2021
The Solar Desalination Plants produce safe water which is purchased by independent water sellers, as well as individual consumers. The water sellers travel within the local community serving people. Safe water is therefore available within 1km distance from the households as it is not fixed at the location of the solar desalination plant. The methodology requirement therefore does not apply.				
Documentation provided by project participant				
-				
DOE assessment				**Date:** 04/07/2021
Clarification provided by the PP is found acceptable. Same was also discussed during the remote audit. FAR-02 has been raise in this regard to check during the verification. Hence this CAR-03 is closed.				

CAR ID	04	**Section no.**	D.3.6	**Date:** 08/04/2021
Description of CAR				
CME need to submit the detailed Fnrb calculation excel sheet.				
Project participant response				**Date:** 28/04/2021
PP has submitted fNRB calculation excel sheet.				
Documentation provided by project participant				
Kenya_fNRB Calculation Sheet_17 March 2021				
DOE assessment				**Date:** 04/07/2021
Validation team has checked the fNRB calculation /19/ and found in compliance with the tool “Calculation of the fraction of non-renewable biomass, Version 03.0” /27/. Hence this CAR is closed.				

Table 4. FAR from this validation

FAR ID	01	**Section No.**	-	**Date:** 04/07/2021

Description of FAR	
As per para 2.1.1 of COVID 19: Interim Measures /28/, project developer may postpone physical stakeholder consultation meetings and the Stakeholder Feedback Round (SFR) for Gold Standard project/POA/VPAs until the COVID-19 situation eases. CME/CPA implementer need to carry out the physical stakeholder consultation meeting and SFR at a later stage as soon as the situation allows.	
Project participant response	**Date:** DD/MM/YYYY
Documentation provided by project participant	
DOE assessment	**Date:** DD/MM/YYYY

FAR ID	02	**Section No.**	-	**Date:** 04/07/2021
Description of FAR				
During the 1st verification of the VPA, Verification team need to check supportive document for the methodology requirement “The water in its improved form should be available within 1 km walking / pedaling distance from the households. There is a two-year grace period (from date of registration) for any households falling outside of this distance, however once this period is over these households would not be included in the emission reduction calculation.”.				
Project participant response				**Date:** DD/MM/YYYY
Documentation provided by project participant				
DOE assessment				**Date:** DD/MM/YYYY