



**Verified Carbon
Standard**

GROUPED PROJECTS FOR MEKONG RIVER DELTA WATER PURIFIER

Document Prepared by

Sustainability Investment Promotion and Development Joint Stock
Company (SIPCO)

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1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The intention of the grouped project activity (“hereafter “proposed project activity”) involves the installation of low greenhouse gas emitting safe drinking water purifier (SDWP) to provide clean drinking water to the households (hereafter “users”) in MeKong River Delta of Viet Nam. For this reason, this proposed project activity aims at reducing the wood fuel consumption of traditional stove users by distributing water purifiers to households and/or SMEs.

The grouped project activity reduces the use and demand for fossil fuels and non-renewable biomass that would have been used to boil water as a means to purify water in the absence of this project activity. This directly leads to reduced greenhouse gas emissions. Furthermore, it can be helpful to user`s health.

The project activity targets households in rural communities with no previous water purifiers access. The geographical boundary is in Viet Nam. Water purifiers are distributed free of cost to users. Sustainability Investment Promotion and Development Joint Stock Company (SIPCO) financed the implementation of the project in full.

The water purifiers (model Ecozen -25) covered under the project has been manufactured by Viet Charcoal Production Company Limited. The equipment lifetime is 10 years. The credits shall be claimed only till the end of the operational life of the project devices.

Currently, there are 22 project instances under the grouped project¹. The first water purifier was distributed on 10/11/2021. The first monitoring period is from 10/11/2021 to 31/03/2022, the second monitoring period is from 01/04/2022 to 31/10/2022. Till the end of 2nd monitoring period, a total of 600,000 water purifiers was reported installed under the project. Detail below:

Table 1: Distribution schedule

Month of installation	Number of Water Purifiers
11/2021	33,550
12/2021	60,634
01/2022	67,350
02/2022	52,236

¹ The detail of the 22 project instances are mentioned in the section 3.1

03/2022	27,730
04/2022	9,841
05/2022	72,476
06/2022	70,968
07/2022	68,605
08/2022	96,610
09/2022	40,000
Total	600,000

The total GHG emission reductions generated in the second monitoring from 01/04/2022 to 31/10/2022 is 532,195 tCO₂e GHG emission reductions.

Audit Type	Period	Program	VVB Name	Number of years
1 st Verification	10/11/2021 - 31/03/2022	<u>VCS</u>	Carbon Check (India) Private Ltd	0.39
2 nd Verification	01/04/2022 - 31/10/2022	<u>VCS</u>	EPIC Sustainability Services Pvt. Ltd	0.59
Total	2	1	2	0.98

1.2 Sectoral Scope and Project Type

The project activity under consideration is a grouped project activity. The project activity instances as part of the grouped project will have following sectoral scope, project type and methodologies:

Sectoral Scope applicable to project: 03 – Energy Demand

Project type III: Other projects activities not included in Type I or Type II that result in GHG emission reductions not exceeding 60,000 tCO₂e per year in any year of the crediting period”.

1.3 Project Proponent

Organization name	Sustainability Investment Promotion and Development Joint Stock Company. (SIPCO)
Contact person	Mr. Hoang Anh Dung
Title	Chairman
Address	5th Floor, Sunrise Building, No.25B3, 57 Lang Ha Street, Ba Dinh District, Hanoi, Viet Nam
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1.4 Other Entities Involved in the Project

Organization name	Vitol (China) Energy Co Ltd
Role in the Project	VCU Buyer
Contact person	Tracy Zhao
Title	Originator Carbon Trading, North & South Asia
Address	Unit 2308, 23/F, Raffles City Changning Office Tower 2, No. 1189 Changning Road, Changning District, Shanghai, China
Telephone	+86 13611774287
Email	zlt@vitol.com

1.5 Project Start Date

The project start date is 10 November 2021 which is the distribution date of the first water purifier.

1.6 Project Crediting Period

The crediting period: From 10/11/2021 to 09/11/2031.

The first monitoring period: From 10/11/2021 to 31/03/2022 (both days included).

The second monitoring period: From 01/04/2022 to 31/10/2022 (both days included)

Total number of years: 10 years 00 month

1.7 Project Location

The grouped project will be hosted by Viet Nam. The grouped project covers the 12 Provinces and one City of Mekong River Delta in Viet Nam. The details of coordinates are being submitted separately as KML file.



Figure: Mekong River Delta Map

1.8 Title and Reference of Methodology

The methodology applied for this project is AMS-III.AV: “Low greenhouse gas- emitting safe drinking water production systems”, version 08.

This grouped project also refers to the approved versions of the following tools and methodologies:

- AMS-I.E.: “Switch from non-renewable biomass for thermal applications by the user”, Version 12.0
- Standard for “Sampling and surveys for CDM project activities and programmes of activities”, version 09.0.
- CDM Guideline “Sampling and surveys of CDM project activities and programmes of activities” version 04.0.

- TOOL01 “Tool for the demonstration and assessment of additionality”, version 07.0.
- TOOL 21 - “Demonstration of additionality of small-scale project activities” (Version 13.1).
- TOOL30: Calculation of the fraction of non-renewable biomass, version 04.0.

1.9 Participation under other GHG Programs

The project is not registered under any other GHG Programs.

1.10 Other Forms of Credit and Supply Chain (Scope 3) Emissions

- The project has not generated any other form of GHG emissions from trading program or any other mechanism.
- The project has not applied for any other programme to create another form of GHG related environment credit.
- SIPCO have sent the notification of the project and the potential risk of Scope 3 emission double claiming to Viet Charcoal Production Company Limited via email.
- Viet Charcoal Production Company Limited is in charge of manufacturing water purifiers for SIPCO's greenhouse gas emission reduction projects. The company received an email from SIPCO requesting a public statement for scope 3 emission of the project. However, Viet Charcoal's website is only used to introduce their products to partners, and does not publish information on their partners' projects to avoid misunderstanding. Therefore, all public statements for supply chain of scope 3 emission will be announced directly by the project proponents (SIPCO) on their websites instead in this crediting period. Content of statement below: *“VCUs may be issued for the greenhouse gas emission reductions and removals associated with Ecozen-25 water purifiers, manufactured by Viet Charcoal Production Company Limited in Di Su commune, My Hao District, Hung Yen Province, Vietnam, distributed by Sustainability Investment Promotion and Development Joint Stock Company (SIPCO) under their project activity titled “Grouped projects for Mekong River Delta Water Purifier” (VCS ID: 2581). (detail in Appendix 1 of this report).*

1.11 Sustainable Development Contributions

The project activity helps in achieving following co-benefits, which will contribute in sustainable development in host country.

- **Environmental sustainability**

The project will help significantly reduce greenhouse gas emissions over its lifetime.

The project will help reduce the use of non-renewable biomass from forests, assisting the maintenance of existing forest stock, protecting natural forest eco-systems and wildlife habitats.

The protection of standing forests will ensure the maintenance of watersheds that regulate water table levels and prevent flash flooding.

- ***Social benefits***

Purchasing or collecting firewood or fossil fuels to boil the water constitutes a significant expense for the very poorest households and communities. The project will provide free equipment, people can drink water directly without cooking, thus saving firewood and boiling water time for families. That time could be spent to increase productivity and income, and more generally give a sense of hope and opportunity.

Micro-entrepreneurs: low greenhouse gas emitting water purification technologies offer scope for micro-entrepreneurs (Distributors/Installers), thereby creating jobs and supporting families.

There is a direct incentive to ensure that the projects (instance) have a successful long term operation as this will ensure continued SDWP.

Polluted indoor air due to open and uncontrolled combustion is a huge health concern. Low greenhouse gas emitting water disinfection technologies tackle this problem by reducing the combustion of wood/fossil fuels.

The project will alleviate the work burden of women and children as they have to spend less time to collect firewood for boiling water.

- ***Economic benefits***

The project activity will help develop a section of Viet Nam rural economy through the installation and maintenance of SDWPs, as well as work related to monitoring of the carbon registration activity.

The proposed project will deliver a long term, secure and simple contribution to sustainable development in Viet Nam that would not exist without carbon finance.

The project aligns with and will contribute to sustainable development objectives outlined in Table 1 below.

Table 1: Sustainable Development Contributions

Row number	SDG Target	SDG Indicator	Net Impact on SDG Indicator	Current Project Contributions	Contributions Over Project Lifetime
<i>Sequential row number</i>	<i>SDG Target number</i>	<i>Number and text of SDG indicator or, if no official SDG indicator is applicable, user-defined indicator</i>	<i>Indicate the project's contribution to the SDG Indicator (implemented activities to increase or decrease)</i>	<i>Brief description of the quantifiable impact of the project's activities related to the SDG indicator, during the monitoring period.</i>	<i>Brief description of the cumulative quantifiable impact of the project's activities related to the SDG indicator, over the project lifetime.</i>
1)	1.1	1.1.1 Proportion of population below the international poverty line	Implemented activities to decrease	No further changes this monitoring period	Implement activities to promote income increases through money and time saved using Safe Drinking Water Purifier Technology. The project will increase monthly income of families who purchase and collect wood fuel to boil water. Contribute to the eradication of extreme poverty (measured at less than \$1.25 per day. Save an average of 1-2 days/week in time for families.
	1.4	1.4.1. Proportion of population living in households with access to basic services	Implemented activities to increase	Provide 600,000 families with greater access to basic services in the form of clean water technology	No further changes compare with this monitoring period

2)	3.3	By 2030, end the epidemics of AIDs, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water borne diseases and other communicable diseases.	Implemented activities to decrease	Provide safe water for 2,699,160 people, help to prevent illness related to digestive system such as diarrhea, cholera, dysentery, typhoid fever from drinking contaminated water is still a leading cause of death for children under five	No further changes compare with this monitoring period
	3.9	3.9.1: Mortality rate attributed to household and ambient air pollution	Implemented activities to decrease	Reduce HAP by 100% due to boil water by using 600,000 water purifiers in these households.	No further changes compare with this monitoring period
3)	5.4	5.4.1: Proportion of time spent on unpaid domestic and care work, by sex, age and location	Implemented activities to increase	No further changes this monitoring period	Under the project scenario, women will see a massive reduction in both the amount of fuelwood required for boil water, and the amount of time taken to boil water. They would be able to save 2 to 3 hours daily. They would also have time to engage in other employment opportunities.
4)	13.0	Tonnes of greenhouse gas emissions avoided or removed	Implemented activities to increase	Reduce the total fuelwood usage in the project area to generate approximately 532,195 tCO ₂ e of emission reductions	No further changes compare with this monitoring period

5)	6.1	Proportion of the rural population who have easy access to a safe water supply	Implemented activities to increase	With the distribution of 600,000 Safe Drinking Water Purifiers (SDWPs), the project will lower exposure to unsafe water for 600,000 households	No further changes compare with this monitoring period
6)	8.3	8.3.1. Proportion of informal employment in total employment by sector and sex.	Implemented activities to increase	The project will generate about 40 employments opportunities (including 25 employing full time and 15 employment retailer) for assembling of SPWPs, distribution of SPWPs and maintenance of SPWPs	
7)	15.1	15.1.1. Forest area as a proportion of total land area. 15.2.1 Progress towards sustainable forest management.	Implemented activities to increase	By distributing 600,000 safe water purifiers, using drinking water directly instead of boiling water for drinking, the project help reduction in demand for firewood.	No further changes compare with this monitoring period

2 SAFEGUARDS

2.1 No Net Harm

Greenhouse gas reductions: Project implementation will result in GHG reductions because it will reduce the consumption of non-renewable biomass in countries where the biomass harvested for fuel use is typically non-renewable.

Air quality: Users (especially women and children) will be exposed to fewer air pollutants through reduced emission of not only CO₂, but also carbon monoxide and particulate matter.

Air pollution from cooking with solid fuel is a key risk factor for childhood pneumonia as well as many other respiratory, cardiovascular and ocular diseases.

Biodiversity: will be improved as the programme reduces pressure on remaining forest reserves in MeKong River Delta of Viet Nam. No negative impacts can be identified.

Water quality: Project implementation will help these households access to safe water. The filtered water meets the national standard of Viet Nam as QCVN 6-1:2010/BYT for drinking water.

2.2 Local Stakeholder Consultation

Continuing on the formal stakeholder consultations executed prior to the project start date and current monitoring period (see VCS Project Description ver 05, section 2.2), SIPCO has continued to expand its informal consultation activity to introduce the project at each province to reach households and stakeholders affected parties by project who did not access to formal meetings. Various relevant socio-economic and cultural barriers in the project area make them do not assess safe drinking water source at community. Consequently, SIPCO has sought and continues to seek consultation from these groups through direct community engagement during the current monitoring period. Consultation activities have been undertaken on an informal basis, using participatory methods with previous, current, and prospective end user.

Feedback was requested from local stakeholders for the “Grouped projects for MeKong River Delta water purifier” dated 18/04/2021. Necessary precautions were taken place in light of the COVID-19 pandemic, with feedback having been conducted electronically when possible, minimizing large groups and socially distancing during in person meetings.

Currently, the project received all supportive comments from local stakeholders without any negative one.

Consultation will continue throughout the project lifetime, and will continue to influence project design. Any feedback from the household on the product design will be received and

we will improve the product to suit the needs of the household. Adaptations will be made if deemed necessary. In this monitoring, no improvement is implemented.

The formal and informal leaders in the village were the major contacts that provided a broad overview of issues and challenges. Women leaders also gave detailed information about the issues regarding the use of water purifiers. Similar meetings will be conducted with the villagers in various regions to discuss, and register their feedback regarding the water purifiers. Their opinions will be taken into consideration wherever necessary. The water purifier itself has been designed in continuous consultations with women, and other direct users of water purifier, and this trend of taking user feedback will be continued. In case of any grievances, if required a meeting will be held as early as possible, depending upon the situation to discuss any solutions. For all such meetings advance invitation to users will be given along with a public notice in the local village office.

Mechanism for ongoing communication

SIPCO engages with a number of stakeholders (Women's Union) through annual reports, records and SIPCO's social media communication. Women's Unions are large organizations at all administrative levels (Commune, District, Province, State).

Annual Reports includes information about the operation throughout the year. Women's Unions at commune and ward levels regularly come to exchange information with Beneficiaries and report to the District's level and the District's level will report it province's level. The province's Women Union has responsibly for summarizing and reporting to SIPCO. If these Beneficiaries have any comment in using water purifiers, the Women Union will report immediately to SIPCO.

Records will send to project donors about 2 times a year. The records include updates on current projects, community stories to share, fund raising appeals and much more.

Social media communications are crucial to stay engaged with a variety of stakeholders. Below mentioned mechanism will be used by stakeholders to communicate their grievances with the Project owner:

- Communication via phone call (+84) 243 519 0955 or email info@carbonvietnam.com
- Through you tube
<https://www.youtube.com/watch?v=8jisMjPa6jo>
- By informing Women Union at levels.

SIPCO will continue to implement these informal ongoing consultation procedures, alongside formalized consultation via annual our survey.

Feedback was requested from local stakeholders for the “Grouped projects for Mekong River Delta Water Purifier” in period from 01 April 2022 to 31 October 2022 sent to SIPCO. There were no negative or adverse comments received from stakeholders in this monitoring period

2.3 AFOLU-Specific Safeguards

This section is not applicable because the project is a non – AFOLU project.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

Table 02: Timeline of project activities (PAs)

Project activity	Steps	Timeline
PA 1	Start date of second monitoring period	01/04/2022
	Project start date (the first equipment distributed)	10/11/2021
	Implementation status as on 30/09/2022 (number of SDWPs distributed)	28,000 WPs were distributed by 27/11/2021.
PA 2	Start date of second monitoring period	01/04/2022
	Project start date (the first equipment distributed)	30/11/2021
	Implementation status as on 30/09/2022 (number of SDWPs distributed)	5,550 WPs were distributed by 30/11/2021 22,450 WPs were distributed by 16/12/2021
PA 3	Start date of second monitoring period	01/04/2022
	Project start date (the first equipment distributed)	08/01/2022
	Implementation status as on 30/09/2022 (number of SDWPs distributed)	6,950 WPs were distributed by 24/01/2022 14,770 WPs were distributed by 17/02/2022 6,280 WPs were distributed by 29/07/2022
	Start date of second monitoring period	01/04/2022

PA 4	Project start date (the first equipment distributed)	19/04/2022
	Implementation status as on 30/09/2022 (number of SDWPs distributed)	• 5,948 WPs were distributed by 27/04/2022 • 17,139 WPs were distributed by 27/05/2022 • 4,913 WPs were distributed by 25/06/2022
PA 5	Start date of second monitoring period	01/04/2022
	Project start date (the first equipment distributed)	12/05/2022
	Implementation status as on 30/09/2022 (number of SDWPs distributed)	• 28,000 WPs were distributed by 17/05/2022
PA 6	Start date of second monitoring period	01/04/2022
	Project start date (the first equipment distributed)	11/12/2021
	Implementation status as on 30/09/2022 (number of SDWPs distributed)	• 22,484 WPs were distributed by 28/12/2021 • 5,516 WPs were distributed by 08/01/2022
PA 7	Start date of second monitoring period	01/04/2022
	Project start date (the first equipment distributed)	10/01/2022
	Implementation status as on 30/09/2022 (number of SDWPs distributed)	• 4,384 WPs were distributed by 10/01/2022. • 23,616 WPs were distributed by 20/02/2022
PA 8	Start date of second monitoring period	01/04/2022
	Project start date (the first equipment distributed)	01/03/2022
	Implementation status as on 30/09/2022 (number of SDWPs distributed)	• 3,610 WPs were distributed by 12/03/2022 • 14,537 WPs were distributed by 20/05/2022 • 4,853 WPs were distributed by 25/06/2022 • 5,000 WPs were distributed by 09/08/2022
PA9	Start date of second monitoring period	01/04/2022

	Project start date (the first equipment distributed)	25/03/2022
	Implementation status as on 30/09/2022 (number of SDWPs distributed)	• 1,500 WPs were distributed by 25/03/2022 • 3,893 WPs were distributed by 20/04/2022 • 4,697 WPs were distributed by 11/05/2022 • 17,910 WPs were distributed by 10/06/2022
PA10	Start date of second monitoring period	01/04/2022
	Project start date (the first equipment distributed)	06/09/2022
	Implementation status as on 30/09/2022 (number of SDWPs distributed)	• 28,000 WPs were distributed by 20/09/2022
PA11	Start date of second monitoring period	01/04/2022
	Project start date (the first equipment distributed)	15/06/2022
	Implementation status as on 30/09/2022 (number of SDWPs distributed)	• 18,918 WPs were distributed by 30/06/2022 • 9,082 WPs were distributed by 15/07/2022
PA12	Start date of second monitoring period	01/04/2022
	Project start date (the first equipment distributed)	15/07/2022
	Implementation status as on 30/09/2022 (number of SDWPs distributed)	• 28,000 WPs were distributed by 27/07/2022
PA13	Start date of second monitoring period	01/04/2022
	Project start date (the first equipment distributed)	27/07/2022
	Implementation status as on 30/09/2022 (number of SDWPs distributed)	• 20,050 WPs were distributed by 31/07/2022 • 7,950 WPs were distributed by 03/08/2022
PA14	Start date of second monitoring period	01/04/2022

	Project start date (the first equipment distributed)	03/08/2022
	Implementation status as on 30/09/2022 (number of SDWPs distributed)	28,000 WPs were distributed by 12/08/2022
PA15	Start date of second monitoring period	01/04/2022
	Project start date (the first equipment distributed)	12/08/2022
	Implementation status as on 30/09/2022 (number of SDWPs distributed)	28,000 WPs were distributed by 19/08/2022.
PA16	Start date of second monitoring period	01/04/2022
	Project start date (the first equipment distributed)	22/12/2021
	Implementation status as on 30/09/2022 (number of SDWPs distributed)	15,700 WPs were distributed by 29/12/2021 12,300 WPs were distributed by 05/01/2022
PA17	Start date of second monitoring period	01/04/2022
	Project start date (the first equipment distributed)	06/01/2022
	Implementation status as on 30/09/2022 (number of SDWPs distributed)	28,000 WPs were distributed by 21/01/2022
PA18	Start date of second monitoring period	01/04/2022
	Project start date (the first equipment distributed)	22/01/2022
	Implementation status as on 30/09/2022 (number of SDWPs distributed)	10,200 WPs were distributed by 25/01/2022 13,850 WPs were distributed by 25/02/2022 3,950 WPs were distributed by 01/03/2022
PA19	Start date of second monitoring period	01/04/2022
	Project start date (the first equipment distributed)	05/03/2022

	Implementation status as on 30/09/2022 (number of SDWPs distributed)	• 18,670 WPs were distributed by 15/03/2022. • 9,330 WPs were distributed by 11/06/2022
PA20	Start date of second monitoring period	01/04/2022
	Project start date (the first equipment distributed)	20/05/2022
	Implementation status as on 30/09/2022 (number of SDWPs distributed)	• 8,103 WPs were distributed by 21/05/2022 • 19,897 WPs were distributed by 09/06/2022
PA21	Start date of second monitoring period	01/04/2022
	Project start date (the first equipment distributed)	29/07/2022
	Implementation status as on 30/09/2022 (number of SDWPs distributed)	• 340 WPs were distributed by 29/07/2022 • 27,660 WPs were distributed by 10/08/2022
PA22	Start date of second monitoring period	01/04/2022
	Project start date (the first equipment distributed)	12/09/2022
	Implementation status as on 30/09/2022 (number of SDWPs distributed)	• 12,000 WPs were distributed by 15/09/2022

3.2 Deviations

3.2.1 Methodology Deviations

Not applicable. No methodology deviations were applied.

3.2.2 Project Description Deviations

There had a change in the sample size calculation for parameter m “fraction of functional appliances that are meeting the SDWP Standard” in section 5.3 of registered PD, that were presented in 1st monitoring report and approval on 10/01/2023 as following:

Parameter m

As per Guideline “Sampling and surveys for CDM project activities and programmes of activities”, for the use of a single sampling plan covering a group of PAs, provided the homogeneity of population can be demonstrated, or differences are taken into account in the sample size calculation, a 95/10 confidence/precision is applied for annual sampling. For fraction of functional appliances that are providing the SDWP (m), this is proportion value so the equation that will be used is:

$$n \geq \frac{1.96^2 N \times p (1-p)}{(N -1) \times 0.1^2 \times p^2 + 1.96^2 \times p (1- p)}$$

Where:

- n : Sample size
- N=N_y : Population who consumes the purified water serviced by the project activity in year y
- p : Our expected proportion of the installed water purification systems will be in use and operating at the specified efficiency)
- 1.96 : Represents the 95 % confidence required
- 0.1 : Represents the 10 % relative precision

Substituting the values in above equation gives the value of N = [Number of users to be sampled] (rounded up).

At validation, the Implementer will distribute 28,000 SDWPs and will provide clean drinking water to 28,000 households in An Giang Provinces. So, the population size, N is taken as 28,000 persons.

It is expected at least 90% of households will be use drinking water from SDWPs, hence the expected proportion p for N_{y,i,j} is taken as 0.9.

Based on the above assumptions, the resulting sampling size for a 95/10 confidence/precision is calculated as:

$$n \geq \frac{1.96^2 \times 28,000 \times 0.9 (1-0.9)}{(28,000 -1) \times 0.1^2 \times 0.9^2 + 1.96^2 \times 0.9 (1- 0.9)}$$

Which comes out to be

$$n \geq 42.62$$

$$n= 43$$

Therefore, in this case a sample size of 43 is to be sampled from each primary sampling unit.

In case the resulting sample size to achieve the desired confidence/precision levels is smaller than 30, a minimum sample size of 30 shall be chosen when the parameter of interest is a proportion. The sample size is 43.

3.3 Grouped Projects

New project activity instances included under this grouped project ensure that it meets the eligibility criteria below.

No.	Eligibility criterion - Category	How the new project activity instances to comply	Supporting evidence for inclusion
1	Meet the applicability conditions set out in the methodology applied to the project.	The new project activity instance will meet all applicability conditions of AMS – III.A.V: “Low greenhouse gas emitting safe drinking water production systems”, version 08.0.	The new project activities including PA4, PA5, PA9, PA10, PA11, PA12, PA13, PA14, PA15, PA20, PA21, PA22 meet all applicability conditions listed in section 3.2 of the final PD.
2	Use the technologies or measures specified in the project description	The water purification technologies include a low greenhouse gas emitting technology	At the Monitoring time and for new project activities including PA4, PA5, PA9, PA10, PA11, PA12, PA13, PA14, PA15, PA20, PA21, PA22 no other project device type will be used, other than low greenhouse gas emitting technology.
3	Apply the technologies or measures in the same manner as specified in the project description	Technologies that use fossil fuels are not eligible. Technologies shall meet minimum criteria for specific instance type, as outline below: Technologies shall be deployed Natural Osmosis systems with the components illustrated in section 1.11 of this PD Technologies for community water consumption, with project emissions Flow rate: 2 – 3l/hr Other key features of the design of the systems. Type of service, as well as performance specification	The new project activities including PA4, PA5, PA9, PA10, PA11, PA12, PA13, PA14, PA15, PA20, PA21, PA22 only apply the low greenhouse gas emitting technology in section 1.1

		based on, inter alia testing/certification: Each unit must achieve water quality for microbes defined in QCVN 6-1:2010/BYT for drinking water Lifespan is 10 years	
4	Are subject to the baseline scenario determined in the project description for the specified project activity and geographic area.	The grouped project will only perform distribution water purifiers within the MeKong River Delta of Viet Nam.	The new project activities have been implemented in the households of An Giang, Can Tho, Dong Thap, Tra Vinh and Ben Tre Provinces within MeKong River Delta, detail below • An Giang: PA10, PA21, PA22 • Ben Tre: PA5, PA9 • Can Tho: PA4 • Dong Thap: PA11,12,13,14,15 • Tra Vinh: PA20
5	Have characteristics with respect to additionality that are consistent with the initial instances for the specified project activity and geographic area.	The additionality of the project activity is demonstrated by simple cost analysis that is in line with paragraph 10 (a) of Tool21 “Demonstration of additionality of small-scale project activities” (version 13.1) and paragraph 33 and 34 of TOOL01 “Tool for the demonstration and assessment of additionality”. Version 07.0. To demonstrate additionality by Simple cost analysis, each project instance shall confirm and demonstrate that the SDWPs are distributed for free to the Users.	The new project activities eligible when the CME have provided the confirmation that the SDWPs are distributed for free to the Users. Simple cost analysis has been provided for each project activity.
	Conditions that avoid double counting of emission reductions.	The new project activity instances will: Apply a unique system (i.e. conformity letter) for SDWP in each project instance, assigning a unique ID to each SDWP and allowing to clearly identify each	Each Users have been provided a safe drinking water purifier (SDWP) with a unique identification number put on each SDWP, the label is as following below:

6		SDWP and to which project instance it belongs. Each SDWP installed will include project instance assignment and will have corresponding end user details (i.e. name, address). This data will be recorded as part of the beneficiary agreement and Project database. The CME has an agreement in place with residents who use drinking water from SDWPs in the project instance in which the owner transfers the rights to the emissions reductions exclusively to the CME as part of the Carbon Rights Waiver within the Beneficiary agreement.	PA4: CPA004-MRD-00001 to CPA004-MRD-28000 PA5: CPA005-MRD-00001 to CPA005-MRD-28000 PA9: CPA009-MRD-00001 to CPA009-MRD-28000 PA10: CPA010-MRD-00001 to CPA010-MRD-28000 PA11: CPA011-MRD-00001 to CPA011-MRD-28000 PA12: CPA012-MRD-00001 to CPA012-MRD-28000. PA13: CPA013-MRD-00001 to CPA013-MRD-28000 PA14: CPA014-MRD-00001 to CPA014-MRD-28000 PA15: CPA015-MRD-00001 to CPA015-MRD-28000 PA20: CPA020-MRD-00001 to CPA020-MRD-28000 PA21: CPA021-MRD-00001 to CPA021-MRD-28000 PA22: CPA022-MRD-00001 to CPA022-MRD-12000
7	Capacity Limit	Where a capacity limit applies to a project activity included in the project, no project activity instance shall exceed such limit. Further, no single cluster of project activity instances shall exceed the capacity limit, determined as follows: 1) Each project activity instance that exceeds one percent of the capacity limit shall be identified.	The new project activities satisfy the criteria. The emission reduction of each Project activity is smaller than 60,000 tCO₂/year, equivalent 35,400 tCO₂/in this monitoring period. Detail below: PA4: 25,739 PA5: 28,492 PA9: 27,114 PA10: 6,670 PA11: 19,543 PA12: 15,912 PA13: 15,116

		2) Such instances shall be divided into clusters, whereby each cluster is comprised any system of such instances such that each instance is within one kilometer of at least one other instance in the cluster. Instances that are not within one kilometer of any other instance shall not be assigned to clusters. 3) None of the clusters shall exceed the capacity limit and no further project activity instances shall be added to the project that would cause any of the clusters to exceed the capacity limit.	PA14: 13,288 PA15: 12,139 PA19: 30,369 PA20: 24,012 PA21: 13,204 PA22: 3,199 The emission reduction of each safe drinking water purifier (project activity instance) is about 1-2 tCO₂/year that lower than 1% of the capacity limit (600 tCO₂/year). Therefore, no project activity instance is identified and divided into cluster.
8	Target group	Each project instance will target end users which includes households who use traditional cookstove to boil water.	The new project activities satisfy the criteria. Each households in project activities must sign a beneficiary agreement to commit that they are using traditional cookstove to boil water.

Additionality

The proposed project activity instances are a voluntary coordinated action by SIPCO. There is no mandatory law or requirement in Viet Nam for the installation of water purification technologies/measures (SDWPs). Hence this voluntary coordinated action would not be possible in the absence of the grouped project, due to the cost associated with it.

The new project activity instances from PA 02 to PA 22 in grouped project will distribute SDWPs free of cost to users i.e. households, hence there is no financial return from the programmes other than revenue from sale of GHG credits. As each SDWP has costs associated with the purchase and distribution of the SDWPs, these new project activity instances will not occur in absence of the GHG credits revenue. The action is not financially viable without the support of revenues from the sale of GHG credit. As the end-user doesn't benefit from a direct financial return and procuring SDWPs requires capital, which is a barrier to rural consumers due to difficulties in accessing capital, a wide dissemination of SDWPs in the Host Country is unlikely. The new project activity instances will alleviate these barriers by promoting free distribution of ICSs to end-users. Hence in line with para 10 a) of tool 21, version 13.1, the new project activity instances face investment barrier and its additional

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	QPW _{pp}	
Data unit	Litres	
Description	Average volume of drinking water per person per day	
Source of data	Calculated based on survey Records	
Value applied	PA	QPW _{pp}
	PA 1	5.1
	PA 2	5.1
	PA 3	5.1
	PA 4	4.82
	PA 5	5.02
	PA 6	5.02
	PA 7	5.02
	PA 8	5.02
	PA 9	5.02
	PA 10	5.1
	PA 11	5.008
	PA 12	5.008
	PA 13	5.008
	PA 14	5.008
	PA 15	5.008
	PA 16	4.98
	PA 17	4.98
	PA 18	4.98
	PA 19	4.98
	PA 20	4.98
	PA 21	5.1
	PA 22	5.1
Justification of choice of data or description of	Survey	

measurement methods and procedures applied	
Purpose of Data	Calculation of baseline emissions
Comments	-

Data / Parameter	LS
Data unit	Years
Description	Life span of water treatment technologies
Source of data	Manufacturer's specifications
Value applied	10
Justification of choice of data or description of measurement methods and procedures applied	Manufacture specifications
Purpose of Data	-
Comments	Life span of water treatment technologies shall be 10 years.

Data / Parameter	nwb
Data unit	%
Description	Efficiency of water boiling system being replaced
Source of data	Efficiency of the water boiling systems being replaced. Use one of the options below: (a) The efficiency of the water boiling system shall be established using representative sampling methods or based on referenced literature values (fraction), use weighted average values if more than one type of systems is encountered; (b) 0.10 default value may be optionally used if the replaced system or the system that would have been used is a three stone fire or a conventional system for woody biomass lacking improved combustion air supply mechanism and flue gas ventilation system that is without a grate as well as a chimney; for the rest of the systems using woody biomass 0.2 default value may be optionally used; (c) 0.5 default value may be used if the replaced system or the system that would have been used is a fossil fuel combusting system.
Value applied	10%

Justification of choice of data or description of measurement methods and procedures applied	This shall be determined based on option (b) detailed under the row above "Source of data" because only households whousing three stone fine are taken into account for supplying safe drinking water.
Purpose of Data	Calculation of baseline emissions
Comments	The project proponents will distribute the SDWPs for the households who have used the traditional cookstove to boil water

Data / Parameter	$BL_{fuel,i}$	
Data unit	Fraction	
Description	Proportions of baseline fuel type I (NBR and or fossil fuels)	
Source of data	Survey	
Value applied	PA	$BL_{fuel,i}$
	PA 1	0.9198
	PA 2	0.9198
	PA 3	0.9198
	PA 4	0.9152
	PA 5	0.9667
	PA 6	0.9667
	PA 7	0.9667
	PA 8	0.9667
	PA 9	0.9667
	PA 10	0.9198
	PA 11	0.9542
	PA 12	0.9542
	PA 13	0.9542
	PA 14	0.9542
	PA 15	0.9542
	PA 16	0.9438
	PA 17	0.9438
	PA 18	0.9438
	PA 19	0.9438
	PA 20	0.9438
	PA 21	0.9198
	PA 22	0.9198

Justification of choice of data or description of measurement methods and procedures applied	The baseline survey data show that the major source of fuel is fire wood
Purpose of Data	Calculation of baseline emissions
Comments	The baseline scenario established through the survey shows that proportion of the people used traditional stoves using
	woody biomass to boil water in the absence of the project activity.

Data / Parameter	<i>fi</i>
Data unit	Fraction
Description	Factor to determine amount of non-renewable fuels
Source of data	Survey Methodology AMS – III.AV (Version 08.0),
Value applied	0.9403
Justification of choice of data or description of measurement methods and procedures applied	For the wood fuel, the value established from sub national survey report conducted for region in which specific instance(s) implemented and will be fixed ex-ante. The value will be established using as per the methodological Tool30 “Calculation of fraction of non-renewable biomass” version 03.0. As per “TOOL30: Calculation of the fraction of non-renewable biomass”. The analysis was independently completed by C4 Ecosolutions (Pty) Ltd. For fossil fuel, the default value is 1.0
Purpose of Data	Calculation of baseline emissions
Comments	

Data / Parameter	EF _{projected fossil fuel}
Data unit	tCO ₂ /TJ
Description	Emission factor for the substitution of non – renewable woody biomass.
Source of data	AMS – III.AV, Version 08.0 IPCC, chapter 2, table 2.2
Value applied	85.7
Justification of choice of data or description of measurement methods and procedures applied	As per AMS-III.AV, Version 08.0 and IPCC, Chapter 2, table 2.2

Purpose of Data	Calculation of baseline emissions
Comments	This parameter shall remain fixed for the monitoring periods

Data / Parameter	Xboil	
Data unit	%	
Description	Fraction of the population serviced by the project activity for which the common practice of water purification is or would havebeen water boiling.	
Source of data	Survey	
Value applied	PA	Xboil
	PA 1	0.9818
	PA 2	0.9818
	PA 3	0.9818
	PA 4	1
	PA 5	0.9958
	PA 6	0.9958
	PA 7	0.9958
	PA 8	0.9958
	PA 9	0.9958
	PA 10	0.9818
	PA 11	1
	PA 12	1
	PA 13	1
	PA 14	1
	PA 15	1
	PA 16	1
	PA 17	1
	PA 18	1
	PA 19	1
	PA 20	1
	PA 21	0.9818
	PA 22	0.9818
Justification of choice of data or description of	Survey	

measurement methods and procedures applied	
Purpose of Data	The data is used for baseline emission calculations.
Comments	

Data / Parameter	P_h		
Data unit	Fraction		
Description	Averaged number of person per household		
Source of data	Survey		
Value applied		PA	P_h
		PA 1	4.5
		PA 2	4.5
		PA 3	4.5
		PA 4	4.52
		PA 5	4.58
		PA 6	4.58
		PA 7	4.58
		PA 8	4.58
		PA 9	4.58
		PA 10	4.5
		PA 11	4.48
		PA 12	4.48
		PA 13	4.48
		PA 14	4.48
		PA 15	4.48
		PA 16	4.43
		PA 17	4.43
		PA 18	4.43
		PA 19	4.43
		PA 20	4.43
		PA 21	4.5
		PA 22	4.5
Justification of choice of data or description of	Survey		

measurement methods and procedures applied	
Purpose of Data	The data is used for baseline emission calculations.
Comments	-

4.2 Data and Parameters Monitored

Data / Parameter	Py			
Data unit	Number			
Description	Population who consumes the purified water serviced by the project activity in year y			
Source of data	Survey records			
Description of measurement methods and procedures to be applied	Water purifier distribution database and Monitoring survey records			
Frequency of monitoring/recording	Annual			
Value monitored	PA	N _y	P _h	P _y = N _y x P _h
	1	28,000	4.5	126,000
	2	28,000	4.5	126,000
	3	28,000	4.5	126,000
	4	28,000	4.52	126,560
	5	28,000	4.58	128,240
	6	28,000	4.58	128,240
	7	28,000	4.58	128,240
	8	28,000	4.58	128,240
	9	28,000	4.58	128,240
	10	28,000	4.5	126,000
	11	28,000	4.48	125,440
	12	28,000	4.48	125,440
	13	28,000	4.48	125,440

	14	28,000	4.48	125,440
	15	28,000	4.48	125,440
	16	28,000	4.43	124,040
	17	28,000	4.43	124,040
	18	28,000	4.43	124,040
	19	28,000	4.43	124,040
	20	28,000	4.43	124,040
	21	28,000	4.5	126,000
	22	12,000	4.5	54,000
	Total	600,000²		2,699,160
Monitoring equipment	-			
QA/QC procedures to be applied	A 95 /10 confidence / margin of error is applied for the sampling parameter as per para 22 of Standard: Sampling and surveys for CDM project activities and programmes of activities, Version 09.0			
Purpose of the data	Calculation the baseline emission			
Calculation method	Calculated by the quality of water purifiers are distributed x The average of number of person in a household. CME maintains the database of all water purifiers installed. The number of operating water purifiers have been determined on a sampling basis. The population in the database was categorized on the basis random sampling was applied to identify the sample. The identified samples were monitored for operational status of water purifiers. The results from monitoring were used to calculate N_y as follows: $N_y = (n_{\text{operational}}/n_{\text{total}}) * N_{\text{distributed}}.$ Where: N = Number of SDWPs n = Number of samples.			
Comments				

² Considered total number of SDWPs distributed as on 20th September 2022. Details are provided in ER sheet.

Data / Parameter	QPW _y	
Data unit	litres	
Description	Quantity of purified water in year y	
Source of data	Calculated	
Description of measurement methods and procedures to be applied	This parameter can be calculated based on equation: $QPW_y = P_y \times QPW_{pp} \times \text{Number of operating days}$	
Frequency of monitoring/recording	Annual	
Value monitored	PA	QPW _y
	1	137,516,400
	2	137,516,400
	3	120,365,406
	4	102,767,495
	5	108,152,486
	6	137,765,667
	7	137,765,667
	8	93,612,415
	9	102,920,817
	10	26,989,200
	11	74,840,802
	12	60,935,741
	13	57,887,833
	14	50,884,485
	15	46,487,060
	16	132,191,909
	17	132,191,909
	18	132,191,909

	19	117,577,776
	20	92,965,791
	21	53,429,436
	22	12,943,800
	Total	2,069,900,403
Monitoring equipment	-	
QA/QC procedures to be applied	NA	
Purpose of the data	Calculation of baseline emissions	
Calculation method		
Comments		

Data / Parameter	m
Data unit	fraction
Description	Fraction of functional appliances that are providing the SDWP
Source of data	Microbiological testing certificate of Can Tho Technical Center of Standards Metrology and Quality and Viet Tin Analysis Testing Company Limited.
Description of measurement methods and procedures to be applied	For determination of function appliances that providing the SDW, an across PA sampling based on the WP model and its vintage with the applied 95/10 confidence precision level. Total of 43 samples were microbiological testing at Laboratory by third Parties and all samples meet requirement following: (a) Using filtration ceramic with Natural Osmosis systems to create safe drinking water. (b) All SDWPs are operating in good condition (condition (through survey questionnaires) as well as physical signs that are observable (e.g. wetness of the unit, water in storage receptacle, functionality of parts) (c) All samples meet microbiologically safe drinking water requirement as QCVN 6-1:2010/BYT for drinking water.
Frequency of monitoring/recording	Annually
Value monitored	1
Monitoring equipment	

QA/QC procedures to be applied	Quality of safe drinking water is confirmed by third parties' institution annually. There are the third parties that conducted the test during monitoring period. The Center's laboratories have been recognized by VILAS in accordance with international standards ISO/IEC 17025.
Purpose of the data	Calculation of baseline emissions
Calculation method	
Comments	Emission reductions cannot be claimed if over 10% of appliances in the project activity fail to meet the final water quality requirements mentioned above.

Data / Parameter	Check for SDWP public distribution network
Data unit	
Description	Annual check if there is a public distribution network supplying SDWP is installed
Source of data	Confirmation from local authorities and survey questionnaires
Description of measurement methods and procedures to be applied	1. Before distribution at new area, the provincial Women Union will send an official letter confirming that the WP distribution locations are places that do not have access to clean water. This confirmation has been provided to DOE for checking in supporting documents. 2. The random survey by questionnaires for end user were used to check if there is a public distribution network supplying SDW is installed. If the household accessed to safe drinking water, the emission reduction will be discarded (according to proportion). Monitoring shall include annual check if there is public distribution network supplying SDW
Frequency of monitoring/recording	Annually
Value monitored	1. (No public distribution network supplying SDWP is installed at project area)
Monitoring equipment	-
QA/QC procedures to be applied	-

Purpose of the data	To check the applicability of methodology AMS.III.AV (Version 08)
Calculation method	-
Comments	If SDWP is made available through a public distribution network during the crediting period, the emission reductions pertaining to the households/buildings supplied by the public system cannot be claimed from that point onwards. This condition should be checked annually during the crediting period.

Data / Parameter	Quality of safe drinking water
Data unit	Proportion
Description	The quality of the safe drinking water
Source of data	Sampling surveys
Description of measurement methods and procedures to be applied	Quality of safe drinking water is confirmed by Third party annually. 09 samples for grouped project were sampled and tested. All treated water samples are confirmed to meet requirement of Viet Nam Drinking water Standard.
Frequency of monitoring/recording	Once every two years
Value monitored	1
Monitoring equipment	-
QA/QC procedures to be applied	
Purpose of the data	Calculation of baseline emission
Calculation method	
Comments	Emission reductions cannot be claimed if project activity fails to meet SDWP standards

4.3 Monitoring Plan

The monitoring procedures and sampling plan for the grouped project is in-line with AMS- III.AV low greenhouse gas emitting safe drinking water production systems (Version 08.0) and the procedures outlined of the Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities (Version 09.0), which refers to the Guidelines for Sampling and Surveys for CDM Project Activities and Programmes of Activities (Version 04).

Due to the large number of SDWP distributed as part of the PAs included in the grouped project, it is not economically feasible to monitor each individual SDWP unit distributed. Therefore, representative sampling was undertaken as part of a grouped project - wide Sampling Plan (by grouping and sampling across PAs) that is designed in line with the requirements of the “Sampling and surveys for CDM project activities and programmes of activities”, version 04

(a) Objective and reliability requirements

The objective is to obtain an unbiased and reliable estimate of the proportion or mean value of the following key variables over the course of the crediting period, and with 95/10 confidence/precision for annual and 95/10 for biennial sampling across. In case a single PA is sampled 90/10 confidence/precision for annual and 95/10 confidence/precision shall be required for biennial sampling. CME has considered 95/10 confidence/precision sampling to consider 22 PAs under one sampling frame. Following are the parameters considered for monitoring via sampling survey.

Parameter	Description of parameter
Py	Population who consumes the purified water serviced by the project activity in year y
m	Fraction of functional appliances that are meeting the SDWP Standard
Quality of safe drinking water	The quality of the safe drinking water

(b) Target population

The target population (Users – including households) will be the total population served under the specific instance project activity or group of instance.

(c) Sampling method

As per registered monitoring plan, the sampling method for monitored parameters Py, m and water quality is “Stratified Random Sampling” and samples will be randomly selected from the primary sampling units as illustrated above.

To ensure a random selection of SDWP, random pickup shall be applied. Each SDWP in the target population is uniquely identifiable by its unique ID number. Applying the random sampling, the SDWP numbers are randomly chosen from the defined population up to the required sample size as calculated by the CME. The details of the selected samples are provided in the sample survey sheet along with the database.

To determine the parameters, sampling survey has been involved the following approaches (outcome in brackets):

Py: Visual inspection of the premises to see if SDWP is operational and in use. Interview with end user if required to verify that SDWP is still in use (Yes/No).

m, water quality: These is monitoring parameter and testing has also been performed by third party.

Using the formulas as given in the section “Sample Size” below, the CME has randomly sampled the required number of SDWPs from the primary sampling units.

(d) Sample size

In line with the registered sampling plan, for the estimation of the proportion or mean value of the parameters investigated, the minimum sample size for each sample frame has been calculated based on 95/10 confidence/precision which will suffice for biennial sampling.

The procedure to determine the sample of households will ensure that they adequately represent the broader project population, minimizing sampling error. Using, a 95 per cent confidence level, and a 10 per cent margin of error, random samples will be selected from each Primary Sampling Unit.

The parameters: The number of SDWPs still in operation during the monitoring period as determined by the monitoring survey (Py), It can be sampled in a survey with a random sample of households using the above described confidence/precision levels depending on annual or biennial monitoring frequency.

Parameter Py

To estimate the sample size for parameters Py, the equation that will be used is:

$$n \geq \frac{1.96^2 N \times p(1-p)}{(N-1) \times 0.1^2 \times p^2 + 1.96^2 p(1-p)}$$

Where:

- n : Sample size
- N=Ny : Population who consumes the purified water serviced by the project activity in year y
- p : Our expected proportion of the installed water purification systems will be in use and operating at the specified efficiency)
- 1.96 : Represents the 95 % confidence required
- 0.1 : Represents the 10 % relative precision

Based on the above assumptions, the resulting sampling size for a 95/10 confidence/precision is calculated for total population size, the result below:

Monitoring parameter(s)	Water purifier Operating Fraction for determination of P _y			
Sampling frame(s) Sampling approach	Given water purifier model and age population			
	Stratified random sampling across water purifier model and age			
Sampling Population (Batch)	Water Purifier population	Expected operational proportion)	Calculated Sample Size (n)	Actual Monitored sample size
Ecozen-25	600,000	0.90	43	54
Sample size determination				
Estimated Operation (p)			0.90	
V _{operation} = p(1-p)/p ²			0.111	
Sample Size required (SOF)			43	

Additionally, as per registered sampling plan, it's recommended that the CME may choose to use the same samples to monitor more than one parameter, where parameters have same units. Sampling more than one parameter within the same sample (household) helps reduce travel needs for monitoring and the associated costs. At the same time this approach ensures the random selection of samples for every parameter. Also, oversampling is strongly encouraged, not only to compensate for any attrition, outliers or nonresponse associated with the sample, but also to prevent a situation at the analysis stage where the required reliability is not achieved and additional sampling efforts would be required. We expect the response rate from the sampled households to be 80%. Thus, we would decide to sample $43/0.8 = 54$ samples. A total of 54 samples were selected.

Parameter m

For Fraction of functional appliances that are meeting the SDWP Standard (m), this is proportion value so the equation that will be used is:

$$n \geq \frac{1.96^2 N \times p(1-p)}{(N-1) \times 0.1^2 \times p^2 + 1.96^2 p(1-p)}$$

Where:

- n : Sample size
- N=N_y : Population who consumes the purified water serviced by the project activity in year y
- p : Our expected proportion of the installed water purification systems will be in use and operating at the specified efficiency)
- 1.96 : Represents the 95 % confidence required

0.1 : Represents the 10 % relative precision

Based on the above assumptions, the resulting sampling size for a 95/10 confidence/precision is calculated for total population size, the result below:

Monitoring parameter(s)	Fraction of functional appliances m		
Sampling frame(s)	Given water purifier model and age population		
Sampling approach	Stratified random sampling across stove model and age		
Sampling Population (Batch)	Water Purifier population	Expected operational proportion)	Calculated Sample Size (n)
Ecozen	240,000	0.90	43
Sample size determination			
Estimated Operation (p)			0.90
V _{operation} = p(1-p)/p ₂			0.111
Sample Size required (SOF)			43

A total sample size for parameter m is 43 samples.

Quality of safe drinking water

Water quality monitoring will be undertaken annually or biennially on a sampling basis. This will comply with relevant national standards. To ensure compliance of the water quality with: (i) at a minimum the “interim” performance target as per “Evaluating household water treatment options: Health based targets and microbiological performance specifications” (WHO, 2011); or (ii) an applicable national standard or guideline, the water quality shall be monitored on sample basis for contamination with Escherichia coli (E. coli). A test for E. coli colony forming units (CFU) in 100 ml of water or an equivalent quantitative test for E. coli CFU shall be used. The fraction of water quality measurements providing water of insufficient quality shall be excluded from the calculation of emission reductions.

For water quality, the equation that will be used is:

$$1.96^2 NV$$

$$n \geq \frac{(N-1) \times 0.1^2 + 1.96^2 \times V}{1}$$

$$V = \left(\frac{SD}{mean} \right)^2$$

Where:

n : Sample size

N=Ny : Number of SDWPs in the target population.

1.96 : Represents the 95% confidence required

0.1 : Represents the 10% relative precision

Mean : Our expected mean

SD : Our expected standard deviation

$$n \geq \frac{1.96^2 \times 240,000 \times (0.09/0.9)^2}{(240,000 - 1) \times 0.1^2 + 1.96^2 \times (0.09/0.9)}$$

Using above values, the sample size comes out to be 3.84 or 4

As the calculated sample size (for parameter of interest is a numeric mean value) is less than 30 samples, the Student's t-distribution will be used to calculate the sample size (in accordance with paragraph 13 of standard: sampling and survey for CDM project activities and programmes of activities (version 09.0))

As the sample size calculated above is less than 30, the Student's t-distribution has been used to calculate the sample size (in accordance with paragraph 13 of standard: sampling and survey for CDM project activities and programmes of activities (version 09.0):

Monitoring Parameter	Water Quality					
Sampling approach	Stratified random sampling based on stove year of distribution					
Year	Year of operation	Population Size	Expected Mean	Expected Standard Deviation	Calculated Sample Size	Actual Monitored sample size
1	1	600,000	0.9000	0.090	7	9
Sample size determination						
Mean					0.9000	
Standard Deviation (SD)					0.0900	
$V_{\text{mean}} = (SD/\text{mean})^2$					0.01000	
Minimum Sample Size required					4	
tDistribution sample size adjustment				Iteration 1	11	
				Iteration 2	5	
				Iteration 3	8	

	Iteration 4	6
	Iteration 5	7
	Iteration 6	6

The adjusted sample size obtained after applying Student's t-distribution is 7. We expect the response rate from the sampled households to be 80%. Thus, we would decide to sample $7/0.8 = 9$ samples.

(e) Analysis of data collected and confidence/precision achieved

Analysis of the data monitored through sampling revealed the following results

Parameters P_y

RESULT			
Sampling Population	Sampling frame size	Monitored Sample Size	Monitored Operation
Ecozen- 25	600,000	54	1.00
Reliability Check			
Samples Monitored			54
Utilization Measured			1.00
Standard Error of Utilization			0.00%
Relative precision (Margin of error)			0.00%
Result			Ok, reliability level met
Lower Bound confidence value			Not applicable

Parameters m

RESULT			
Sampling Population	Sampling frame size	Monitored Sample Size	Monitored water quality fraction
Ecozen- 25	600,000	43	1.00
Reliability Check			
Samples Monitored			43
Utilization Measured			1.00
Standard Error of Utilization			0.00%
Relative precision (Margin of error)			0.00%
Result			Ok, reliability level met
Lower Bound confidence value			Not applicable

Parameter water quality

RESULT			
Sampling Population	Sampling frame size	Monitored Sample Size	Monitored standard deviation
Ecozen- 25	600,000	9	1.00
Reliability Check			
Samples Monitored			9
Water quality			1.00
Standard Error of water quality			0.00%
Relative precision (Margin of error)			0.00%
Result			Ok, reliability level met
Lower Bound confidence value			Not applicable

For detailed calculations refer ER calculator sheet.

(f) Organizational Structure

The Sustainability Investment Promotion and Development Joint Stock Company (SIPCO) has a monitoring manager responsible for field staff training, QA/QC of the data, analysis and reporting into the monitoring report. SIPCO has a database manager who manages the process of collecting the information of installed SDWPs from the SDWP distributors and entering the data into the project database. For the monitoring survey, a monitoring team has been organized by the SIPO consisting of survey coordinator, survey supervisor and trained monitoring staff, who conducted the surveys

All data monitored and required for verification and issuance will be kept for two years after the end of the crediting period or the last issuance of VERs for the project activity, whichever is later.

Data Collection Team Organization Structure.

Monitoring Team			
The SIPCO (End user data checking and archiving)			
Field Staff (end user data collection)		Field Staff (end user data collection)	
End user	End user	End user	End user

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

The baseline emissions shall be calculated as follows:

$$BE_y = QPW_y \times m \times X_{boil} \times SEC \times \sum_i (BL_{fuel,i} \times f_i \times EF_{projected\ fossilfuel,i} \times 10^{-9})$$

Where:

BE_y : Baseline emissions during the year y in (tCO₂e)

QPW_y : Total quantity of purified water by the project in year y (litres).

m : Fraction of functional appliances that are meeting the SDWP standards (%). Only project appliances that (i) use technologies that meet the technology standards as per paragraph 4(b) and (ii) are operating or replaced by an equivalent in service appliance and (iii) deliver microbiologically safe drinking water, are counted for emission reductions.

X_{boil} : Fraction of the population served by the project activity for which the common practice of water purification is or would have been water boiling. This shall be determined ex-ante through surveys.

SEC : Specific energy consumption required to boil one litre of water(kJ/L) to be calculated according to paragraphs below

$BL_{fuel,i}$	: Proportions of baseline fuel type i (NRB and/or fossil fuels) used in the absence of the project activity (fraction)
f_i	: Fraction of non-renewable fuel type i used in the absence of the project activity in year y. For biomass it is the fraction of woody biomass that can be established as non-renewable biomass (f_{NRB}). If the baseline fossil fuel, the value to be applied is 1
$EF_{projected\ fossil\ fuel,i}$	: Emission factor of the fossil fuel substituted (tCO_2/TJ).

5.2 Project Emissions

Refer to section 4.4 for the calculation of emission reductions resulting from the proposed project. There is no project emissions considered.

5.3 Leakage

Where relevant leakage relating to the non-renewable woody biomass shall be assessed as per the relevant procedures of AMS-I. E version 12.0 explained below:

Leakage emissions related to the non – renewable woody biomass saved by the project activity shall be assessed based on ex post surveys of users and the areas from which this woody biomass is sourced. The following potential source of leakage shall be considered: the use/diversion of non-renewable woody biomass saved under the project activity by non-project end-users that previously used renewable energy source. If this leakage assessment quantifies an increase in the use of non-renewable woody biomass used by the non-project end-users that is attributable to the project activity, then B_y is adjusted to account for the quantified leakage increase in the use of non-renewable woody biomass used by the non-project end-users that is attributable to the project activity, then B_y is adjusted to account for the quantified leakage. B_y will be multiplied by a net to gross adjustment factor of 0.95 to account for leakages, in which case surveys are not required. This is applied for the grouped project. Hence, there is no project leakage considered.

5.4 Net GHG Emission Reductions and Removals

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y - LE_y$$

Where:

ER_y : Emission reductions in year y ($t\ CO_2e/yr$)

BE_y : Baseline emissions in year y (t CO₂e/yr)

PE_y : Project emissions in year y (t CO₂e/yr)

LE_y : Leakage emissions in year y (t CO₂e/yr)

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
From 01/04/2022 to 31/10/2022 (214 days)	532,195	0	0	532,195
Total	532,195	0	0	532,195

For detail emission reduction of each project activity below

Project activity	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
PA 1	33,985	0	0	33,985
PA 2	33,985	0	0	33,985
PA 3	29,747	0	0	29,747
PA 4	25,739	0	0	25,739
PA 5	28,492	0	0	28,492
PA 6	36,293	0	0	36,293
PA 7	36,293	0	0	36,293
PA 8	24,662	0	0	24,662
PA 9	27,114	0	0	27,114

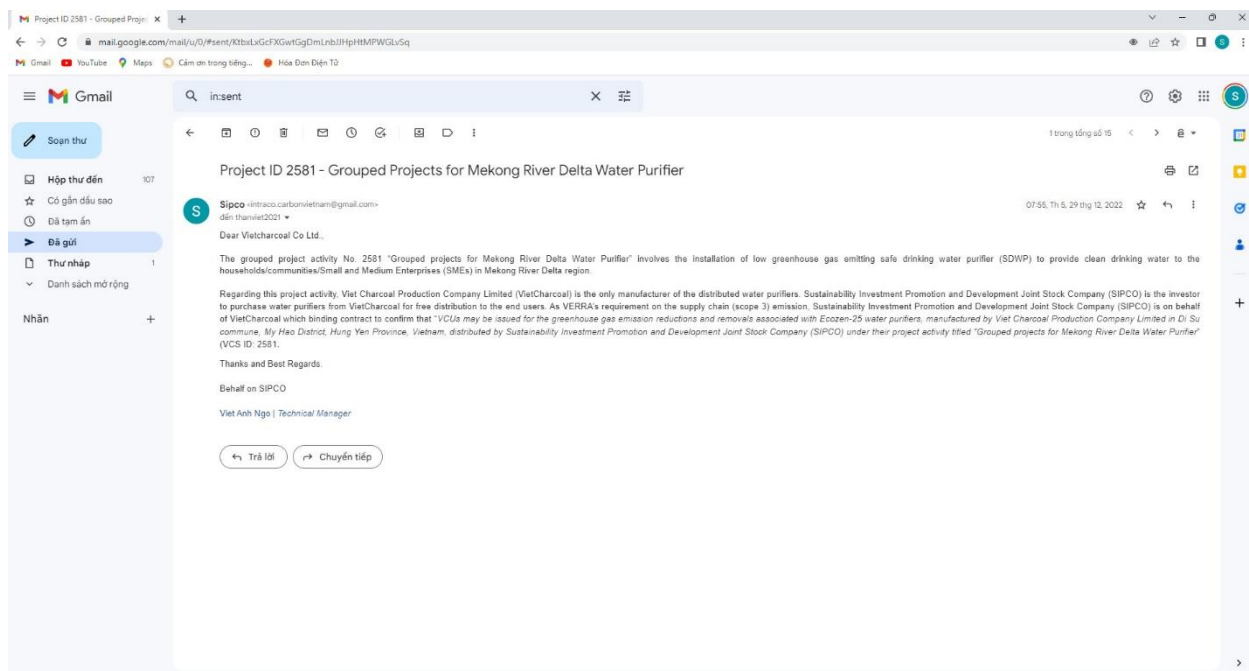
PA 10	6,670	0	0	6,670
PA 11	19,543	0	0	19,543
PA 12	15,912	0	0	15,912
PA 13	15,116	0	0	15,116
PA 14	13,288	0	0	13,288
PA 15	12,139	0	0	12,139
PA 16	34,143	0	0	34,143
PA 17	34,143	0	0	34,143
PA 18	34,143	0	0	34,143
PA 19	30,369	0	0	30,369
PA 20	24,012	0	0	24,012
PA 21	13,204	0	0	13,204
PA 22	3,199	0	0	3,199
Total	532,195	0	0	532,195

For detailed calculations refer ER calculation sheet.

PA	<u>Ex-ante emissions reductions /removals</u>	<u>Achieved emissions reductions /removals</u>	<u>Percent difference</u>	<u>Justification for the difference</u>
PA 1 01/04/20 22 to 31/10/20 22 (214 days)	33,985	33,985	0%	No difference

APPENDIX 1: SUPPLY CHAIN

1. Email SIPCO sent to Viet Charcoal about supply chain scope 3



2. Public statement has been posted on SIPCO's website.

<https://intracocarbon.com/public-announcement-on-grouped-projects-for-mekong-river-delta-water-purifier-project-id-2581>

