



TEMPLATE

MONITORING REPORT

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VERSION **v. 1.1**

RELATED SUPPORT – **TEMPLATE GUIDE Monitoring Report v. 1.1**

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KEY PROJECT INFORMATION

Key Project Information

GS ID (s) of Project (s)	GS4290
Title of the project (s) covered by monitoring report	Nazava Water Filter Project
Version number of the PDD/VPA-DD (s) applicable to this monitoring report	3.0
Version number of the monitoring report	3.1
Completion date of the monitoring report	26/11/2023
Date of project design certification	15/02/2016
Date of Last Annual Report	23/12/2022
Monitoring period number	MP3
Duration of this monitoring period	19 December 2020- 18 December 2022 (Both days inclusive)
Project Representative	Guido van Hofwegen, PT Holland for Water
Host Country	Indonesia
Activity Requirements applied	<input checked="" type="checkbox"/> Community Services Activities <input type="checkbox"/> Renewable Energy Activities <input type="checkbox"/> Land Use and Forestry Activities/Risks & Capacities <input type="checkbox"/> N/A
Methodology (ies) applied and version number	AMS-III.AV, version 04.0, Small-scale Methodology, "Low greenhouse gas emitting safe drinking water production systems"
Product Requirements applied	<input checked="" type="checkbox"/> GHG Emissions Reduction & Sequestration <input type="checkbox"/> Renewable Energy Label <input type="checkbox"/> N/A

Table 1 - Sustainable Development Contributions Achieved

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved ¹	Units/ Products
SDG13: Climate action	Emissions Reductions	46,219.00	GSVERs
SDG1. No Poverty	Amount of biomass save after using project technology	20,032.36	Tonne of Biomass
	Amount of LPG save after using project technology	10,292.80	Tonne of LPG
	Percentage of household noted on money save after using project technology	79.63%	%
	Percentage of household noted on time save after using the project technology	99.10%	%
SDG3. Good Health and well being	Number of people who notice less smoke in kitchen after having water filter	308,452	People
SDG5. Gender Equality	Number of women and girls benefiting from stop/reduce boiling water and collecting/purchasing cooking fuel	331,818	People
SDG6. Clean water and sanitation	Number of people with access to safe drinking water	364,515	People
SDG8: Decent work and economic growth	Number of new jobs created by the project with safe and healthy work environment	27	People
SDG15: Life on Land	Areas of forest save	85.17	Hectare

Table 2 - Product vintages

		Amount Achieved		
Start Dates	End Dates	GSVERs ²
19 th Dec 2020	31 st Dec 2020	816		
1 st Jan 2021	31 st Dec 2021	23,278		
1 st Jan 2022	18 th Dec 2022	22,125		

¹ ER spreadsheet, tab "Summary, cell P22:P31"

² ER spreadsheet, tab "Summary, cell F12-F14"

SECTION A.DESCRPTION OF PROJECT

A.1.General description of project

The project owner PT Holland for Water (PTH) is a social enterprise that distributes ceramic candle water filters across Indonesia, targeting low-income households (<\$7/day) in rural and urban areas through a wide network of resellers or micro-entrepreneurs. The activity is the sale and distribution of Nazava water filtration technology in regions of Indonesia.

The applied technology is a ceramic water filter that produces water of safe drinking water quality. Prior to the implementation of the proposed project, in the proposed project boundary there is limited access to clean drinking water. Lack of ready access to a water source also limit the quantity of suitable drinking water that is available to a household. Even if the water is obtained from an improved source, water that must be fetched from a source that is not readily accessible to the household and may be contaminated during transport or storage. Nationally, boiling water prior to drinking is the most common treatment method.

The baseline scenario is the continuation of current practice, thus identical to the existing scenario prior to the implementation of the proposed project.

Under the project scenario, the proposed project will reduce GHG emissions by replacing the use of non-renewable biomass or fossil fuel to boil water to purify the water for drinking purposes. This purification method is energy intensive, creates indoor air pollution that is damaging to health, and emits significant GHG. Thus, the project activity contributes to the reduction in the GHG gas emissions associated to fossil fuel combustion for obtaining safe drinking water (SDW) as per conventional methods of water purification and also provides access to SDW to the consumers at an affordable price.

The project start date is defined on 09/11/2011. The carbon project was first developed by Impact Carbon since 2010. It was submitted to GS as a Voluntary Project Activity GS2443 in 2013. However, the ERPA between the project owner and Impact Carbon was terminated in 2014 while the project was under validation. Since 2015, the project owner has been cooperated with Nexus for continuing the validation process as a stand-alone project and it was finally registered on 15/02/2016. The project will continue its operation at least until the end of this crediting period of 29/02/2024.

The project activity in this monitoring period (19 Dec 2020-18 Dec 2022) result in total CO₂ emission reduction of 46,219 tCO₂e.

A.2.Location of project

Whole country of Indonesia. The geographic coordinates of Indonesia is as below:

Latitude: 6°00' N to 11° 00' S

Longitude: 95°00' E to 140°00' E

The geographic coordinates of the Nazava project factory is as below:

Latitude: 6°56'42" S,

Longitude: 107°32'02" E

Physical Adress of the Nazava project factory:

Jl. Soreang - Cipatik (Cisaat), RT 001 RW 002 No. 147, Jelegong, Kutawaringin, Bandung

Regency, West Java 40911, Indonesia



Figure 1. Indonesia geographic and project factory location in Bandung, Java

A.3.Reference of applied methodology

Methodology:

AMS-III.AV, version 04.0, Small-scale Methodology, “Low greenhouse gas emitting safe drinking water production systems”³

Tools/Guidelines:

- Methodological tool “Demonstration of additionality of small-scale project activities”, Version 10.0, EB 83, Annex 14.⁴
- Guidelines for sampling and surveys for CDM project activities and programme of activities, Version 04.0, EB 86, Annex 4⁵
- Standard: Sampling and surveys for CDM project activities and programme of activities Version 05.0, EB 86, Annex 3⁶

A.4.Crediting period of project

Start date of crediting period was 01/03/2014 with a fixed length of 10 years (01/03/2014 to 29/02/2024)

³ <https://cdm.unfccc.int/UserManagement/FileStorage/8QPUVMR1K6N9J43LIOZ07DS5WTAYF>

⁴ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-21-v1.pdf>

⁵ https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20151023152925068/Meth_GC48_%28ver04.0%29.pdf

⁶ https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20210531160756223/Meth_Stan05.pdf

SECTION B.IMPLEMENTATION OF PROJECT

B.1.Description of implemented project

The project sold 139,579 Ceramic Water Filters (CWFs) up to 18/12/2022⁷ and during this monitoring period (19th Dec 2020- 18th Dec 2022) the total sale of CWFs was 23,357 Units as shown in Table 3. PP has been monitoring closely all the activities required by the monitoring plan registered in PDD. For this monitoring period, the project reduced 46,219.00 tonnes⁸ of GHG emissions (tCO₂e).

This project is an end-use energy efficiency improvement project, registered under the Sectoral scope 3 of CDM: “Energy demand” Applied methodology AMS III.AV version 4.0

The project has been implemented as described in the PDD in section A.4.2. The technology used during this monitoring period is the same as described in the PDD. There has been no change in the technology.

Project Activities

The starting date of operation of the project activity was 09/11/2011, when the first purchased of PTH’s water filters was made.

The Ceramic Water Filters are sold throughout the Indonesia, as outlined in Section A.2, and are not all installed at the start of the project but are installed progressively during the 10-year crediting period. Below Table 3 illustrates the sale rate per month for this monitoring period.

⁷ ER calculation sheet, Tab ER_Cals_HH, sum (E26:E160)

⁸ ER calculation sheet, Tab Summary, Cell G17

Table 3. Number of CWFs sold per month

Date	Sold CWFs ⁹
Dec 2020 ¹⁰	165
Jan 2021	923
Feb 2021	676
Mar 2021	981
Apr 2021	1,954
May 2021	514
Jun 2021	817
Jul 2021	1,251
Aug 2021	1,958
Sep 2021	1,223
Oct 2021	769
Nov 2021	590
Dec 2021	1,507
Jan 2022	1,995
Feb 2022	701
Mar 2022	1,142
Apr 2022	663
May 2022	332
Jun 2022	556
Jul 2022	536
Aug 2022	1,527
Sep 2022	770
Oct 2022	462
Nov 2022	948
Dec 2022	397
Total	23,357

During this monitoring period, Nazava produced/assembled all the filters at their purpose-built factory in Indonesia. Local production using locally available skills has continued to provide low-cost production while providing gainful employment to local people.

As described in PDD, PTH's core product is the Nazava Ceramic filter candle, a ceramic filter candle that is mixed with colloidal silver and filled with activated carbon. The water filters are made at the facilities of PTH and tested by the WHO¹¹. After the filters are assembled and checked for quality at the Nazava's factory, they are distributed through different market channels. The impact of Nazava water filters is large including Health impact, Economic impact and Environmental impact.

⁹ ER spreadsheet, Tab Sale_Actual&Forecast(Note: sale data is from 19 Dec 2020 to 18 Dec 2022).

¹⁰ From 19th -31st Dec 220 (including both days)

¹¹ <https://www.nazava.com/wp-content/uploads/2019/03/WHO-Product-report-Nazava.pdf>

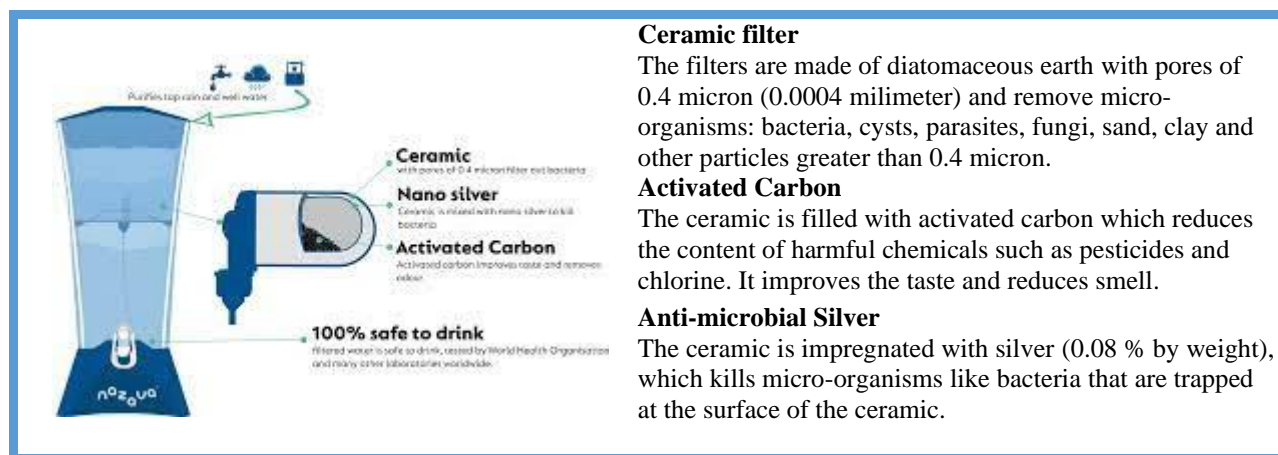


Figure 2. PROT3CT (Tulip) filter

PTH's filters are ceramic filters that remove microorganisms such as bacteria, fungi, sand, clay and other particles greater than 0.4 micron. PTH's water filter technologies conservatively purifies 3 litres per hour¹², is certified to last for 7,000 litres¹³

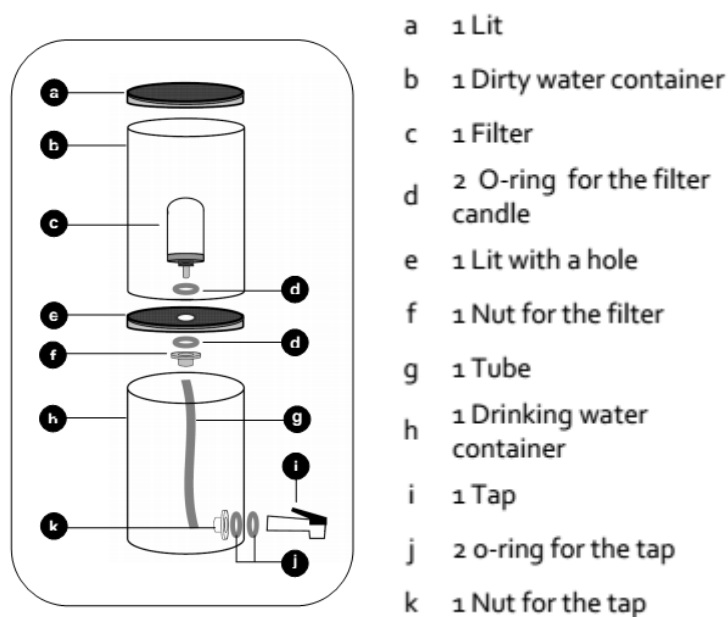


Figure 3: PTH's water filters technology

Using this technology, households can filter their own tap, well, river or rain water. All of these filters come with an Indonesian-language user manual with clear directions, an indicator for filter replacement, and a one-year warranty card. Nazava ceramic water filter has been one of the solutions for providing safe drinking water. They have been shown to effectively reduce diarrhea diseases, with independent tests and assessments available¹⁴.

¹² [product data sheet](#)

¹³ [product data sheet](#)

¹⁴ There are some independent assessments available: the effectiveness of the bacterial removal of the Nazava water filter: <https://www.nazava.com/wp-content/uploads/2019/03/WHO-Product-report-Nazava.pdf>; other international test reports: <https://www.nazava.com/en/laboratory-test-results-nazava-water-filters/>.

PTH provides customers with household drinking water purification systems and well water treatment options. The core product of PTH is a high quality ceramic water filter element, which is used in 10 different water filter housings. The water filter housings come in a broad range of different shapes and capacity, answering to different needs and demand among different income groups in society. The main models are table tops that have an upper container to collect the dirty water and a lower container with a tap for the drinking water. There is also a model that can be connected directly to the water tap.



Figure 4: PTH's water filters products

Regarding the distribution of the project technology (CWFs), Nazava has maintained a total sales record of all sales through three main channels:

- i) Direct sales to end users by Nazava sales staff or online
- ii) Indirect Sales from retailers
- iii) NGOs and variety of community development projects that purchase wholesale CWFs for distribution to their project beneficiaries.

For direct sales, Nazava sells either through door-to-door sales, through office walk-ins or through holding meetings to share with interested communities the potential benefits of the CWF. For indirect sale, Nazava sell CWFs to many retailers across the country. Nazava also sells the filters to NGOs wishing to distribute or sell the CWFs at subsidized rates. Additionally, throughout the monitoring period, Nazava has maintained a project database containing the contact details of 24,970 end users, to the extent possible.

Nazava has about 162 resellers in over 78 cities and municipalities throughout the country. These resellers finance themselves to build their businesses and increase water filter adoption in poor, rural areas. Resellers are making bulk purchases from Nazava and selling them back to end users within a time period, which takes time to install the CWF. Therefore, the average gap between installation and start ER claim date of a CWF is 4 months. This period is conservative, and it is accounted as 4 months later for each sale to get credited because the majority of the Nazava sales are from resellers. Thus, the time gap in these cases is considered as 4 months.

Monitoring work

From Feb 2023 to May 2023, Nazava has conducted monitoring survey and water quality survey test as shown in below table to accurately calculate the monitoring parameters outlined in the Project Design Document and Transition Annex.

Nazava has implemented ongoing monitoring of sales, end-user contact details, water quality and usage rates. The sales database records monthly sales of the CWFs and the user database records end-user information, when feasible. Nazava has monitored the usage rates of the CWFs through the usage survey to ensure the project claims an appropriate useful life of the technology. End-users can replace broken parts or the entire unit at no cost through a 1-year warranty system. This system extends the lifespan of the CWF by providing a warranty with the information necessary to replace broken parts or units detailed within the sales receipt or as a Warranty Card provided with the unit. End-users are also provided with detailed instructions outlining the proper care and maintenance of the filter.

Monitoring actions	When	Sample size/Total record	Target population size
Monitoring survey: - Usage survey - Project survey	3 Feb 2023-15 May 2023	486 HH ¹⁵	139,579
Water quality test survey	06 Feb- 06 March 2023	51 samples ¹⁶	139,579
Monitoring of Sales database	Monthly from 19 Dec 2020 to 18 Dec 2022	23,357 CWFs	139,579

B.1.1.Forward Action Requests

No FAR raised during the MP2.

B.2.Post-Design Certification changes

B.2.1.Temporary deviations from the approved Monitoring & Reporting Plan, methodology or standardized baseline

N/A

B.2.2.Corrections

The value of X_{boil} factor is changed from 70.1% of the approved PDD to 88.26% which was proposed by PP during the 1st verification period and was accepted. This value is fixed for the whole crediting period in accordance with the applied methodology (AMS-III.AV, version 4, paragraph 19).

B.2.3.Changes to start date of crediting period

N/A

¹⁵ Nazava_MP3_Project_Survey_Test, Tab URate&Nyi, cell D27

¹⁶ Nazava_MP3_Project_Survey_Test,Tab Water_test_result, Cell K56

B.2.4. Permanent changes from the Design Certified monitoring plan, applied methodology or applied standardized baseline.

During the 1st monitoring period, a permanence request was made for water quality test: The project request for employing water quality test kit instead of using the third-party laboratory. This request has been reviewed and approved by the GS-TAC as found in the file named “Deviation Request_form_GS4290_GS_Nexus FINAL”

B.2.5. Changes to project design of approved project

N/A

SECTION C.DESCRPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT

As described in its registered PDD, the monitoring system has been implemented as described in the structure of the monitoring system as shown in Figure 5.

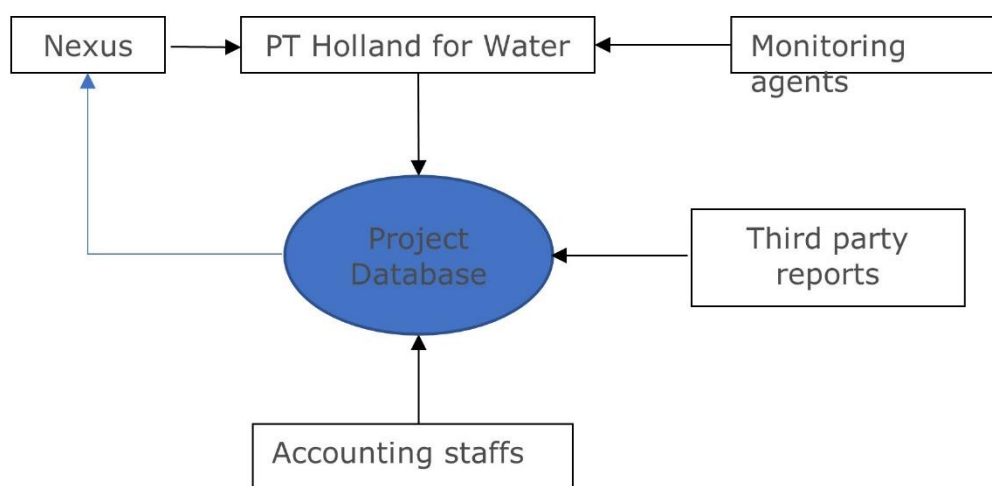


Figure 5. Structure of the monitoring system

The responsibilities of each group involved are elaborated as follows:

Group members and their responsibilities

Entity	Responsibility
Nexus	<ul style="list-style-type: none"> • Consultant, prepare sampling plan, • Verify the monitoring work done to ensure accuracy before submission, spot check data • Prepare the monitoring report • Contacting VVB • Sell carbon credit.
PT Holland for Water	<ul style="list-style-type: none"> • Implement project • Manages the Project Database, in which the results of monitoring shall be summarized. • Collecting data to be monitored accurately, or training Field Measurement Personnel to do so. • Sharing monitoring data with Nexus. • Maintains proper and continuous records of project activities and disseminated technologies, including product identification • Oversees maintenance of installed systems
Accounting staffs	<ul style="list-style-type: none"> • Insert sales records to database.
Monitoring agents	<ul style="list-style-type: none"> • Conduct on the ground monitoring surveys of end users

Data recording and archiving procedures

Per training manual¹⁸ for monitoring activities, sale database and project database are data to be monitored and recorded, while the monitoring survey needed to be conducted in accordance with the registered methodology.

QA/QC procedures

Sale database: Nazava field officers check the daily sales and provides relevant database to the office on daily basis and, office staff does the check on the sales inputs and add the same to the sales database in the Excel sheet which is checked using function Duplicate in excel spreadsheet.

Further carbon consultant (NEXUS) also verifies the database using duplicate function as well as by sampling sales records including invoices and payment records. For both sales i.e. individual sales and bulk sales.

For project database, from the Nazava Sales Database, compile a complete list of end-users within the target population (i.e. Indonesia) who have purchased the CWF from the Dec 2011 until Dec 2022. Nazava cannot collect all the user's names and address from all the CWF sale as majority (75%) of the sale is generating from reseller. It was hard to convince them (reseller) to fill out and send back the warrantee cards. The project has tried to provide some incentive for the return of warrantee cards, but it was not so successful. However, for this MP3, the customer list increases from 15% to 18% compared to previous MP2 with the introduction of the online form in Epic-collect (<https://five.epicollect.net/>).

The project database is also stored in spreadsheet where duplicated function can be used to check if there is any duplication.

Monitoring survey: Beside supporting Nazava to create sampling plan for conducting the monitoring surveys, Nexus (carbon consultant) assisted Nazava to develop survey questionnaires and sample size selection. While Nazava is responsible for implementing the sample plan, Nexus is responsible for technical support, data analysis and quality assurance of the survey to be in line with registered PDD.

Training

Based on the training manual for monitoring activities, Senior staff at Nazava continue to instruct their junior to record the sale and project data properly based on its designed format. The training for survey team leaders and surveyor (research assistant) were conducted before the actual survey to be executed.

Avoidance of double counting

Nazava checks the CDM/GS/VCS and other carbon standards' project database to establish whether any proposed project is developed as another project activity. This search will cover registered project activities, project activities requesting registration, project activities under review, project under validation and project activities for which either a review or corrections have been requested. Nazava has also fully implemented the actions mitigating against double counting as outlined in the PDD, including:

1. Nazava has added a serial number to all water filters produced and kept the numbers in sale database; and
2. The design of the water filters from Nazava look physically different from other water filters in the market, making it easy to recognize them.

¹⁸ Training manual

SECTION D.DATA AND PARAMETERS

D.1.Data and parameters fixed ex ante or at renewal of crediting period

Relevant SDG Indicator	SDG13.3.1 Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula. The total amount of emission reduction is the monitored parameter.
Data/parameter	$f_{NRB,y}$
Unit	%
Description	Fraction of woody biomass used in the absence of the project activity in year y that can be established as non-renewable
Source of data	FAO Global Forest Resources Assessment 2010 2006 IPCC Guidelines for National Greenhouse Gas Inventories
Value(s) applied	82.1%
Choice of data or Measurement methods and procedures	The assessment of the non-renewability of biomass within the project boundary is performed as per the procedure contained in AMS-I.E. The calculation is shown in Appendix IV of the registered PDD.
Purpose of data	Calculation of baseline and project emissions
Additional comment	Ex ante physical survey by the project participant is not required as the data was publicly available by an independent parties.

Relevant SDG Indicator	SDG13.3.1 Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula. The total amount of emission reduction is the monitored parameter.
Data/parameter	$R_{y,i}$
Unit	liters/person/day
Description	The average volume of drinking water per person per day
Source of data	"Minimum water quantity needed for domestic uses" by WHO Regional Office for South-East Asia
Value(s) applied	3.5
Choice of data or Measurement methods and procedures	Official data from standard water requirements
Purpose of data	Calculation of baseline/project emissions
Additional comment	Ex ante physical survey by the project participant is not required as the data was publicly available by an independent parties.

Relevant SDG Indicator	SDG13.3.1 Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula. The total amount of emission reduction is the monitored parameter.
Data/parameter	$EF_{\text{projected_fossilfuel}}$
Unit	tCO ₂ /TJ

Description	Emission factor for the substitution of non-renewable woody biomass or the emission factor of the fossil fuel substituted by similar consumers.
Source of data	Default value from AMS-I.E as referenced by AMS-III.AV Version 4
Value(s) applied	81.6
Choice of data or Measurement methods and procedures	Default value from AMS-I.E. This value represents the emission factor of the substitution fuels likely to be used by similar users, on a weighted average basis. It is assumed that the mix of present and future fuels used would consist of a solid fossil fuel (lowest in the ladder of fuel choices), a liquid fossil fuel (represents a progression over solid fuel in the ladder of fuel use choices) and a gaseous fuel (represents a progression over liquid fuel in the ladder of fuel use choices). Thus a 50 per cent weight is assigned to coal as the alternative solid fossil fuel (96 t CO ₂ /TJ) and a 25 per cent weight is assigned to both liquid and gaseous fuels (71.5 t CO ₂ /TJ for kerosene and 63.0 t CO ₂ /TJ for liquefied petroleum gas (LPG)).
Purpose of data	Calculation of baseline emissions
Additional comment	-

Relevant SDG Indicator	SDG13.3.1 Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula. The total amount of emission reduction is the monitored parameter.
Data/parameter	WH
Unit	kJ/L °C
Description	Specific Heat of Water
Source of data	Default Value from AMS-III.AV Version 4
Value(s) applied	4.186
Choice of data or Measurement methods and procedures	-
Purpose of data	Calculation of baseline emissions
Additional comment	-

Relevant SDG Indicator	SDG13.3.1 Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula. The total amount of emission reduction is the monitored parameter.
Data/parameter	T _f
Unit	°C
Description	Final Temperature
Source of data	Default Value from AMS-III.AV Version 4
Value(s) applied	100
Choice of data or Measurement methods and procedures	-
Purpose of data	Calculation of baseline emissions
Additional comment	-

Relevant SDG Indicator	SDG13.3.1 Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula. The total amount of emission reduction is the monitored parameter.
Data/parameter	T _i
Unit	°C
Description	Initial Temperature
Source of data	Default Value from AMS-III.AV Version 4
Value(s) applied	20
Choice of data or Measurement methods and procedures	-
Purpose of data	Calculation of baseline emissions
Additional comment	-

Relevant SDG Indicator	SDG13.3.1 Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula. The total amount of emission reduction is the monitored parameter.
Data/parameter	WHE
Unit	kJ/L
Description	Latent Heat of Water Evaporation
Source of data	Default Value from AMS-III.AV Version 4
Value(s) applied	2,260
Choice of data or Measurement methods and procedures	-
Purpose of data	Calculation of baseline emissions
Additional comment	-

Relevant SDG Indicator	SDG13.3.1 Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula. The total amount of emission reduction is the monitored parameter.
Data/parameter	L
Unit	-
Description	Leakage relating to non-renewable woody biomass
Source of data	Default Value from AMS-I.E Version 6
Value(s) applied	0.95
Choice of data or Measurement methods and procedures	-
Purpose of data	Calculation of leakage emissions
Additional comment	-

Relevant SDG Indicator	SDG13.3.1 Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula. The total amount of emission reduction is the monitored parameter.
Data/parameter	Case 1 or Case 2
Unit	-
Description	Classifies the proposed project as either Case 1 or Case 2

Source of data	https://washdata.org/data/household#!/
Value(s) applied	Case 2
Choice of data or Measurement methods and procedures	According to data which is available from WHO/UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation https://washdata.org/data/household#!/idn the proportion of urban and rural population using an improved drinking-water source of the most recent year (2022) is 98.33% and 88.30% respectively. These proportion are higher than 60% therefore the project case is Case 2.
Purpose of data	Calculation of baseline /project emissions
Additional comment	The proposed project is classified as Case 1 or Case 2 depending on the fraction of the population using an improved drinking-water source prior to the implementation of the proposed project. This proposed project is classified as Case 2.

Relevant SDG Indicator	SDG13.3.1 Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula. The total amount of emission reduction is the monitored parameter.
Data/parameter	X_{boil}
Unit	%
Description	Fraction of the population serviced by the project activity for which the common practice of water purification is or would have been water boiling
Source of data	Nazava_MPI(2018)_ProjectSurveyData_20181212, tab Analysis, Cell C7
Value(s) applied	88.26%
Choice of data or Measurement methods and procedures	Result of the monitoring survey in the 1 st monitoring period which serves as an ex-ante survey to define X_{boil} factor.
Purpose of data	Calculation of baseline /project emissions
Additional comment	<p>According to the applied methodology, the project falls to Case 2. Therefore, the following adjustment is required:</p> <p>«For Case 2, total project population needs to be adjusted for the fraction of the population serviced by the project equipment at households/buildings for which it can be demonstrated through documentation or survey that the practice of water purification would have been water boiling» - AMS III.AV, version 4, paragraph 11. Furthermore, in paragraph 19 for case 2, the X_{boil} factor should be defined by an ex-ante survey. During the validation stage, due to no available survey with the project filter users (or «the population serviced by the project equipment»), PP applied the X_{boil} factor of 70.1% based on the Indonesian Demographic and health survey 2012 report for ex-ante ER calculation. This survey was a general survey and was not targeted the specific project user group of having CWF.</p> <p>Therefore, during the first verification period, the PP conducted the monitoring survey in accordance with the methodology requirement including target user group, number of sampling and sampling methodology. Thus, the result of X_{boil} factor (88.26%) from this survey is well reflecting the baseline situation of the project targeted households. This value is then applied as a fixed value of X_{boil} factor for the whole crediting period as stated in section B.2.2 corrections.</p>

Relevant SDG Indicator	SDG13.3.1 Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula. The total amount of emission reduction is the monitored parameter. 15.1.1 Forest area as a proportion of total land area. Area of forest save is the monitored parameter.
Data/parameter	$\eta_{wb,y}$
Unit	fraction
Description	Efficiency of water boiling system being replaced

Source of data	Default efficiencies from AMS-III.AV Version 4 for each baseline technology Percentage of fuel types																					
Value(s) applied	0.4																					
Choice of data or Measurement methods and procedures	<p>Weighted average efficiency is calculated from default values from AMS III.AV and percentage of fuel types according to the table below:</p> <table><tr><th>Fuel type</th><th>Percentage¹⁹</th><th>Efficiency</th></tr><tr><td>LPG</td><td>51.8%</td><td>0.5</td></tr><tr><td>Kerosene</td><td>7.4%</td><td>0.5</td></tr><tr><td>Wood</td><td>37.6%</td><td>0.2</td></tr><tr><td>Charcoal</td><td>0.4%</td><td>0.2</td></tr><tr><td>Other</td><td>2.8%</td><td>1</td></tr><tr><td colspan="2">Weigh averaged efficiency n_{wb}</td><td>0.4</td></tr></table>	Fuel type	Percentage ¹⁹	Efficiency	LPG	51.8%	0.5	Kerosene	7.4%	0.5	Wood	37.6%	0.2	Charcoal	0.4%	0.2	Other	2.8%	1	Weigh averaged efficiency n_{wb}		0.4
Fuel type	Percentage ¹⁹	Efficiency																				
LPG	51.8%	0.5																				
Kerosene	7.4%	0.5																				
Wood	37.6%	0.2																				
Charcoal	0.4%	0.2																				
Other	2.8%	1																				
Weigh averaged efficiency n_{wb}		0.4																				
Purpose of data	Determination of baseline emissions																					
Additional comment	<p>The efficiency of 0.5 was applied for LPG and Kerosene stoves according to the methodology AMS III.AV, version 4, section 5.2: <i>“I 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”</i></p> <p>Similarly, the efficiency of 0.2 was applied for wood and charcoal stoves as below: <i>“(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 i.e. 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”</i></p> <p>Regarding the “Other” stoves, the efficiency 1 (or 100%) was applied as conservative approach for ER estimation.</p>																					

Relevant SDG Indicator	SDG13.3.1 Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula. The total amount of emission reduction is the monitored parameter. 15.1.1 Forest area as a proportion of total land area. Area of forest save is the monitored parameter.								
Data/parameter	%HH using biomass								
Unit	%								
Description	Percentage of household using biomass for boiling water								
Source of data	Indonesian Demographic and health survey report published by Indonesian Ministry of Health on Aug 2013								
Value(s) applied	38%								
Choice of data or Measurement methods and procedures	<p>Weighted average efficiency is calculated from default values from AMS III.AV and percentage of fuel types according to the table below:</p> <table> <tr> <th>Fuel type</th><th>Percentage</th></tr> <tr> <td>Wood</td><td>37.6%</td></tr> <tr> <td>Charcoal</td><td>0.4%</td></tr> <tr> <td colspan="2">38%</td></tr> </table>	Fuel type	Percentage	Wood	37.6%	Charcoal	0.4%	38%	
Fuel type	Percentage								
Wood	37.6%								
Charcoal	0.4%								
38%									
Purpose of data	Determination of baseline emissions								

¹⁹ Indonesian Demographic and health survey report published by Indonesian Ministry of Health on Aug 2013

Additional comment	Since the proportion of people using charcoal is small, it is added up to woody proportion directly. This is a simplified calculation with conservativeness.
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Relevant SDG Indicator	SDG13.3.1 Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula. The total amount of emission reduction is the monitored parameter. 15.1.1 Forest area as a proportion of total land area. Area of forest save is the monitored parameter.				
Data/parameter	%HH using LPG				
Unit	%				
Description	Percentage of household using LPG for boiling water				
Source of data	Indonesian Demographic and health survey report published by Indonesian Ministry of Health on Aug 2013				
Value(s) applied	51.8%				
Choice of data or Measurement methods and procedures	Weighted average efficiency is calculated from default values from AMS III.AV and percentage of fuel types according to the table below: <table border="1"> <thead> <tr> <th>Fuel type</th><th>Percentage</th></tr> </thead> <tbody> <tr> <td>LPG</td><td>51.8%</td></tr> </tbody> </table>	Fuel type	Percentage	LPG	51.8%
Fuel type	Percentage				
LPG	51.8%				
Purpose of data	Determination of baseline emissions				
Additional comment	NA				

Relevant SDG Indicator	1.1.1 Proportion of population below the international poverty line, by sex, age, employment status and geographical location (urban/rural). Three parameter were selected to be monitored for this indicator: - The amount of fuel save, Percentage of household noted on money save and Percentage of household noted on time save after using the project technology. 15.1.1 Forest area as a proportion of total land area. The area of forest save is the monitored parameter.
Data/parameter	NCV _{wood}
Unit	TJ/tonne
Description	Net calorific value of wood
Source of data	IPCC (2006) "IPCC Guidelines for National Greenhouse Gas Inventories", Volume 2, Energy, Chapter 1, Introduction, Table 1.2, p 1.19
Value(s) applied	0.015 TJ/tonne
Choice of data or Measurement methods and procedures	IPCC default factor
Purpose of data	Calculation of amount of biomass save and area of forest save
Additional comment	-

Relevant SDG Indicator	1.1.1 Proportion of population below the international poverty line, by sex, age, employment status and geographical location (urban/rural). Three parameter were selected to be monitored for this indicator: - The amount of fuel save, Percentage of household noted on money save and Percentage of household noted on time save after using the project technology. 15.1.1 Forest area as a proportion of total land area. The area of forest save is the monitored parameter.
Data/parameter	NCV _{LPG}
Unit	TJ/tonne
Description	Net calorific value of LPG
Source of data	IPCC (2006) "IPCC Guidelines for National Greenhouse Gas Inventories", Volume 2, Energy, Chapter 1, Introduction, Table 1.2, p 1.18

Value(s) applied	0.0474 TJ/tonne
Choice of data or Measurement methods and procedures	IPCC default factor
Purpose of data	Calculation of amount of LPG save
Additional comment	-

Relevant SDG Indicator	15.1.1 Forest area as a proportion of total land area. The area of forest save is the monitored parameter.
Data/parameter	Growth stock in forest
Unit	m ³ /Hectare
Description	Growth stock in forest in Indonesia
Source of data	FAO data 2015, Global Forest Resources Assessment 2015 (page 81)
Value(s) applied	112 m ³ /Hectare
Choice of data or Measurement methods and procedures	Using existing study/report from FAO.
Purpose of data	Calculation of area of forest save
Additional comment	-

Relevant SDG Indicator	15.1.1 Forest area as a proportion of total land area. The area of forest save is the monitored parameter.
Data/parameter	Converting factor of biomass from m ³ to tonne
Unit	fraction
Description	Converting factor of biomass from m ³ to tonne
Source of data	FAO, Global forest assessment 2000 report, Appendix 3, Table 7; http://www.fao.org/3/Y1997E/y1997e1u.htm#bm66
Value(s) applied	1.72
Choice of data or Measurement methods and procedures	In the FAO, Global forest assessment 2000 report, Appendix 3, Table 7, it was reported that for Indonesia 79 m ³ /hectare = 136 tonne/hectare.
Purpose of data	Calculation of area of forest save
Additional comment	-

D.2.Data and parameters monitored

Relevant SDG Indicator/Safeguarding Principle	<p>1.1.1 Proportion of population below the international poverty line, by sex, age, employment status and geographical location (urban/rural). Three parameter were selected to be monitored for this indicator: - The amount of fuel save, Percentage of household noted on money save and Percentage of household noted on time save after using the project technology.</p> <p>13.3.1 Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula. The total amount of emission reduction is the monitored parameter.</p> <p>15.1.1 Forest area as a proportion of total land area. Area of forest save is the monitored parameter.</p>																																		
Data / Parameter	QPW _y																																		
Unit	Litres/yr/unit																																		
Description	Quantity of purified water in year y (litres)																																		
Source of data	Calculation																																		
Value(s) applied	4,583																																		
Measurement methods and procedures	<p>The quantity of purified water per year is estimated by using below equation.</p> $QPW_y = \sum_0^i T_{y,i} * N_{y,i} * R_{y,i} * 365 * \text{Water Quality} * \text{Operational Units} * X_{boil}$ <table border="1"> <thead> <tr> <th>Parameter</th><th>Description</th><th>Value</th><th>Source/Comment</th></tr> </thead> <tbody> <tr> <td>QPW_y</td><td>Quantity of purified water in year y (litres)</td><td>4,583</td><td>Calculated</td></tr> <tr> <td>T_{y,i}</td><td>Distributed water purification units</td><td>1 for 1 unit</td><td>For one unit</td></tr> <tr> <td>N_{y,i}</td><td>The average population serviced by water purification system</td><td>4.41</td><td>See below</td></tr> <tr> <td>R_{y,i}</td><td>The average volume of drinking water per person per day</td><td>3.5</td><td>See section D1</td></tr> <tr> <td>Water Quality</td><td>Water quality passing WHO standard rate.</td><td>92.16%</td><td>See below</td></tr> <tr> <td>Operational Units</td><td>Usage rate of the sold units based on its age group</td><td>100%</td><td>For one active unit, 100% rate is applied but for total active units, the actual rate from the monitoring survey per age group was used as detail in ER spreadsheet</td></tr> <tr> <td>X_{boil}</td><td>Fraction of the population serviced by the project activity for which the common practice of water purification is or would have been water boiling</td><td>88.26%</td><td>Section D.1</td></tr> </tbody> </table>			Parameter	Description	Value	Source/Comment	QPW _y	Quantity of purified water in year y (litres)	4,583	Calculated	T _{y,i}	Distributed water purification units	1 for 1 unit	For one unit	N _{y,i}	The average population serviced by water purification system	4.41	See below	R _{y,i}	The average volume of drinking water per person per day	3.5	See section D1	Water Quality	Water quality passing WHO standard rate.	92.16%	See below	Operational Units	Usage rate of the sold units based on its age group	100%	For one active unit, 100% rate is applied but for total active units, the actual rate from the monitoring survey per age group was used as detail in ER spreadsheet	X _{boil}	Fraction of the population serviced by the project activity for which the common practice of water purification is or would have been water boiling	88.26%	Section D.1
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Monitoring frequency	Every two years																																		
QA/QC procedures	Transparent data analysis and reporting. The data is analysed in the monitoring report and raw data is available on request to the VVB.																																		
Purpose of data	Calculation of ER.																																		
Additional comment	NA																																		


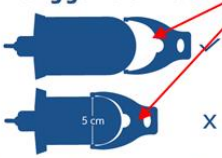

Relevant SDG Indicator/Safeguarding Principle	<ul style="list-style-type: none"> - 3.9.1 Mortality rate attributed to household and ambient air pollution. The number of people who notice less smoke in kitchen after having water filter is the monitored parameter. - 6.1.1 Proportion of population using safely managed drinking water services. The number of people with access to safe drinking water is the monitored parameter. - 13.3.1 Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula. The total amount of emission reduction is the monitored parameter
Data / Parameter	$T_{y,i}$
Unit	Number
Description	Total distributed water purification units in this monitoring period
Source of data	Sale database
Value(s) applied	23,357
Measurement methods and procedures	The total number of units by technology type and date deployed is tracked in the Sale Database, using Sales Invoices. All units distributed will be recorded. Any unit not recorded in the sale database will not be credited for emission reductions.
Monitoring frequency	Continuous and aggregated monthly
QA/QC procedures	Sales database is cross checked with sale invoices to ensure transparent and robust data. They are available for VVB to be verified.
Purpose of data	Calculation of QPW_y and ER calculation- Quantity of purified water in year y (litres) and baseline emissions
Additional comment	

Relevant SDG Indicator/Safeguarding Principle	<ul style="list-style-type: none"> - 3.9.1 Mortality rate attributed to household and ambient air pollution. The number of people who notice less smoke in kitchen after having water filter is the monitored parameter. - 6.1.1 Proportion of population using safely managed drinking water services. The number of people with access to safe drinking water is the monitored parameter. - 13.3.1 Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula. The total amount of emission reduction is the monitored parameter.
Data / Parameter	$N_{y,i}$
Unit	Persons/Units
Description	The average population serviced by water purification system
Source of data	Nazava_MP3_MonitoringSurvey_Test, tab: Urate&Nyi, cell B35
Value(s) applied	4.41
Measurement methods and procedures	Project survey is conducted on sample of units
Monitoring frequency	Every two years
QA/QC procedures	<p>According to the EB 86 Annex 3 “Standard for Sampling and Surveys for CDM PAs and PoAs” Version 05.0, paragraph 10 “Where there is no specific guidance in the applicable methodology, project proponents shall use 90/10 confidence/precision as the criteria for reliability of sampling efforts for small scale project activities and 95/10 for large-scale project activities.” Because the proposed project activity is the small-scale project and there is no specific requirement in the applied methodology AMS III.AV, version 4, so the 90 percent confidence interval and a 10 per cent margin of error requirement shall be achieved for the sampling parameter. In cases where survey results indicate that 90/10 precision is not achieved, the lower bound of 90 per cent confidence interval of the parameter value may be chosen as an alternative to repeating the survey efforts to achieve the 90/10 precision.</p> <p>In this monitoring period, based on the survey and its 90/10 rule, the average population services by water purification system was calculated to be 4.41. This result meets the 90/10 rule in which the margin of error at 90% confidence is lower</p>

	than 10% as seen in Nazava_MP3_MonitoringSurvey_Test, Tab: URate&Nyi, Cell B35.
Purpose of data	Calculation of QP _y - Quantity of purified water in year y (liter) and baseline emissions
Additional comment	N/A

Relevant SDG Indicator/Safeguarding Principle	<ul style="list-style-type: none"> - 3.9.1 Mortality rate attributed to household and ambient air pollution. The number of people who notice less smoke in kitchen after having water filter is the monitored parameter. - 6.1.1 Proportion of population using safely managed drinking water services. The number of people with access to safe drinking water is the monitored parameter. - 13.3.1 Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula. The total amount of emission reduction is the monitored parameter
Data / Parameter	WQ _{Passed,y}
Unit	%
Description	Average water quality passing rate of water quality standard (WHO standard)
Source of data	Nazava_MP3_MonitoringSurvey_Test, tab: Water_test_result, cell O54
Value(s) applied	92.16%
Measurement methods and procedures	<p>Mobil testing kit: Compact dry Compact Dry E. coli/Coliform Count (EC) is a ready-to-use test method for the enumeration of Escherichia coli and coliform bacteria in food and water. The results are as good as other testing methods: https://www.ncbi.nlm.nih.gov/pubmed/16512235.</p> <p>The manual of the product can be found here. The test can be done in the field with a mobile incubator because the tool is very light.</p> <p>In this monitoring period, PP conducted water quality test on 51 samples by employing mobile test kit.</p>
Monitoring frequency	Every two years
QA/QC procedures	<p>Transparent data analysis and reporting.</p> <p>The data is analysed in the monitoring report and raw data is available on request to the VVB.</p>
Purpose of data	Calculation of QPW _y (Quantity of purified water in year y (litres)) and baseline emissions
Additional comment	

Relevant SDG Indicator/Safeguarding Principle	<ul style="list-style-type: none"> - 1.1.1 Proportion of population below the international poverty line, by sex, age, employment status and geographical location (urban/rural). Three parameters were selected to be monitored for this indicator: - The amount of fuel save, Percentage of household noted on money save and Percentage of household noted on time save after using the project technology. - 6.1.1 Proportion of population using safely managed drinking water services. The number of people with access to safe drinking water is the monitored parameter. - 13.3.1 Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula. The total amount of emission reduction is the monitored parameter
Data / Parameter	Usage rate
Unit	%
Description	Percentage of sold unit in operation
Source of data	Nazava_MP3_MonitoringSurvey_Test, tab: Urate&Nyi, cell G15:G24

Value(s) applied	<table><tr><th>Aged group</th><th>Year of installed units</th><th>Usage rate</th></tr><tr><td>1</td><td>1st Jan-18th Dec 2022</td><td>100.00%</td></tr><tr><td>2</td><td>1st Jan-31st Dec 2021</td><td>100.00%</td></tr><tr><td>3</td><td>1st Jan-31st Dec 2020</td><td>93.94%</td></tr><tr><td>4</td><td>1st Jan-31st Dec 2019</td><td>79.49%</td></tr><tr><td>5</td><td>1st Jan-31st Dec 2018</td><td>95.74%</td></tr><tr><td>6</td><td>1st Jan-31st Dec 2017</td><td>60.55%</td></tr><tr><td>7</td><td>1st Jan-31st Dec 2016</td><td>13.33%</td></tr><tr><td>8</td><td>1st Jan-31st Dec 2015</td><td>16.67%</td></tr><tr><td>9</td><td>1st Jan-31st Dec 2014</td><td>15.00%</td></tr><tr><td>10</td><td>1st Jan-31st Dec 2013</td><td>13.33%</td></tr></table>	Aged group	Year of installed units	Usage rate	1	1 st Jan-18 th Dec 2022	100.00%	2	1 st Jan-31 st Dec 2021	100.00%	3	1 st Jan-31 st Dec 2020	93.94%	4	1 st Jan-31 st Dec 2019	79.49%	5	1 st Jan-31 st Dec 2018	95.74%	6	1 st Jan-31 st Dec 2017	60.55%	7	1 st Jan-31 st Dec 2016	13.33%	8	1 st Jan-31 st Dec 2015	16.67%	9	1 st Jan-31 st Dec 2014	15.00%	10	1 st Jan-31 st Dec 2013	13.33%
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Measurement methods and procedures	Usage Survey questionnaire and observation																																	
Monitoring frequency	Every two years																																	
QA/QC procedures	Transparent data analysis and reporting. The data is analysed in the monitoring report and raw data will be available on request to the VVB.																																	
Purpose of data	Baseline and project emission calculations																																	
Additional comment	<p>As part of operation and maintenance component: user manual, washing tool and measuring tool to check if the ceramic candle is still at its recommended size are provided within the sale package. It is observed that the CWF is a simple water purifier device in which the fragile part being ceramic candle which can be replaced easily if needed. With the system set up via retailer shops and online sale, the replacement parts (ceramic candle) can be purchased and delivered easily nationwide. Furthermore, there was no consideration on the lifetime of the filter system. The calculation of ER is based on usage rate which reflects well the actual use of CWF instead of lifetimes of the filter. Additionally, in the ER calculation it is accounted with 4 month gap between sale date and installation date which described in section B.1 above in details.</p> <div><p>Perawatan</p><p>Jika filter tersumbat:</p><ul style="list-style-type: none">• Gosok menggunakan spons dibawah air mengalir• Jangan menggunakan sabun untuk mencuci filter<p>Penggantian filter</p><p>Measuring tool</p><ul style="list-style-type: none">• Bila diameter sudah kurang dari 5 cm;• atau• Setelah 3 tahun pemakaian (lihat barcode)<p>Layanan konsumen: 022 6649061 081360862522</p><p>www.nazava.com</p><p>Perhatian : Harga filter ini terjangkau karena disubsidi oleh karbon kredit. Dengan membeli produk ini, pengguna mentransfer semua hak karbon kredit kepada PT. Holland for Water (Nazava).</p></div>																																	

Relevant SDG Indicator/Safeguarding Principle	- 13.3.1 Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula. The total amount of emission reduction is the monitored parameter.
Data / Parameter	SDW
Unit	%
Description	Existence of public distribution network of safe drinking water
Source of data	Nazava_MP3_MonitoringSurvey_Test, tab: Project_Analysis, cell E14 and SDW monitoring report
Value(s) applied	0
Measurement methods and procedures	Conducting desk review in combination with project survey
Monitoring frequency	Every year
QA/QC procedures	Transparent data analysis and reporting. The data is analysed in the monitoring report and raw data is available on request to the VVB.
Purpose of data	Baseline and project emission calculations
Additional comment	

Relevant SDG Indicator/Safeguarding Principle	3.9.1 Mortality rate attributed to household and ambient air pollution. The number of people who notice less smoke in kitchen after having water filter is the monitored parameter
Data / Parameter	$N_{Less_smoke,y}$
Unit	%
Description	% of households notice that their kitchen is less smoke
Source of data	Nazava_MP3_MonitoringSurvey_Test, tab: Project_Analysis, cell D71
Value(s) applied	84.62%
Measurement methods and procedures	Monitoring survey will be conducted in line with the Transition Annex
Monitoring frequency	Every two years
QA/QC procedures	Transparent data analysis and reporting. The data is analysed in the monitoring report and raw data is available on request to the VVB.
Purpose of data	To estimate SDG3 contribution
Additional comment	

Relevant SDG Indicator/Safeguarding Principle	5.4.1 Proportion of time spent on unpaid domestic and care work, by sex, age and location. The number of women and girls benefiting from stop/reducing boiling water and collecting/purchasing cooking fuel is the monitored parameter.
Data / Parameter	Women%
Unit	Percentage
Description	Average percentage of women and girls responsible for water boiling and collecting/purchasing cooking fuel before having CWFs
Source of data	Nazava_MP3_MonitoringSurvey_Test, tab: Project_Analysis, cell D122
Value(s) applied	91.03%
Measurement methods and procedures	Monitoring survey is conducted in line with the transition annex
Monitoring frequency	Every two years
QA/QC procedures	Transparent data analysis and reporting. The data is analysed in the monitoring report and raw data is available on request to the VVB.
Purpose of data	To estimate SDG5 contribution
Additional comment	N/A

Relevant SDG Indicator/Safeguarding Principle	1.1.1 Proportion of population below the international poverty line, by sex, age, employment status and geographical location (urban/rural). Three parameter were selected to be monitored for this indicator: - The amount of fuel save, Percentage of household noted on money save and Percentage of household noted on time save after using the project technology.
Data / Parameter	Net benefit (a) of SDG1
Unit	tonne
Description	Total amount of biomass fuel saves
Source of data	ER calculation sheet, tab: Summary, cell P23
Value(s) applied	20,032.36
Measurement methods and procedures	Please refer to section E for the detail calculation method
Monitoring frequency	Every two years
QA/QC procedures	Transparent data analysis and reporting. The data will be analysed in the monitoring report and raw data will be available on request to the VVB.
Purpose of data	To estimate SDG1 contribution
Additional comment	

Relevant SDG Indicator/Safeguarding Principle	1.1.1 Proportion of population below the international poverty line, by sex, age, employment status and geographical location (urban/rural). Three parameter were selected to be monitored for this indicator: - The amount of fuel save, Percentage of household noted on money save and Percentage of household noted on time save after using the project technology.
Data / Parameter	Net benefit (b) of SDG1
Unit	tonne
Description	Total amount of LPG saves
Source of data	ER calculation sheet, tab: Summary, cell P24
Value(s) applied	10,292.8
Measurement methods and procedures	Please refer to section E for the detail calculation method
Monitoring frequency	Every two years
QA/QC procedures	Transparent data analysis and reporting. The data will be analysed in the monitoring report and raw data will be available on request to the VVB.
Purpose of data	To estimate SDG1 contribution
Additional comment	

Relevant SDG Indicator/Safeguarding Principle	1.1.1 Proportion of population below the international poverty line, by sex, age, employment status and geographical location (urban/rural). Three parameter were selected to be monitored for this indicator: - The amount of fuel save, Percentage of household noted on money save and Percentage of household noted on time save after using the project technology.
Data / Parameter	Net benefit (c) of SDG1
Unit	%
Description	Percentage of household noted on money save after using the project technology
Source of data	ER calculation sheet, tab: Summary, cell P25
Value(s) applied	79.63%
Measurement methods and procedures	Please refer to section E for the detail calculation method

Monitoring frequency	Every two years
QA/QC procedures	Transparent data analysis and reporting. The data will be analysed in the monitoring report and raw data will be available on request to the VVB.
Purpose of data	To estimate SDG1 contribution
Additional comment	N/A

Relevant SDG Indicator/Safeguarding Principle	1.1.1 Proportion of population below the international poverty line, by sex, age, employment status and geographical location (urban/rural). Three parameter were selected to be monitored for this indicator: - The amount of fuel save, Percentage of household noted on money save and Percentage of household noted on time save after using the project technology.
Data / Parameter	Net benefit (d) of SDG1
Unit	%
Description	Percentage of household noted on time save after using the project technology
Source of data	ER calculation sheet, tab: Summary, cell P26
Value(s) applied	99.10%
Measurement methods and procedures	Please refer to section E for the detail calculation method.
Monitoring frequency	Every two years
QA/QC procedures	Transparent data analysis and reporting. The data is analysed in the monitoring report and raw data is available on request to the VVB.
Purpose of data	To estimate SDG1 contribution
Additional comment	N/A

Relevant SDG Indicator/Safeguarding Principle	3.9.1 Mortality rate attributed to household and ambient air pollution. The number of people who notice less smoke in kitchen after having water filter is the monitored parameter
Data / Parameter	Net benefits of SDG3
Unit	Number
Description	Number of people using CWF and note that their kitchen is less smoke
Source of data	ER calculation sheet, tab: Summary, cell P27
Value(s) applied	308,452
Measurement methods and procedures	Please refer to section E for the detail calculation method.
Monitoring frequency	Every two years
QA/QC procedures	Transparent data analysis and reporting. The data is analysed in the monitoring report and raw data is available on request to the VVB.
Purpose of data	To estimate SDG3 contribution
Additional comment	

Relevant SDG Indicator/Safeguarding Principle	5.4.1 Proportion of time spent on unpaid domestic and care work, by sex, age and location. The number of women and girls benefiting from stop/reducing boiling water and collecting/purchasing cooking fuel is the monitored parameter.
Data / Parameter	Net benefits of SDG5
Unit	Number
Description	The number of women and girls benefiting from stop/reduce boiling water and collecting/purchasing cooking fuel.
Source of data	ER calculation sheet, tab: Summary, cell P28

Value(s) applied	331,818
Measurement methods and procedures	Please refer to section E for the detail calculation method.
Monitoring frequency	Every two years
QA/QC procedures	Transparent data analysis and reporting. The data is analysed in the monitoring report and raw data is available on request to the VVB.
Purpose of data	To estimate SDG5 contribution
Additional comment	

Relevant SDG Indicator/Safeguarding Principle	6.1.1 Proportion of population using safely managed drinking water services. The number of people with access to safe drinking water is the monitored parameter.
Data / Parameter	Net benefits of SDG6
Unit	Number
Description	Number of people with access to safe drinking water
Source of data	ER calculation sheet, tab: Summary, cell P29
Value(s) applied	364,515
Measurement methods and procedures	Please refer to section E for the detail calculation method.
Monitoring frequency	Every two years
QA/QC procedures	Transparent data analysis and reporting. The data is analysed in the monitoring report and raw data is available on request to the VVB.
Purpose of data	To estimate SDG6 contribution
Additional comment	

Relevant SDG Indicator/Safeguarding Principle	8.5.1 Average hourly earnings of female and male employees, by occupation, age and persons with disabilities. The number of new job created by the project with safe and healthy work environment is the monitored parameter.
Data / Parameter	Net benefit of SDG8
Unit	Number
Description	Number of new job created by the project with safe and healthy work environment
Source of data	Staff report
Value(s) applied	27
Measurement methods and procedures	PD is monitoring and recording number of its employed staff
Monitoring frequency	Every two year
QA/QC procedures	Transparent data analysis and reporting. The data is analysed in the monitoring report and raw data is available on request to the VVB.
Purpose of data	To define SDG8's contribution
Additional comment	

Relevant SDG Indicator/Safeguarding Principle	- 13.3.1 Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula. The total amount of emission reduction is the monitored parameter.
Data / Parameter	Net benefits of SDG13
Unit	tCO2e
Description	Amount of ER
Source of data	ER calculation sheet, tab: Summary, cell P31
Value(s) applied	46,219.00

Measurement methods and procedures	Please refer to section E for the detail calculation method.
Monitoring frequency	Every two years
QA/QC procedures	Transparent data analysis and reporting. The data is analysed in the monitoring report and raw data is available on request to the VVB.
Purpose of data	To estimate SDG13 contribution
Additional comment	

Relevant SDG Indicator/Safeguarding Principle	15.1.1 Forest area as a proportion of total land area. The area of forest save is monitored indicator.
Data / Parameter	Net benefits of SDG15
Unit	Hectare
Description	Area of forest save
Source of data	ER calculation sheet, tab: Summary, cell P32
Value(s) applied	85.17
Measurement methods and procedures	Please refer to section E for the detail calculation method.
Monitoring frequency	Every two years
QA/QC procedures	Transparent data analysis and reporting. The data is analysed in the monitoring report and raw data is available on request to the VVB.
Purpose of data	To estimate SDG15 contribution
Additional comment	

D.3.Comparison of monitored parameters with last monitoring period

No	Parameter	Description	Unit	Value obtained in (MP3)	Value obtained in (MP2)	Remarks on different
1	QPW _y	Quantity of purified water in year y	L/y/unit	4,583	5,164	The reduction of QPW _y is because the average population serviced by water purifications system (N _{y,i}) is lower than that of the previous MP. N _{y,i} is determined by the monitoring survey. It is understood that different survey may give different results but the result should follows the 90/10 rule as stated in the survey sampling methodology. In this case, N _{y,i} (4.41) meets the 90/10 in which the margin of error at 90% confidence interval is less than 10%.
2	T _{y,i}	Total distributed water purification units	Unit	23,357	28,343	The annual sale in MP3 is 11,678.5 Units (23,357/2 years) which is less than that of MP2 being units 14,171.5 (28,343/2 years). This low sale is understood to be affected by covid and post CoVid 19 pandemic.
3	N _{y,i}	The average population serviced by water purification system	Number	4.41	4.66	The number of people served by CWFs per household is slightly decrease from previous MP. It is understood that different survey may give different results but the result should follows the 90/10 rule as stated in the survey sampling methodology. In this case, N _{y,i} (4.41) follows the 90/10 in which the margin of error at 90% confidence interval is less than 10%.
4	WQ _{Passed,y}	Water Quality passing rate of water quality standard (WHO standard)	%	92.16	98.28	The water quality test result from the select samples is slightly decrease compared to that of the previous MP. It is understood that the difference may be happened due to different test, different samples.
5	R _{y,i}	The average volume of drinking water per person per day	Liter/person/day	3.5	3.5	Fixed over the whole crediting period.

No	Parameter	Description	Unit	Value obtained in (MP3)	Value obtained in (MP2)	Remarks on different
6	Usage Rate	Usage rate of the sold units based on its age group				During this monitoring period, PP has cover up to 10 age groups of CWF while the last MP was covered only 8 age groups.
		1	%	100	93.55	
		2	%	100	99.13	
		3	%	93.94	84.57	
		4	%	79.49	57.29	
		5	%	95.74	68.24	
		6	%	60.55	63.33	
		7	%	13.33	36.17	
		8	%	16.67	9.02	
		9	%	15.00	NA	
		10	%	13.33	NA	
7	N _{Less_smoke,y}	% of households notice that their kitchen is less smoke	%	84.62%	96.13%	Slightly difference due to different samples and survey.
8	Women%	% of women and girls responsible for water boiling and collecting/purchasing cooking fuel before having CWFs	%	91.03%	95.69%	Slightly difference due to different samples and survey
9	SDW	Existence of public distribution network of safe drinking water	%	0	0	No difference.
10	ER	Emission reduction	tCO ₂ e/y/unit	0.26	0.29	The ER in this MP is slightly lower than that of previous one. This is due to number of person per household in this MP is slightly less than that of the previous one.

No	Parameter	Description	Unit	Value obtained in (MP3)	Value obtained in (MP2)	Remarks on different
11	SDG1	Amount of biomass save after using project technology	tonne	20,032.36	18,399.82	Slightly increase mainly due to cumulative number of filter sold is up to 18 th Dec 2022 where in the previous MP the cumulative sales is only up to 18 Dec 2020.
		Amount of LPG save after using project technology	tonne	10,292.80	9,453.99	Slightly increase mainly due to cumulative number of filter sold is up to 18 th Dec 2022 where in the previous MP the cumulative sales is only up to 18 Dec 2020.
		Percentage of household noted on money save	%	79.63%	88.56%	Slightly difference due to different samples and survey
		Percentage of household noted on time save after using the project technology	%	99.10%	98.92%	Slightly difference due to different samples and survey
12	SDG3	Number of people who notice less smoke in kitchen after having water filter	People	308,452	310,419	Slightly difference due to different samples and survey
13	SDG5	Number of women and girls benefiting from stop/reduce boiling water and collecting/purchasing cooking fuel	People	331,818	353,703	Slightly difference due to different samples and survey
14	SDG6	Number of people with access to safe drinking water	People	364,515	369,635	Slightly difference due to different samples and survey
15	SDG8	Number of new jobs created by the project with safe and healthy work environment	Staff	27	19	Slightly increase due to new, bigger factory capacity
16	SDG13	Emission Reduction	tCO2e	46,219.00	44,942.00	Slightly increase mainly due to cumulative number of filter sold is up to 18 th Dec 2022 where in the previous MP the cumulative sales is only up to 18 Dec 2020.
17	SDG15	Area of forest save	Hectare	85.17	78.23	Slightly increase mainly due to cumulative number of filter sold is up to 18 th Dec 2022 where in the previous MP the cumulative sales is only up to 18 Dec 2020.

D.4.Implementation of sampling plan

Objective and reliability requirement

The sampling objective is to obtain a reliable estimate of the following key variables over the course of this monitoring period and meeting the indicated confidence/precision levels. The parameters to be monitored are as following:

- The average population serviced by a water purification system ($N_{y,i}$) from Project Survey
- Existence of public distribution network of safe drinking waterq (SDW) from Project Survey
- % of households notice that their kitchen is less smoke ($N_{Less_smoke,y}$) from Project Survey
- Average percentage of women and girls responsible for water boiling and collecting/purchasing cooking fuel before having CWFs (Women%) from project survey
- Percentage of Operational Units (Usage Rate) from Usage survey
- Water quality which is conducted by mobile testing kit is used.

According to the EB 86 Annex 3 “Standard for Sampling and Surveys for CDM PAs and PoAs” Version 05.0, paragraph 10 “Where there is no specific guidance in the applicable methodology, project proponents shall use 90/10 confidence/precision as the criteria for reliability of sampling efforts for small-scale project activities and 95/10 for large-scale project activities.” Because the proposed project activity is the small-scale project and there is no specific requirement in the applied methodology AMS III.AV, version 4, so the 90 per cent confidence interval and a 10 per cent margin of error requirement shall be achieved for the sampling parameter.

Description of the implemented sampling design

Sample plan for monitoring surveys (Usage and Project survey and water quality test survey) are prepared in accordance with the approved sample plan under the registered PDD and approved transition annex. It is designed to be representative of all households in the target population including all HHs in the nation of Indonesia, which are end-users of the project technology and who have purchased the CWF from 01/12/2011 through 18/12/2022.

The sample of HHs was chosen from Nazava’s project database representing all CWF customers for whom contact information is available. Villages have been identified from the Nazava customer information.

During this MP, the surveys include all HHs with end user details in the four (4) provinces which account for about 71% of the total sales.

A list of villages per each selected province is used as a sampling frame²⁰.

Sample size

Given the various survey activities have been consolidated into a single Project Sample Group (PSG) and to ensure that the accuracy requirements for each survey activity have been met, the sample size have been estimated separately for each survey activity.

Based on the registered PDD, sample size needs to be determined on a stratum level to ensure that the precision and reliability requirements are met throughout the data set. The size of the sample for each sampling frame is determined by the requirement to achieve the 90/10 confidence/precision for the estimation of the proportion or mean value of the parameter investigated.

²⁰ Nazava_MP3(2023)_Sampling_Village, Tab ProjectSurveySample.

The table below summarized the sample size estimated in the sample plan and the actual survey with comment and justification on the differences. The detailed of the sample plan is described in “Nazava_MP3 (2023) Sample Plan”.

No	Parameters to be monitored	Name of the survey	Planned Sample size	Actual survey household	Comment/Justification
1	$N_{y,i}$	Project survey	268 ²¹	324	With the increase of sample for usage survey, household who still use CWFs were asked to participate in the project survey. The more the sample, the better representative the figure is.
2	SDW				
3	$N_{Less_smoke,y}$				
4	Women%				
6	Usage rate	Usage survey	336	486	The samples were increased to include difference age of the filter which may reflect the actual usage rate.
7	$WQ_{passed,y}$	Water quality test survey	50	51	The test water sample is higher than what has plan to increase its reliability.

Demonstration that the samples were randomly selected and are representative of the population

A Project Sample Group (PSG) including both project survey and usage survey is established to monitor a representative sample of all participating HHs in the target population.

The chosen sampling method for the PSG is a Stratified random sample in accordance with the CDM methodology guidelines, CDM-EB67-A06-GUID, Guidelines: Sampling and Surveys for CDM Project Activities and Programme of Activities, (Version 4.0).

The samples for the PSG are randomly selected across the four (4) provinces representing the proportion of CWF end-users of about 71%.

The total customer list for each province is divided geographically into villages and customers categorized by age group.

For water quality test survey, the sampling is done using random sampling method. However, for cost saving and logistic arrangement without scarifying the quality of data sampling, the random sampling will be done for the selected villages under the project survey which were already randomly selected and represented about 71% of the total sale. The total number of sample is determined by using random function in Microsoft Excel. Please refer to the sample plan (Nazava_MP3(2023)SamplePlan) for the detail.

Collected data

The survey questionnaires were developed in accordance with the registered methodology by carbon consultant (Nexus) and the project implementer (Nazava). It is first developed in English, then translated into Indonesia. The questionnaire is then reformatted into tablet-based data collection system (<https://five.epicollect.net/>).

Data cleaning and analysis

²¹ Assuming 80% of usage survey sample size

After the data was provided from field teams, it was cleansed by the project manager. Cleansing checked for any missing values, inappropriate logical skips, or likely erroneous values (outliers). Where any issues were identified, they were addressed by going back to the interviewer's or supervisor's notes for that village/household. For clarification on specific values, respondents were called to confirm correct values. The clean data was then analyzed using Microsoft excel software. For water quality test survey, the water samples are tested with mobile testing kit and all the results were taken pictures as evidence as shown in WQtest results Nazava MP3.

Demonstration that the required confidence/precision level has been met

As mentioned above the sample size and sample selection of all the survey components (usage and project survey) and water quality test survey were followed the registered methodology as detail in sample plan (Nazava_MP3(2023)SamplePlan). The result for $N_{y,i}$ was also checked against 90/10 rule and its corresponding values is meeting the requirement in which the margin of error at 90% confidence interval is less than 10% as seen in below table of the project survey data analysis (Nazava_MP3_ProjectSurvey_Test, Tab: URate&Nyi, Cell G32).

Checking if # person/HH is follow 90/10 rule						
N	Mean	Std Dev	Standard	90% Confidence Interval		Margin
			Error Mean	Lower Limit	Upper Limit	(+/-)
323	4.41	1.918	0.107	4.236	4.588	3.99%

SECTION E.CALCULATION OF SDG IMPACTS

E.1.Calculation of baseline value or estimation of baseline situation of each SDG Impact

Goal 1 Contribution

The project technology help users to save time spending on fuel collection/purchase and boiling water, and save household expenditure on fuel purchased for boiling water. The indicator for this SDG1 would be *the amount fuel saves, the percentage of household noted on money save and the percentage of time save after using the project technology* which are relevant to the UN's SDG indicator "1.1.1 Proportion of population below the international poverty line, by sex, age, employment status and geographical location (urban/rural).

Estimating baseline outcome:

In the baseline situation, no fuel save, no percentage of household noted on money save and no percentage of household noted on time save after using the project technology. Therefore, the four baseline outcome benefits are zero.

Table 4 - Baseline outcomes of SDG1

Indicator	Unit	Baseline situation ²²
SDG1 (a) Biomass saved	tonne	0
SDG1 (b) LPG saved	tonne	0
SDG1 (c) % of HH noted on money save	%	0
SDG1 (d) of % of HH noted on time save	%	0

Goal 3 Contribution

The project technology help reducing smoke and dust coming from boiling water with solid biomass. Therefore, it could help contributing to the target 3.9 "by 2030 substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water, and soil pollution and contamination" of Goal 3.

Estimating Baseline outcome:

In baseline situation, no change in smoke level from boiling water. Therefore, baseline outcome benefit is zero.

Goal 5 contribution

The project technology help reducing the work load on women and girls who are responsible for boiling water and collecting/purchasing cooking fuel which is contributing to the target 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" of Goal 5. The SDG's indicator of this target is *the number of women and girls benefiting from stop/reduce boiling water and collecting/purchasing cooking fuel* which is relevant to the UN's SDG indicator "5.4.1 Proportion of time spent on unpaid domestic and care work, by sex, age and location".

Estimating Baseline outcome:

²² Please refer to ER spreadsheet, tab "summary, cell M22:M25"

In baseline situation, no distribution of project technology. Therefore, baseline outcome benefit is zero.

Goal 6 contribution

The project technology provides a clean water supply to the users which is contributing to the target 6.1 “by 2030, achieve universal and equitable access to safe and affordable drinking water for all”. The SDG’s indicator of this target is ***the number of people access to safe drinking water*** which is relevant to the UN’s SDG indicator “6.1.1 Proportion of population using safely managed drinking water services”

Estimating Baseline outcome:

In baseline situation, no distribution of project technology. Therefore, baseline outcome benefit is zero.

Goal 8 contribution

Through the project activities, it will create jobs which contribute to the target 8.5 “by 2030 achieve full and productive employment and decent work for all women and men”. ***The number of new job created by the project with safe and healthy work environment is used as indicator of this SDG8*** which is relevant to the UN’s SDG indicator “8.5.1 Average hourly earnings of female and male employees, by occupation, age and persons with disabilities”.

The expected job created are logistic manager, production manager, worker, admin and finance officer, sale officer.

Estimating baseline outcome:

In baseline situation, no new job created with safe and healthy work environment. Therefore, baseline outcome benefit is zero.

Goal 13 contribution

According to the selected methodology AMS-III.AV Version 4.0, the project will help to save fuel which therefore reduce the GHG emission. Amount of ER will be calculated according to the selected methodology **which is relevant to the UN’s SDG indicator SDG13.3.1**. The following section will describe a step by step in estimating baseline outcome of SDG13.

Calculating Baseline Emissions (BE_y)

$$BE_y = QPW_y \times SEC \times f_{NRB,y} \times EF_{\text{projected fossil fuel}} \times 10^{-9} \quad \text{Equation 1}$$

Where:

Parameters	Description	Source/value
BE _y	Baseline Emission	Calculated
QPW _y	Quantity of purified water in year y in litre	Equation 2
SEC	Specific energy consumption required to boil one litre of water	Equation 3
f _{NRB,y}	Fraction of woody biomass used in the absence of the project activity in year y that can be established as non-renewable	See section D.1

EF _{projected fossilfuel}	Emission factor for the substitution of non-renewable woody biomass or the emission factor of the fossil	See section D.1
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Estimating quantity of purified water (QPWy)

$$QPW_y = T_{y,i} \times N_{y,i} \times R_{y,i} * 365 * \text{Water Quality} * \text{Operation Units} * X_{\text{boil}} \quad \text{Equation 2}$$

Where:

Parameters	Description	Source/value
QPW _y	Quantity of purified water in year y (liter)	To be calculated
T _{y,i}	Total distributed water purification units	Sale database
N _{y,i}	The average population serviced by water purification system	See section D.2
R _{y,i}	The average volumes of drinking water per person per day (liter)	See section D.1
Water Quality	Water quality passing WHO standard rate	See section D.2
Operation Units ²³	Usage rate of the sold units based on its age group	See section D.2
X _{boil}	Fraction of the population serviced by the project activity for which the common practice of water purification is or would have been water boiling	See section D.1

Estimating Specific energy consumption required to boil one litre of water (SEC)

$$SEC = [WH * (T_f - T_i) + 0.01 * WHE] / \eta_{wb} \quad \text{Equation 3}$$

Where:

Parameters	Description	Source/value
SEC	Specific energy consumption required to boil one litre of water	To be calculated
WH	Specific heat of water	See section D.1
T _f	Final temperature	See section D.1
T _i	Initial temperature	See section D.1
WHE	Latent heat of water evaporation	See section D.1
η _{wb}	Stove's thermal efficiency	See section D.1

Based on the above equation and data presented in section D.1 and D.2, the baseline outcome of SDD13 was estimated to be **48,654 tCO₂e²⁴**.

Goal 15 Contribution

²³ It is same with Usage Rate (Up,y)

²⁴ ER spreadsheet, tab "Summary, cell M31"

The project technology help users to reduce amount of fuel collected or purchased especially biomass save which contribute to the area of forest save. The indicator for this SDG15 would be *the area of forest save* which is relevant to the UN's SDG indicator "15.1.1 Forest area as a proportion of total land area".

Estimating baseline outcome

In baseline situation, no area of forest save. Therefore, baseline outcome benefit is zero.

E.2.Calculation of project value or estimation of project situation of each SDG Impact

Goal 1 Contribution

Estimating project outcome

In the project situation, the amount of biomass save (a) and LPG save (b) and the project outcome (C) of SDG1 and outcome (d) of SDG1 can be estimated as shown in Table 5.

In the project situation, the project outcome can be estimated as following:

Project outcome (a) of SDG1

The amount of Biomass saves = $[QPW_y * SEC * 10^{-9} * \%HH \text{ using wood}] / NCV_{wood}$ Equation 4

Project outcome (b) of SDG1

The amount of LPG saves = $[QPW_y * SEC * 10^{-9} * \%HH \text{ using LPG}] / NCV_{LPG}$ Equation 5

Project outcome (c) of SDG1 = % of household noted on money save after using the project technology

Project outcome (d) of SDG1 = % of household noted on time save after using the project technology

Where

Parameters	Description	Source/value
Project outcome (a) of SDG1	Total amount of biomass fuel saves (tonne)	To be calculated Equation 4
Project outcome (b) of SDG1	Total amount of LPG fuel saves (tonne)	To be calculated Equation 5
QPW_y	Quantity of purified water in year y (litre)	Equation 2
SEC	Specific energy consumption required to boil one litre of water (kJ/L)	Equation 3
%HH using biomass	Percentage of household using biomass for boiling water (%)	see section D.1
%HH using LGP	Percentage of household using LPG for boiling water (%)	see section D.1
NCV_{wood}	Net calorific value of wood (TJ/ton)	see section D.1
NCV_{LPG}	Net calorific value of LPG (TJ/ton)	see section D.1
Project outcome (c) of SDG1	Percentage of household noted on money save after using the project technology (%)	Monitoring survey
Project outcome (d) of SDG1	Percentage of household noted on time save after using the project technology (%)	Monitoring survey

Based on the above equations and monitoring survey data, the baseline outcome was estimated as shown in Table 5

Table 5 - Project outcome SDG 1

Description	Value ²⁵
Project outcome (a) of SDG1 = amount of biomass save	20,032.36
Project outcome (b) of SDG1 = amount of LPG save	10,292.80
Project outcome (c) of SDG1 = % of household noted on money save after using the project technology	79.63%
Project outcome (d) of SDG1 = % of household noted on time save after using the project technology	99.10%

Goal 3 Contribution

Estimating Project outcome:

In project situation, the number of people using CWF and note that their kitchen is less smoke could be calculated below:

$$SDG3 \text{ contribution (number of people)} = T_{y,i} * N_{y,i} * \text{usage rate} * WQ_{\text{Passed},y} * N_{\text{Less_smoke},y}$$

Parameters	Description	Source/value
Project outcome of SDG3	Number of people using CWF and note that their kitchen is less smoke	To be calculated
$T_{y,i}$	Total distributed water purification units	See section D.2
$N_{y,i}$	The average population serviced by water purification system	See section D.2
usage rate	Usage rate for technologies in project scenario p during year y, based on cumulative installation rate and drop off rate	See section D.2
$WQ_{\text{Passed},y}$	Water Quality passing rate of water quality standard (WHO standard)	See section D.2
$N_{\text{Less_smoke},y}$	% of households notice that their kitchen is less smoke	See section D.2

Based on the above equation and the monitored parameters in section D.2, project outcome of SDG3 was estimated to be **308,452 people**²⁶.

Goal 5 contribution

Estimating Project outcome:

In the project situation, the *number of women and girls benefiting from stop/reducing boiling water and collecting/purchasing cooking fuel* can be estimated as following:

$$SDG5 \text{ contribution (number of people)} = T_{y,i} * N_{y,i} * \text{usage rate} * WQ_{\text{Passed},y} * X_{\text{boil}} * \text{Women\%}$$

Parameters	Description	Source/value
Project outcome of SDG5	Number of women and girls benefiting from stop/reducing boiling water and collecting/purchasing cooking fuel	To be calculated
$T_{y,i}$	Total distributed water purification units	See section D.2
$N_{y,i}$	The average population serviced by water purification system	See section D.2

²⁵ ER spreadsheet, tab "Summary, Cell N23:N26"

²⁶ ER spreadsheet, tab "Summary, cell N27".

usage rate	Usage rate for technologies in project scenario p during year y, based on cumulative installation rate and drop off rate	See section D.2
$WQ_{Passed,y}$	Water Quality passing rate of water quality standard (WHO standard)	See section D.2
X_{boil}	Fraction of the population serviced by the project activity for which the common practice of water purification is or would have been water boiling	See section D.1
<i>Women%</i>	Average percentage of women and girls responsible for water boiling and collecting/purchasing cooking fuel before having CWFs.	See section D.2

Based on the above equation, the project outcome of SDG5 was estimated to be 331,818 women²⁷

Goal 6 contribution

Estimating project outcome:

In the project situation, the number of people with access to safe drinking water can be estimated as following:

$$\text{Project outcome of SDG6} = T_{y,i} \times N_{y,i} \times \text{usage rate} \times WQ_{Passed,y}$$

Where

Parameters	Description	Source/value
Project outcome of SDG6	Number of people with access to safe drinking water	To be calculated
$T_{y,i}$	Total distributed water purification units	See section D.2
$N_{y,i}$	The average population serviced by water purification system	See section D.2
usage rate	Usage rate for technologies in project scenario p during year y, based on cumulative installation rate and drop off rate	See section D.2
$WQ_{Passed,y}$	Water Quality passing rate of water quality standard (WHO standard)	See section D.2

Based on the above equation, project outcome of SDG6 was estimated to be 364,515 people²⁸

Goal 8 contribution

Estimating project outcome:

In project situation, the number of created jobs with safe and healthy work environment will be recorded by the project implementer:

Project outcome of SDG8 = Number of created jobs % of worker with salaries paid being at par with wage laws in the host country*

The project outcome of SDG8 was reported to be 27 staffs²⁹ with salaries above minimum wage and with safe and healthy work environment.

²⁷ ER spreadsheet, tab "Summary, cell N28".

²⁸ ER spreadsheet, tab "Summary, cell N29".

²⁹ Nazava_MP(2020)_Staff_Report

Goal 13 contribution

Estimating project outcome

In the project situation, the project emission is zero based on the registered methodology (AMS-III.AV, version 04.0).

Goal 15 contribution

Estimating project outcome

In the project situation, biomass saving related the area of forest save can be estimated as following:

Project outcome of SDG15 = [(Amount of wood save/converting factor of biomass from m³ to tonne)* f_{NRBy} /Growth stock in forest]

Parameter	Description	Value/source
Amount of wood save	Amount of wood save per year [tonne]	Equation 4
f_{NRBy}	Fraction of woody biomass used in the absence of the project activity in year y that can be established as non-renewable	82.1 (see section D.2)
Converting factor of biomass from m ³ to tonne	Converting factor of biomass from m ³ to tonne	1.725 tonne/m ³ (see section D.2)
Growth stock in forest	Growth stock in forest in Indonesia	112 m ³ /ha (see section D.2 below).

Based on the above equation, project outcome of SDG15 was estimated to be 85.17 ha

E.3.Calculation of leakage

Based on the registered methodology (AMS-III.AV, version 04.0), the default value for leakage is 5% of the baseline outcome. Thus, the leakage can be estimated as following:

Indicator	Description	Equation	Value ³⁰
SDG13	SDG13 Emission Reduction	= Baseline outcome *5%	2,435.00

E.4.Calculation of net benefits or direct calculation for each SDG Impact

SDG	SDG Impact	Baseline outcome	Project outcome	Leakage	Net benefits ³¹	
SDG13 Emission Reduction	Emissions Reductions	860 (2020 Vintage)	0.00	44.00 (2020 Vintage)	816 (2020 Vintage)	46,219 (Total in MP)
		24,504 (2021 Vintage)		1,226.00 (2021 Vintage)	23,278 (2021 Vintage)	
		23,290 (2022 Vintage)		1,165.00 (2022 Vintage)	22,125 (2022 Vintage)	
SDG1. No Poverty	Amount of biomass save after using project technology	0	361.06 (2020 Vintage)	0.00	361.06 (2020 Vintage)	20,032.36 (Total in MP)
			10,089.28 (2021 Vintage)		10,089.28 (2021 Vintage)	
			9,582.02 (2022 Vintage)		9,582.02 (2022 Vintage)	
	Amount of LPG save after using project technology	0	185.52 (2020 Vintage)	0.00	185.52 (2020 Vintage)	10,292.80 (Total in MP)
			5,183.96 (2021 Vintage)		5,183.96 (2021 Vintage)	
			4,923.33 (2022 Vintage)		4,923.33 (2022 Vintage)	
	Percentage of household noted on money save	0.00%	79.63%	0.00%	79.63%	
	Percentage of household noted on time save after using the project technology	0.00%	99.10%	0.00%	99.10%	
SDG3. Good Health and well being	Number of people who notice less smoke in kitchen after having water filter	0	308,452	0	308,452	
SDG5. Gender Equality	Number of women and girls benefiting from stop/reduce boiling	0	331,818	0	331,818	

³⁰ ER spreadsheet, tab "Summary, cell O31"

³¹ ER spreadsheet, tab "Summary, cell P23:P32"

	water and collecting/purchasing cooking fuel				
SDG6: Clean water and sanitation	Number of people with access to safe drinking water	0	64,515	0	364,515
SDG8: Decent work and economic growth	Number of new jobs created by the project with safe and healthy work environment	0	27	0	27
SDG15: Life on Land	Areas of forest save	0	<div>1.54 (2020 Vintage)</div> <div>42.90 (2021 Vintage)</div> <div>40.74 (2022 Vintage)</div>	0	<div>1.54 (2020 Vintage)</div> <div>42.90 (2021 Vintage)</div> <div>40.74 (2022 Vintage)</div> <div>85.17 (Total in MP)</div>

E.5.Comparison of actual SDG Impacts with estimates in approved PDD

Item	Indicator	Values estimated in ex ante calculation of approved PDD for this monitoring period ³²	Actual values achieved during this monitoring period
SDG 1 (a)	The amount of biomass save (tonnes)	N/A	19,030.74
SDG 1 (b)	The amount of LPG save (tonnes)	N/A	9,778.16
SDG 1 (c)	% Of household noted on money save after using the project technology	N/A	79.63%
SDG 1 (d)	% Of household noted on time save after using the project technology	N/A	99.10%
SDG 3	Number of people who notice less smoke in kitchen after having water filter	N/A	308,452
SDG 5	Number of women and girls benefiting from stop/reduce boiling water and collecting/purchasing cooking fuel	N/A	331,818

³² Please refer to PDD page 24 for SDG13, for the other SDGs no values are estimated; at the Transition Annex time no enough data available and no survey conducted as well to estimate ex-ante values

SDG 6	Number of people access to safe drinking water	N/A	364,515
SDG 8	The number of new job created by the project with safe and healthy work environment	N/A	19.00
SDG 13	Amount of emission reduction (tCO ₂ e)	78,730	46,219.00
SDG15	The areas of forest save (Hectare)	N/A	80.91

E.5.1.Explanation of calculation of value estimated ex ante calculation of approved PDD for this monitoring period

The calculation method of value estimated in ex ante calculation of approved PDD for this monitoring period is the same as the one in this monitoring period. However, the differences are the monitored value which will be elaborated in the following section E.6.

E.6.Remarks on increase in achieved SDG Impacts from estimated value in approved PDD

The SDG Impacts of SDG13 for this monitoring period is lower than what was estimated in the approved PDD i.e. 78,730 tCO₂e. During this monitoring period MP3 total emissions reductions achieved were 46,219.00 tCO₂e which is mainly caused by lower sale values achieved in this MP and in total as well. It was expected to have cumulative 288,373 units where it is only achieved to 139,579 units at the end of this MP which is less than half. During the monitoring period total of 23,357 units sold where it was expected to be 118,789 units where it is almost lower 5 times. Achieved usage rates are higher than what is expected in the PDD, so in total achieved ER is lower 41%.

SECTION F.SAFEGUARDS REPORTING

The project involves in the application of silver colloid the production of water filter. Ministry of Industry and handicraft have determined the environmental impact of Nazava and because no chemicals are emitted no monitoring is deemed necessary.

Nazava has followed and fulfilled the national environmental requirements as proven by its certificate for factory operation³³.

SECTION G.STAKEHOLDER INPUTS AND LEGAL DISPUTES

G.1.List all Inputs and Grievances which have been received via the Continuous Input and Grievance Mechanism together with their respective responses/mitigations.

As discussed in Local stakeholder consultation report, three main channels have been set up (1) Grievance Expression Process Book, (2) Telephone access, (3) Internet/Email access, as part of grievance mechanism. Under the channel (3), there is new line opened for online customer care service (WhatsApp). During this monitoring period there were 586 support tickets opened which includes questions on how the filters works from non-users. All those tickets were closed.³⁴

Description	Method Chosen (include all known details e.g. location of book, phone, number, identity of mediator)	Monitoring result up to end of MP3
Continuous Input / Grievance Expression Process Book	A comment book is available at Nazava offices in Bandung: Jl. Soreang – Cipatik (Cisaat), RT 001 RW 002 No. 147, Jelegong, Kutawaringin, Kabupaten Bandung, Jawa Barat, Indonesia	No comments (see below photos of the complaint book in Bandung ³⁵).
Telephone access	Nazava +6281360862522	No comments
Online Chat Customer Care Service Line	+6281360446295 (WhatsApp Customer Care- This number is also written on the CWF products)	586 Support Tickets opened during MP3 and All the tickets are Closed.
Internet/email access	https://www.facebook.com/nazava https://www.nazava.com/en/ info@nazava.com Tel of project participant: (856-41) 252717 GS contact +41 22 788 7080	No comments
Nominated Independent Mediator (optional)	NA	NA

³³ Certification of factory operation

³⁴ Before closing a ticket Nazava Customer Care ask the customer if the issue have been resolved if they do not answer Nazava try to call & message 3 times before closing the ticket.

³⁵ Nazava has only one office which is located in Bandung.



G.2.Report on any stakeholder mitigations that were agreed to be monitored.

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There were no any stakeholder mitigations measured to be monitored beside the monitored data that were mentioned in Section D.2.

G.3.Provide details of any legal contest that has arisen with the project during the monitoring period

N/A

Revision History

Version	Date	Remarks
1.1	14 October 2020	<p>Hyperlinked section summary to enable quick access to key sections</p> <p>Improved clarity on Key Project Information</p> <p>Section for POA monitoring</p> <p>Forward action request section</p> <p>Improved Clarity on SDG contribution/SDG Impact term used throughout</p> <p>Clarity on safeguard reporting</p> <p>Clarity on design changes</p> <p>Leakage section added for VER/CER projects</p> <p>Addition of Comparison of monitored parameters with last monitoring period</p> <p>Provision of an accompanying Guide to help the user understand detailed rules and requirements</p>
1.0	10 July 2017	Initial adoption