Gold standard for the global goals
Monitoring report

June 2017, version 1

<table>
<tr><td>Title of the project</td><td>Improved cook stoves in pastoral and agro-pastoral communities in Southern Ethiopia</td></tr>
<tr><td>Gold Standard project id</td><td>GS3422</td></tr>
<tr><td>Version number of the monitoring report</td><td>Version 05</td></tr>
<tr><td>Completion date of the monitoring report</td><td>29/09/2020</td></tr>
<tr><td>Date of project design certification</td><td>05/12/2015 (Project registration date)</td></tr>
<tr><td>Start date of crediting period</td><td>12/10/2014</td></tr>
<tr><td>Duration of this monitoring period</td><td>01/04/2019 to 31/03/2020 (5th monitoring period)</td></tr>
<tr><td>Duration of previous monitoring period</td><td>01/04/2019 to 31/03/2019</td></tr>
<tr><td>Project representative(s)</td><td>Carbonsink Group S.r.l. (Carbonsink)</td></tr>
<tr><td>Host Country</td><td>Ethiopia</td></tr>
<tr><td>Certification pathway (activity certification/impact certification)</td><td>Impact certification</td></tr>
<tr><td>SDG Contributions targeted (as per approved PDD)</td><td>1 – SDG 13: Climate action
2 – SDG 1: No Poverty
3 – SDG 3: Good Health and Well-being
4 – SDG 7: Affordable and Clean Energy</td></tr>
<tr><td>Gold Standard statement/product certification sought (GSVER/ADALYs/RECs etc.)</td><td>GSVER</td></tr>
<tr><td>Selected methodology(ies)</td><td>The Gold Standard Simplified Methodology for Efficient Cookstoves (February 2013)</td></tr>
<tr><td>Estimated amount of annual average certified SDG impact (as per approved PDD)</td><td>SDG13:

<table><tr><td>Vintage</td><td>Estimated amount (tCO_2e)</td></tr><tr><td>2019 (01/04 – 31/12/2019)</td><td>5,087</td></tr><tr><td>2020 (01/01 – 31/03/2020)</td><td>2,799</td></tr><tr><td>Total</td><td>7,886</td></tr></table>
SDG 1: Less money spent and less time consumed for woodfuel collection in comparison with the baseline, hence more time is available for other tasks, like education or income generating activities.

SDG 3: Less smoke related inconveniences in comparison with the baseline</td></tr>
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<table>
<tr><td></td><td>SDG 7: 4,955 households using efficient cookstoves</td></tr>
<tr><td>Total amount of certified SDG impact (as per approved methodology) achieved in this monitoring period</td><td>SDG13:

<table><tr><td>Vintage</td><td>Estimated amount (tCO_2e)</td></tr><tr><td>2019 (01/04 – 31/12/2019)</td><td>5,419</td></tr><tr><td>2020 (01/01 – 31/03/2020)</td><td>1,761</td></tr><tr><td>Total</td><td>7,180</td></tr></table>
SDG 1: Less money spent for 21% of households and less time consumed for woodfuel collection for 23% of households, in comparison with the baseline, hence more time is available for other tasks, like education or income generating activities. Most of respondents declared to use save money/time food expenses and household activities.

SDG 3: Less smoke related inconveniences for 100% of households in comparison with the baseline

SDG 7: 2,966 households using efficient cookstoves</td></tr>
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SECTION A. Description of project

A.1. Purpose and general description of project

The Project Activity has involved the distribution of 4,955 fuel efficient cookstoves to families within Liben, Gorodola and Arero Woredas of Oromia Regional State and Filtu and Hudet Woredas of Somali, Regional State in Southern Ethiopia. The goal of the project is to improve energy efficiency as well as the conditions of the local population. At the same, the project will reduce CO_2 emission by the reduced fuel use for cooking activities.

In the baseline situation most families (75%) living in the above mentioned woredas, cook with the traditional three stone fires or other inefficient wood stoves that consume large amounts of firewood[1]. In the rural areas, which are the focus area of this project, firewood is practically the only fuel used because alternative fuel sources are either unavailable or unaffordable. This means that lots of firewood is used and a lot of time spent for the fuel collection. The traditional cooking method also produces a lot of smoke which causes respiratory diseases, particularly in women/girls who use it for cooking, but also in young children and other people (e.g. the elderly) who spend a lot of time indoors. The use of inefficient cooking method has also unintentional negative impacts on the environment.

The project activity has organized Fuel Saving Stove (FSS) producing cooperatives in the main centres of the project area, Negele Borena town in Guji Zone (Oromia Regional State) and Filtu in Liben Zone (Somali Regional State). Part of the stoves will be bought also directly from the already existing producers from the capital city, Addis Ababa, and brought to the project invention area for selling. The distribution of the stoves to end-users will be made by retailers with the support of project proponent (COOPI). The cookstove model distributed in the project is Tikikil Rocket Stove. This stove model is tailored and optimized for local cooking requirements and it can accommodate the Ethiopia's most commonly used pot types. The fuel used by the stove is firewood.

The stove distribution started on 11th of October 2014 and was completed within one year (by 11th of November 2015). All together 4,955 stoves have been distributed to the local families[2].

This Monitoring Report covers the fifth monitoring period from 01/04/2019 to 31/03/2020 (totally 12 months) for which the monitoring activities were implemented in the field during March and April 2020. The GHG emissions achieved during this monitoring period are 7,180 tCO_2e.[3]

A.2. Location of project

Host Party:	Federal Democratic Republic of Ethiopia
Regional State:	Oromia and Somali Regional States
Woredas:	Arero, Liben and Gorodola Woredas of Oromia Regional State and Filtu and Hudet Woredas of Somali Regional State

The core area of the project will be the surroundings of the towns of Negele Borena and Filtu as these two towns will host the project stove producing cooperatives. Therefore, the coordinates of these towns are used to represent the physical location of the project activity (table 1).

[1] BAGER SAFE ENVIRONMENT FOR HEALTH SERVICES PLC, 2012 (uploaded to GS registry during 1st verification)

[2] From 4,955 distributed stoves 95% (corresponding 4,707 stoves) are considered eligible as described in Section D.3.

[3] Note. From 7,180 tCO_2e is composed of totally 5,419 of vintage 2019 ERs and 1,761 of vintage 2020 ERs. Annual ERs are capped as 10,000 VERs for each project year as showed in the ER calculation spreadsheet.

Table 1: coordinates of the towns of Negele Borena and Filtu

Coordinates	Latitude (North)	Longitude (East)
Negele Borena	5°19’58.24	39°34’27.70
Filtu	5°06’45.97	40°39’15.69

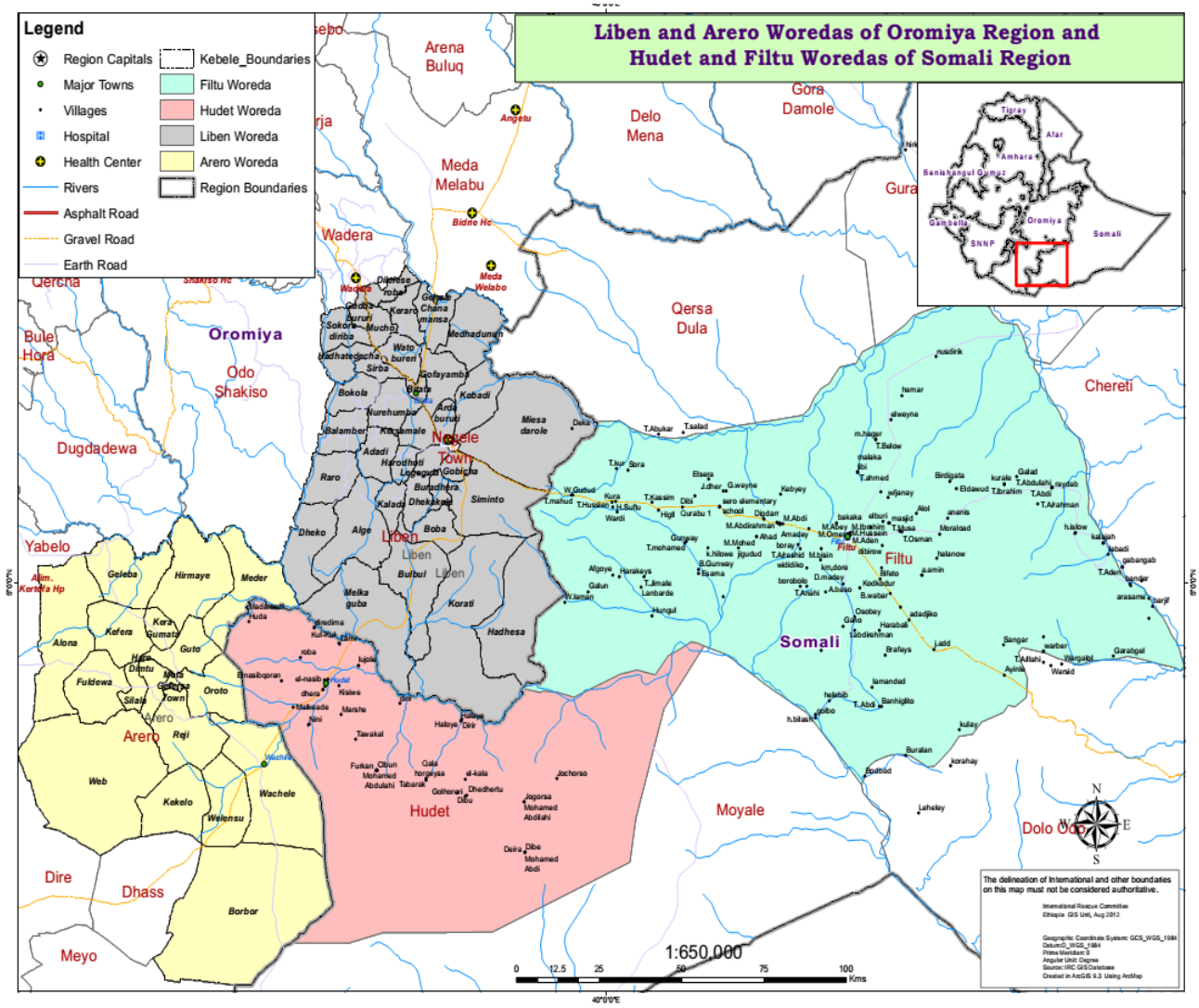

Figure 1: Project invention area including Arero, Liben, Gorodola, Filtu and Hudet woredas. Note that Gorodola woreda is presented as a part of Liben woreda since this woreda is only recently separated from Liben woreda.

A.3. Reference of applied methodology

The applied methodology is the Gold Standard Simplified Methodology for Efficient Cookstoves (February 2013).

A.4. Crediting period of project

The type and length of crediting period applied to this project is renewable 7 years crediting period. The start date of the crediting period is 12/10/2014 and the crediting period end date is 11/10/2021.

This Monitoring Report covers the period of 01/04/2019 to 31/03/2020.

SECTION B. Implementation of project

B.1. Description of implemented project

Purpose of Project Activity and the description of the installed technology

The Micro-Scale Voluntary Project Activity GS3422 "Improved cook stoves in pastoral and agro-pastoral communities in Southern Ethiopia" involves the distribution of domestic fuel-efficient cookstoves to households within the project area located in Oromia and Somali Regional States in Southern Ethiopia. The goal of the project is to improve energy efficiency as well as the conditions of the local population. At the same, the project will reduce CO_2 emission by the reduced fuel use for cooking activities.

The cookstove model distributed in the project is Tikikil Rocket Stove (figure 2). This stove model is tailored and optimized for local cooking requirements and it can accommodate the Ethiopia's most commonly used pot types. The fuel used by the stove is firewood. The design of the stove ensures efficient combustion leading to fuel wood usage reduction up to 50% of compared to the traditional three stone fires and average thermal efficiency of 27%[4]. The Tikikil stoves also emit less smoke compared to the traditional cooking methods. The technical specifications of the model are shown in the table below (table 2).

Table 2: Technical specifications of Tikikil double skirt stove[5]

Technical specification	Tikikil duble skirt stove
Stove Type	Portable rocket stove
Production materials	Inner clay liner for the combustion chamber clad with galvanized sheet metal on the outside
Dimensions	Skirt diameter 29 cm and 33 cm Height 36 cm
Thermal efficiency	27%[4]
Average lifespan	Up to 5 years[6]

[4] The Water Boiling Test results ("WBT sample 1-3") provided to Gold Standard during the validation process.

5 Deutsch Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, 2011. Available at https://energypedia.info/images/2/2c/GIZ_HERA_2012_Tikikil_Stove_ET.pdf (site visited 22/05/2014)

6 The durability test forecasts the Tikikil stove lifetime to be from 2 to 5 years. Eco-Energy Options Pty Ltd, 2011: Durability Testing of the Tikikil Stove as provided to Gold Standard during the validation process.

Figure 2: Tikikil Rocket Stove production in Filtu (Photo: COOPI)

Implementation status

The project started in October 2014 when the first project stoves were distributed to the local families and totally 4,955 stoves are included in this project[7].

The fifth monitoring period covers a period from 01/04/2019 to 31/03/2020 (12 months). The activities in the field for this monitoring period were implemented during April and May 2020. Below table presents a summary of the project phases to date.

Timing	Date	Task/Event
October 2014	11/10/2014	Project start date (Stove distribution start date)
October 2014	12/10/2014	Project crediting period start date
November 2014	03/11/2014	Project listed with GS
October 2015	10/10/2015	Stove distribution completed
December 2015	05/12/2015	Project registered with GS
February – March 2016	17/02 – 19/03/2016	1st Usage survey/Monitoring Survey
March 2017	24/03/2017	1st issuance with GS (covering 12/10/2014 to 31/03/2016)
May – June 2017	15/05 – 14/06/2017	2nd Usage survey/Monitoring Survey
March 2018	23/03/2018	2nd issuance with GS (covering 01/04/2016 to 31/03/2017)
April – May 2018	03/04 – 16/05/2018	3rd Usage survey/Monitoring Survey
July 2018	09/07/2018	Submission to GS for transition to GS4GG and for the 3rd verification
November 2018	07/11/2018	Transition to GS4GG accepted by GS
March 2019	15/03/2019	3rd issuance with GS (covering 01/04/2017 to 31/03/2018)

[7] From the distributed 4,955 stoves 95% (corresponding 4,707 stoves) are considered eligible as described in Section D.3.

March – April 2019	04/03 – 20/04/2019	4th Usage Survey/Monitoring Survey
November 2019	26/11/2019	4th issuance with GS (covering 01/04/2018 to 31/03/2019)
April – May 2020	13/04 – 12/05/2020	5th Usage Survey/Monitoring Survey

In accordance with the implementation plan, the stoves have been sold to the families at a subsided cost, in exchange for the rights to the Voluntary Emission Reductions (VERs). With the signature of the "Carbon Transfer Contract" at the moment they have bought the stove, the users have entered into an agreement with the project implementer, transferring rights to the VERs generated by the VPA in return for the subsided payment of the stove.

The local workers implementing the stove distribution were trained by COOPI to fill the "Carbon Transfer Forms (CTF)[8]" in a correct and carefully manner. The data from the "Carbon Transfer Forms" have been entered into the electronic stove selling database[9] to enable the monitoring of the stoves over the crediting period. Data collected during Monitoring Survey have also been recorded in electronic format[10].

B.2. Post-registration changes

B.2.1. Temporary deviations from Certified Key Project Information, Project Design Document, Monitoring & Reporting Plan, applied methodology or applied standardized baseline

Due to the current situation with Covid 19 pandemic it was not possible to implement a field surveys through in-person interviews which would mean travelling between different regions of the project area and making physical visit to project households and thus in line with the document "Rule Update: COVID 19: INTERIM MEASURES" published 06/04/2020 a deviation request regarding making the monitoring interviews via telephone had been requested and request approved on 27/04/2020.

In line with the approved deviation request, PP has undertaken the annual monitoring interviews thus via telephone.

To guarantee the robustness of the sample, PP increased the sample size from normal 100 up to 120 households. Moreover, in addition to the telephone interviews, the photographic, audio and video material to support the results gathered via telephone interviews were gathered when possible.

The following table illustrates how the performed surveys meet the 'requirements for project developer' expressed in the Deviation Request Form:

Deviation Requirement	Justification
The remote monitoring survey shall be done with the primary cook only.	All the monitoring survey interviews have been performed with the primary cook of each household. When making the remote interviews, this has been confirmed each time before starting the survey over phone.
The remote monitoring survey results shall be compared with the usage rate estimated based on previous monitoring events (MP 1-4). The expected usage rate for MP5 can be estimated based on usage trend observed for each age group in previous years (MP 1-4).	Section D.1 of this MR includes a comparison of the usage rate achieved during this monitoring period with the previous monitoring periods justifying the results to be in line with the expected trend.
The project must apply the conservative value for usage rate - survey results or expected usage rate	The monitored value of the usage rate in the current monitoring period is 63% which is well below the

8 Example of Carbon Transfer Contract 11-10-2014 (uploaded to GS registry during 1st verification)
9 No modifications to the Stove Selling Database since the last verification. Please refer the Excel file "GS3422_Stove Selling Database ver02" uploaded to SustainCERT
10 GS3422_5th Monitoring Raw Data (2020) has been uploaded to SustainCERT

based on trends observed in previous years (MP 1-4), whichever is lower. If the conservative value for usage rate is higher than 90%, the project can claim maximum upto 90% in line with the Good Practice monitoring requirements of the Cookstove Usage monitoring guidelines.	maximum of 90% applicable with the "Good Practice monitoring requirements" as well as can be considered conservative respect the observed trend.
The sample size for carrying our usage surveys shall be increased from a minimum of 30 per vintage to a minimum of 40 per vintage.	All the project cookstoves belongs to one age-vintage and, thus, all the sample of 120 is fulling the requested minimum number of 40 per vintage.

B.2.2. Corrections

There have been no corrections.

B.2.3. Changes to start date of crediting period

There have been no changes to the start date of the crediting period during this monitoring period.

B.2.4. Permanent changes from registered monitoring plan, applied methodology or applied standardized baseline

There have been no permanent changes from the registered monitoring plan, the applied methodology during this monitoring period or standardized baseline.

B.2.5. Changes to project design of approved project

There have been no changes to project design of the registered project activity during this monitoring period.

SECTION C. Description of monitoring system applied by the project

Below is presented the description of the monitoring system and its implementation during the fifth monitoring period. The monitoring of the project is made in accordance with "The Gold Standard Simplified Methodology for Efficient Cookstoves (February 2013)" and the updated "Project Monitoring Plan" validated during the project transition under Gold Standard for Global Goals.

A. Sale record

The Sale Record will include the following data as required by the methodology:

- Date of sale and of installation
- Geographic area of sale
- Model/type of project cookstove(s) sold
- Name and telephone number (if available), address
    - Required for all bulk purchasers, i.e. retailers
    - All end users; the names and telephone numbers or names and addresses collected must be commensurate with representative sampling, i.e. the names and addresses or phone numbers (where possible) within sales records shall be large enough so that surveys can be based on representative, random selected sample.

The above information has been collected in paper format during the stove selling. The electronic Sale Record is maintained and updated continuously by the project participant, COOPI. The original hard copies and the electronic database will be stored for entire life cycle of the project.
In line with the sale record the number of stoves distributed is totally 4,955.[11] No new stoves were sold or substituted after the last project verification.

B. Project database

The project database is derived from the total sales record with project cookstoves differentiated by different project scenarios. The differentiation of the project database into sections is based on the results of the applicable monitoring studies for each project scenario, in order that emissions reduction calculations can be conducted appropriately section by section. Project database is maintained and updated by the project participant, COOPI. The data will be backed up electronically, with original documentation being stored for entire life cycle of the project.
During this monitoring period only one project scenario, installation of Tikikil stoves, has been identified.

C. Ongoing Monitoring Studies

In line with the registered PDD, the ongoing monitoring studies are conducted for each project scenario annually, at least beginning one year after the project registration and on time for any request of issuance. Survey format B in Annex A of the applied methodology will be applied for carrying out the studies.

i. Monitoring consist of checking of a representative sample, once every year (annually) to ensure that project cookstoves are still operating by carrying out the usage survey as per the guidelines below.

   Usage survey must be conducted to estimate the drop off rates as project cookstoves may not be adopted or may be disposed off and potentially replaced again by a baseline stove. Moreover, through the usage survey it will be ensured that the possible households using in the baseline improved stoves or other fuels than firewood will be excluded from the ER calculations.

   Prior to the verification, a usage survey for each cookstove age-groups is required. For example, if only cookstoves in the first year of use (age 0-1) are being credited, a usage parameter must be established for age-group 0-1, through a usage survey for cookstove age 0-1. If cookstoves of

[11] Please refer to Stove Selling Database ver02 has been already uploaded to GS Registry (note: no changes from the previous verifications)

age 0-1 and age 1-2 are being credited (as part of first request for issuance), usage parameters must be established for age-group 0-1 and 1-2, respectively through a usage survey. If cookstoves of age-group 0-1 and age-group 1-2 are being credited (as part of second request for issuance), usage parameter must be established for age group 1-2 only through a usage survey as the usage rate for cookstoves of age-group 0-1 can be applied from the previous issuance.

To successfully conduct a usage survey, a minimum project cookstove sample size of each age-group should be in line with the following guidelines:

- Target population < 300: Minimum sample size 30
- Target population 300 to 1,000: Minimum sample size 10% of group size
- Target population > 1,000: Minimum sample size 100

ii. Where replacements are made, monitoring shall ensure that the efficiency of the new cookstove is similar to the appliance being replaced.

iii. The project must monitor the use of baseline stove in the project activity during annual surveys.

iv. The project must monitor the physical conditions of the cookstoves during annual surveys.

For this monitoring period 120 randomly selected project families were interviewed between 13rd April 2020 and 12th May 2020. The random selection of the families was made by using the function "Random" of Microsoft Excel for extracting the stove IDs the directly from the Selling Database[12] as all the project cookstove are within the same age-vintage. The project partner, COOPI, carried out the questionnaire interviews. The interviews were made mostly via telephone (92% via telephone and 8% via direct in person interviews at family houses) in line with the requirements of the approved deviation request due the covid-19 pandemic. The telephone calls were mediated by local cooperators whose task has been to visit the randomly pre-selected households around the different Kebeles (i.e. smallest administrative unit of Ethiopia) and provide to them a mobile phone via which the monitoring interview has been made by the official surveyor. The telephonic contacts of listed cooperators are provided in the analysis spreadsheet.[14] 7 telephonic interviews were also recorded in order to prove effectiveness of this remote modality.

The collected data have been inserted in an electronic database file by COOPI and analysed by Carbonsink. The used questionnaire and the collected raw data are presented in separate files[13,14] .

Below are presented the main evidences emerged by the 2020 annual survey.

- **End-user profile**: within the monitoring sample, each family had averagely 5.1 family members composed averagely from 31% of children, 36% of women and 38% of men (figure 3).

[12] Please refer the file "GS3422_Stove Selling Database_ver02 and Sample 2020" uploaded to SustainCERT

[13] "GS3422_Monitoring Questionnaire 2020" has been uploaded to SustainCERT

[14] "GS3422_5th Monitoring Raw Data (2020)"

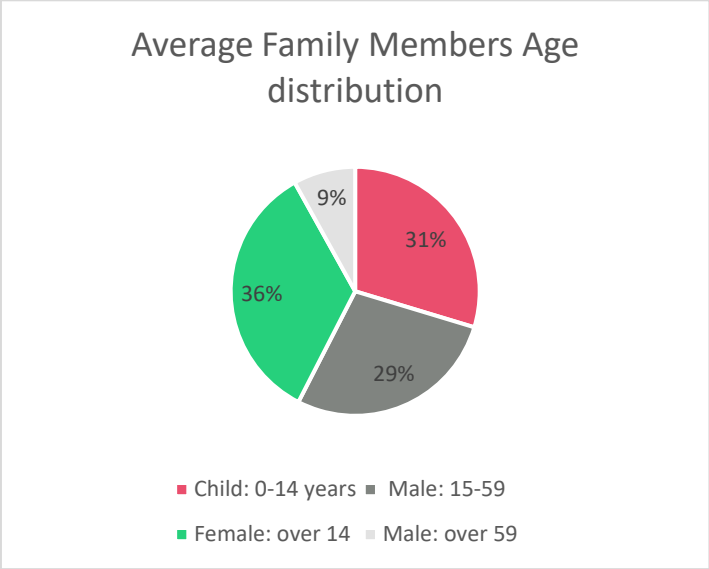

Figure 3: average family members per household

- **Cooking technologies used in the <u>baseline situation:</u>** Most families, 96%[15] stated that they used only three stone fire in the baseline situation. The remaining 4 percent declared to have used both three stone fires and charcoal stove. No other cooking technologies were stated to have been used in baseline situation.

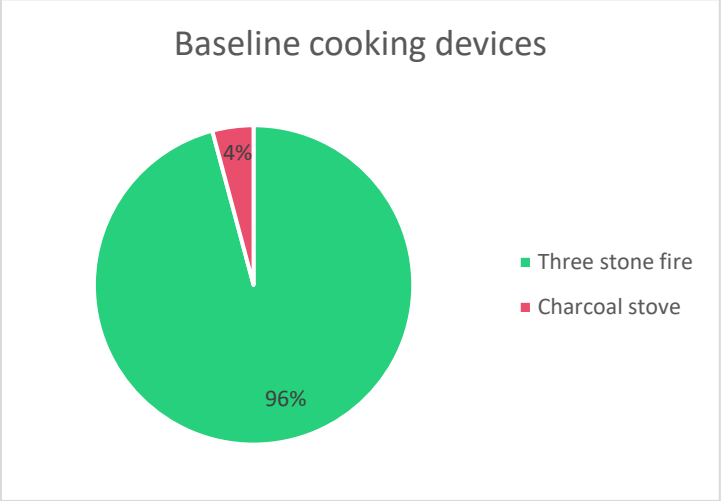

Figure 4: Principal cooking technologies used in the baseline situation

- **Cooking fuels used in the baseline situation**: All the households, 120 respondents out of 120, stated to have used firewood as their baseline fuel. In addition to firewood 5 household (4%), had used also charcoal (figure 5) and this is in line with the previous questions. No other fuels were mentioned as principal baseline cooking fuel.

[15] To be conservative it is estimated that only 95% of the households in the area are using firewood as their baseline fuel and thus from 4,955 distributed stoves only 95% (corresponding 4,707 stoves) are accounted in the Emission Reduction calculations as described more in detail in Section D.3

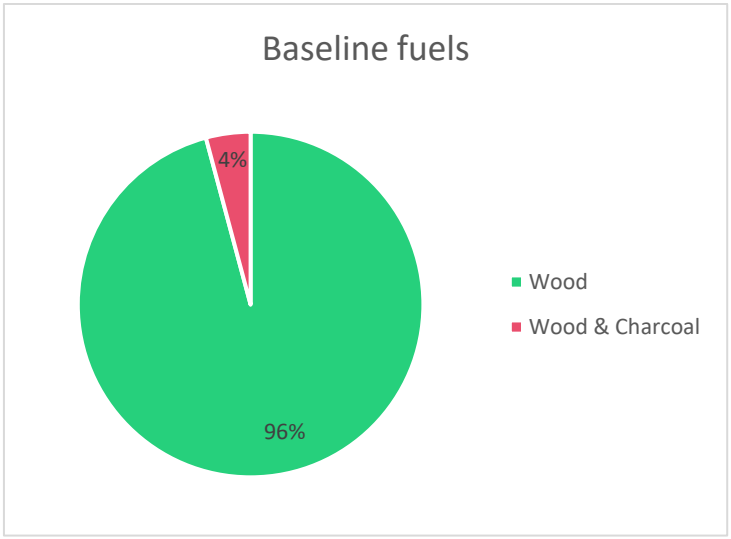

Figure 5: types of fuel used in the baseline situation

- **Project stoves usage:** 63% of the households declared to use the project stoves on daily basis so, in the ERs calculation, that percentage was used as the usage rate. An average of 2.5 meals were cooked daily with the project stoves (figure 6). Within the 63% of the households using the projects stoves some respondents evaluated that their project stoves had some partial damages or parts worn out partially (like damages in pot stabilizer) even though the stove itself was found to be working properly and to be still in use. This kind of small damages are totally in line with the current operation lifetime of the project stoves and do not hinder the proper use of the stoves.

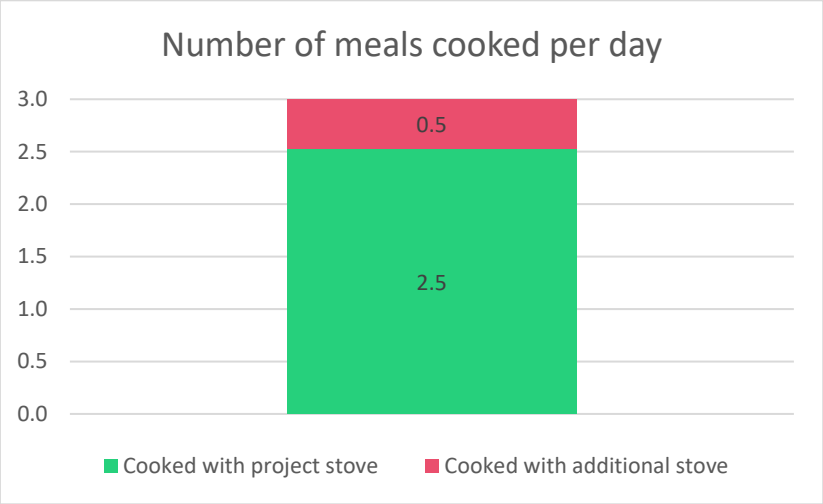

Figure 6: number of weekly meals cooked with Project stove

Figure 7. Examples of two project stoves in with their current conditions: On the left, a worn out and disused stove (stove ID EU3601); On the right a working and well-maintained stove (stove ID EU0348)

- **Simultaneous use of additional technologies:** 54% stated to use other technologies in addition to the project stoves. Among them, 1% stated to use also charcoal and electric stoves, while the others use woodfueled three stone fire (Figure 8).

Among the households cooking with the project stoves, the total number of cooked meals were estimated by to be averagely 3 meals/day/family from which averagely 84.3% were cooked with the project stoves and 15.7% with the other stoves (figure 9).

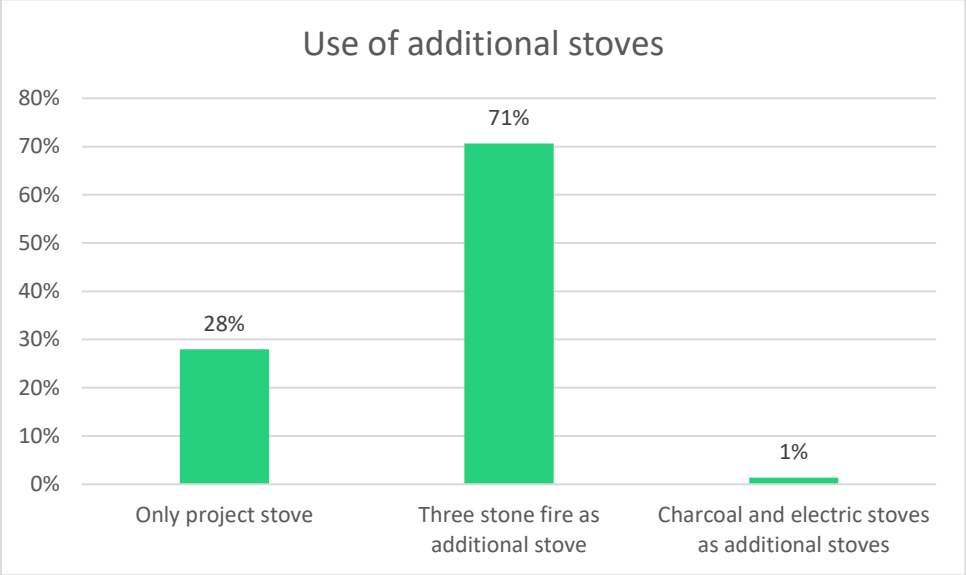

Figure 8: percentages of respondents using the additional stoves

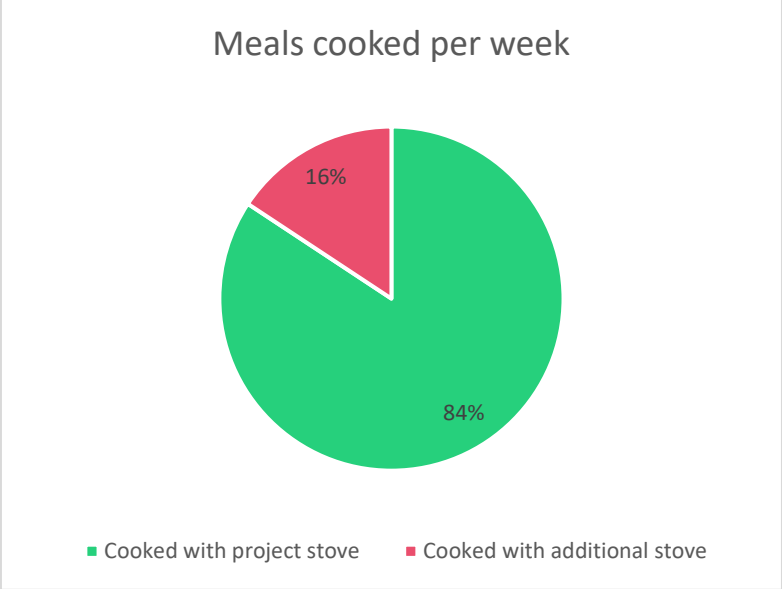

Figure 9: daily meals cooked averagely with project and additional stoves estimated based on the usage of one week

- **Fuel consumption in project situation:** All 120 respondents stated to use wood for cooking activities. 4% of the respondents stated to use charcoal in addition to firewood. Also, some (2 respondents) stated to use electricity as additional source of energy. Except these three listed fuels, no other fuels (like LPG or kerosene) where found to be used by the respondents.

In comparison to the baseline situation, 72% of the respondents using the project cookstoves evaluated to be using the same amount of money for fuel expenses and 21% of them to use less money. Households saving money from fuel expenses declared to be able to spend the saved money for buying food or household items or to keep the saved money a part for future needs. Regarding the time spent for firewood collection, in comparison to baseline scenario, 69% of the respondents using the project cookstoves estimated to be spending the same amount of time for fuel collection and 23% declared to use less time for fuel collection. Saved time was used for different household works, children care or in some cases additional income generation activities (cereal selling). In addition to the respondents estimating to use same amount of money or time, there were 7% and 8% of the respondents using the project cookstoves, respectively, stating that currently they spent more money or time for cooking fuels in comparison with the baseline situation. The afore mentioned outcomes could be interpreted with the fact that deforestation is heavily impacting the project areas making the price of firewood grow as well as time required to collect it by hand increase. This tendency could, in fact, negatively balance the positive outputs of the project implementation.

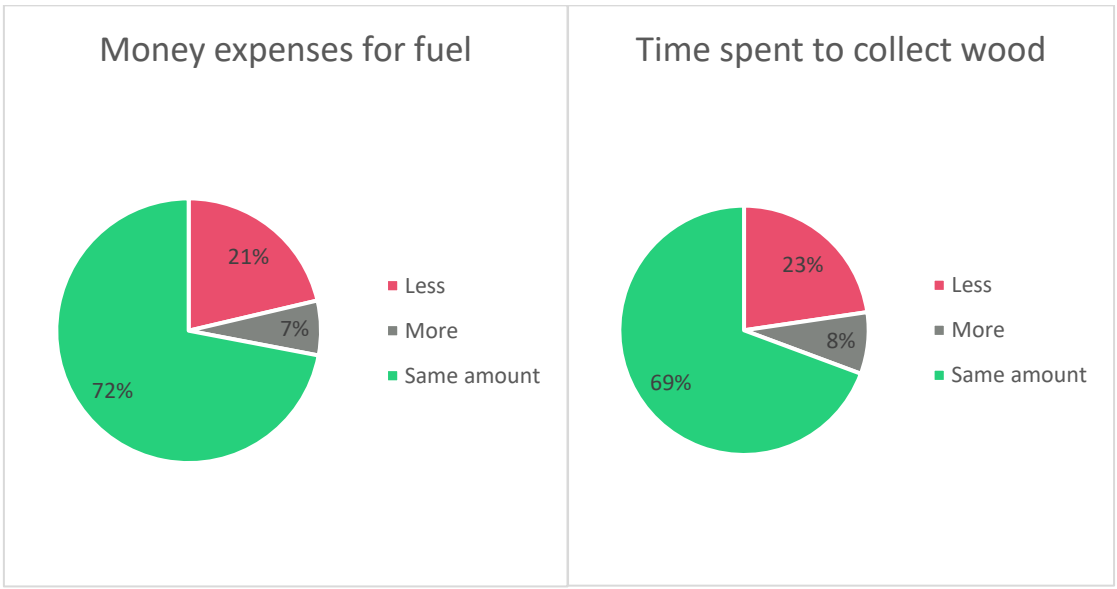

Figure 10 Effects of project implementation

- **Air quality in project situation:** All 100 respondents (100%) estimated to have had less respiratory problems and itchy eyes and moreover they have noted a reduction in smoke emission after starting the usage of the project stove. No one of the respondents stated to have currently more (or even the same amount) of respiratory problems or itchy eyes as in the baseline situation.

SECTION D. Data and parameters

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

Relevant SDG Indicator	SDG 13
Data/parameter:	$f_{NRB,i,y}$
Unit	Fractional non-renewability
Description	Non-renewable status of wood fuel during year y
Source of data	Default f_{NRB} value provided by CDM Executive Board and endorsed by the host country DNA[16].
Value(s) applied)	0.88
Choice of data or measurement methods and procedures	The default NRB value provided by the CDM executive board and endorsed by the host country DNA is deemed valid by the applied methodology
Purpose of data	Calculation of project emissions or actual net GHG removals by sinks
Additional comments	The project activity may choose to update the f_{NRB} during the crediting period. The possible updates on the default country specific fraction of non- renewable woody biomass (f_{NRB}) value available on the CDM website will be controlled annually.

Relevant SDG Indicator	SDG 13
Data/parameter:	$EF_{b,fuel,CO2}$
Unit	tCO_2/tonne of firewood
Description	CO_2 emission factor arising from use of firewood in baseline scenario
Source of data	IPCC default value, table 1.4 of chapter 1 of Vol.2, 2006 IPCC Guidelines for National Greenhouse Gas Inventories
Value(s) applied)	1.747
Choice of data or measurement methods and procedures	Default value deemed valid by the applied methodology (see page 6 of the methodology)
Purpose of data	Calculation of baseline emissions or baseline net GHG removals by sinks
Additional comments	Fixed for entire crediting period

Relevant SDG Indicator	SDG 13
Data/parameter:	$EF_{b,fuel,non-CO2}$
Unit	tCO_2/tonne of firewood
Description	Non-CO_2 emission factor of firewood that is substituted or reduced
Source of data	IPCC default value, table 2.9 of chapter 2 of Vol.2, 2006 IPCC Guidelines for National Greenhouse Gas Inventories
Value(s) applied)	0.455
Choice of data or measurement methods and procedures	Default value deemed valid by the applied methodology (see page 6 of the methodology)

[16] Available at http://cdm.unfccc.int/DNA/fNRB/index.html (Site visited 03/07/2018)

Purpose of data	Calculation of baseline emissions or baseline net GHG removals by sinks
Additional comments	Fixed for entire crediting period

Relevant SDG Indicator	**SDG 13**
Data/parameter:	ηb
Unit	Fraction
Description	Efficiency of the baseline cookstove being replaced (fraction)
Source of data	Default value of the applied methodology
Value(s) applied)	0.10
Choice of data or measurement methods and procedures	Default value of 10% is deemed valid by the applied methodology as the baseline stoves are three stone fires: "A default value of 10% shall be used if the replaced cookstoves is a three stone fire, or a conventional device without a grate or a chimney i.e. with no improved combustion air supply or flue gas ventilation." (section 4.1. of the methodology)
Purpose of data	Calculation of baseline emissions or baseline net GHG removals by sinks
Additional comments	Fixed for entire crediting period

Relevant SDG Indicator	**SDG 13**
Data/parameter:	η_p
Unit	Fraction
Description	Efficiency of project cookstove (fraction) determined at the start of the project activity
Source of data	Water Boiling test (WBT)
Value(s) applied)	0.27
Choice of data or measurement methods and procedures	Efficiency test made in accordance with section 4.3 of the applied methodology (test conducted by independent expert, following the Water Boiling Test protocol)[17]
Purpose of data	Calculation of project emissions or actual net GHG removals by sinks
Additional comments	Fixed for entire crediting period

Relevant SDG Indicator	**SDG 13**
Data/parameter:	$B_{b,y}$
Unit	Tonnes firewood per household per year (tons/hh/year)
Description	Quantity of firewood consumed in baseline scenario during year y
Source of data	Minimum service level in line with the 4.2 option (c) of the Section 4.2 of the applied methodology
Value(s) applied)	2.5

[17] The Water Boiling Test results ("WBT sample 1-3") provided to Gold Standard during the validation

Choice of data or measurement methods and procedures	Default value baseline biomass consumption of 0.5 tons/person/year for is deemed valid by the applied methodology (see the page 6 of the methodology). Moreover, in accordance with the methodology (page 6) the household size shall be determined by using credible references/literature or target population specific survey. The justification of the household size (5 persons/household) determination is described in registered PDD. According the above the average annual consumption of firewood per household can be estimated to be 2.5 tons/year (0.5 tons/person/year * 5 persons/household = 2.5 tons/household/year).
Purpose of data	Calculation of project emissions or actual net GHG removals by sinks
Additional comments	Fixed for entire crediting period

D.2. Data and parameters monitored

Relevant SDG Indicator	**SDG 13, SDG 7**
Data/parameter:	$U_{p,y}$
Unit	Percentage
Description	Usage rate in project scenario p during year y
Measured/calculated/default	Calculated
Source of data	Annual usage survey/monitoring survey
Value(s) of monitored parameter	0.63
Monitoring equipment	Usage survey
Measuring/reading/recording frequency:	Annually
Calculation method (if applicable):	N/A
QA/QC procedures:	Transparent data analysis and reporting
Purpose of data:	Monitoring of SDG 13 (i.e. Calculation of project emissions or actual net GHG removals by sinks) and monitoring of SDG 7
Additional comments:	As stated in section B.2.1, the value 0.63 is more conservative than the value estimated from the trend emerging from previous monitoring periods of the VPA summarized in section D.3.

Relevant SDG Indicator	**SDG 13, SDG 7**
Data/parameter:	$N_{p,y}$
Unit	Number of project cookstove credited (units)
Description	Cookstove in the project database for project scenario p through year y
Measured/calculated/default	Measured
Source of data	Sales record
Value(s) of monitored parameter	4,707
Monitoring equipment	Stove selling database
Measuring/reading/recording frequency:	Continuous monitoring. The number of project cookstove is recorded in the total sales record.

Calculation method (if applicable):	N/A
QA/QC procedures:	Transparent data analysis and reporting
Purpose of data:	Monitoring of SDG 13 (i.e. Calculation of project emissions or actual net GHG removals by sinks) and monitoring of SDG 7
Additional comments:	To be conservative it is estimated that only 95% of the households in the area are using firewood as their baseline fuel and thus from 4,955 distributed stoves only 95% are accounted in the Emission Reduction calculations as described more in detail in Section D.3, thus $N_{p,y}$ = 4,955*0.95 = 4,707

Relevant SDG Indicator	**SDG 13**
Data/parameter:	DF_n
Unit	Fraction
Description	Discount factor to account for efficiency loss of project cookstoves
Measured/calculated/default	Default
Source of data	Annual monitoring / applied methodology
Value(s) of monitored parameter	0.99
Monitoring equipment	Monitoring survey
Measuring/reading/recording frequency:	Annual monitoring
Calculation method (if applicable):	N/A
QA/QC procedures:	Transparent data analysis and reporting
Purpose of data:	Monitoring of SDG 13 (i.e. calculation of project emissions or actual net GHG removals by sinks)
Additional comments:	This default value can be used if stoves are found in good condition during annual surveys. For each year, the stoves of the age-group x-y should be physically verified. In the case of progressive installations, stove of age-group 0-1 shall also be physically verified each year through a random sampling approach. The survey format B (Annex A of the applied methodology) will be followed to capture the required information. Minimum number of sample size shall be selected following the guidelines provided in section 4.2, option (b) of the applied methodology. During annual survey if it is found that the project cookstoves are not in working conditions, the proportionate population of project cookstoves should be excluded from the project database, until these cookstoves are replaced with new cookstoves.

Relevant SDG Indicator	**SDG 13**
Data/parameter:	$DF_{b,stove,y}$
Unit	Fraction
Description	Discount factor to account for the baseline stove use in project scenario p during the year y
Measured/calculated/default	Measured
Source of data	Annual monitoring
Value(s) of monitored parameter	0.157
Monitoring equipment	Annual monitoring
Measuring/reading/recording frequency:	Annual monitoring

Calculation method (if applicable):	N/A
QA/QC procedures:	Transparent data analysis and reporting
Purpose of data:	Monitoring of SDG 13 (i.e. calculation of project emissions or actual net GHG removals by sinks)
Additional comments:	The discount factor for baseline-stove is determined based on number of meals cooked using the baseline stoves. The required information shall be captured through sample-survey carried out following a random sampling approach for each age-group of the project stove. The minimum number of samples sizes shall be selected following the guidelines provided in section 4.2, option (b) of the applied methodology. The survey format B (Annex A of the applied methodology) will be followed to capture the required information. The impact of seasonal variations on use of baseline stove should be considered as part of the monitoring survey.

Relevant SDG Indicator	**SDG 1**
Data/parameter:	Money spent for purchasing wood and time spent for collecting wood
Unit	-
Description	Money spent for purchasing wood and time spent for collecting wood in the project scenario in comparison with the baseline scenario estimated via qualitatively self-estimation by the families
Measured/calculated/default	Measured
Source of data	Monitoring Survey
Value(s) of monitored parameter	Less money spent for 21% of households and less time consumed for woodfuel collection for 23% of households, in comparison with the baseline, hence more time is available for other tasks, like education or income generating activities.
Monitoring equipment	Monitoring Survey will study qualitatively money and time spent for firewood collection activities in the project scenario in comparison with the baseline scenario (The sample of project households is asked to evaluate if they are using less, more or the same amount of money for acquiring firewood or if they are spending less, more or same time for collecting firewood).
Measuring/reading/recording frequency:	Annually
Calculation method (if applicable):	-
QA/QC procedures:	Trained survey team
Purpose of data:	Monitoring of SDG 1
Additional comments:	Based on the baseline survey the majority of the household in the area uses three stone fires and are thus consuming lots of firewood for their daily cooking activities. This means also that lots of time is spent and efforts made for firewood collection which reduces the available time for education and income generating activities.

Relevant SDG Indicator	SDG 1
Data/parameter:	Type of activities being done with the time and money saved through the use of the project cookstoves[18]
Unit	-
Description	The type of the activities done with the time and money saved through the use of the project cookstoves is estimated via qualitatively self-estimation by the families
Measured/calculated/default	Measured
Source of data	Monitoring Survey
Value(s) of monitored parameter	94% of respondents who declared to save more money in fuel purchasing declared to use the saved money for household necessities like food expenses (6% of them did not indicate any particular use for the money). 100% of those who declared to have saved time for its collection declared to use the saved time on other household activities like cooking and cleaning.
Monitoring equipment	Monitoring Survey will study qualitatively the types of the activities done with the time and money saved through the use of the project cookstoves (The sample of project households are asked firstly to evaluate if they are using less, more or the same amount of money for acquiring firewood or if they are spending less, more or same time for collecting firewood. For the families stating to use less time/money in project scenario is asked a further specification regarding the types of the activities which are done with the saved time/money).
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	-
QA/QC procedures:	Trained survey team
Purpose of data:	Monitoring of SDG 1
Additional comments:	Based on the baseline survey the majority of the household in the area uses three stone fires and are thus consuming lots of firewood for their daily cooking activities. This means also that lots of time is spent and efforts made for firewood collection which reduces the available time for education and income generating activities.

Relevant SDG Indicator	SDG 3
Data/parameter:	Frequency of smoke related inconveniences (like smoke levels, itchy eyes and respiratory problems)
Unit	-
Description	Frequency of smoke related inconveniences with the project families estimated via qualitatively self-estimation by the families
Measured/calculated/default	Measured
Source of data	Monitoring Survey
Value(s) of monitored parameter	Less smoke related inconveniences (like smoke levels, itchy eyes and respiratory problems) stated by 100% of sampled households

[18] This parameter has been monitored starting from the monitoring year of "01/04/2018-31/03/2019". This parameter was, in fact, not included in the original monitoring plan accepted at the time of VPA inclusion but added only at the time of transition of the VPA to GS4GGs (transition was accepted in November 2018, in other words, only after the monitoring activities made after that are including this parameter.)

Monitoring equipment	Monitoring Survey will study qualitatively the smoke levels, itchy eyes and respiratory problems in the project scenario in comparison with the baseline scenario (The sample of project households are asked to evaluate if they experience less, more or the same amount of smoke, itchy eyes and respiratory problems as before the project).
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	-
QA/QC procedures:	N/A
Purpose of data:	Monitoring of SDG 3
Additional comments:	In the baseline situation large levels of smoke and TSPM are emitted by inefficient firewood combustion during the cooking with three stone fires which is causing discomfort and health problems like itchy eyes. It is not justifiable to measure this quantitatively, but it will be measured qualitatively through the experienced smoke levels, itchy eyes and respiratory problems. In the Monitoring Survey made in 2020 all 120 respondents (100%) estimated to have had less respiratory problems and itchy eyes and moreover they have noted a reduction in smoke emission after starting the usage of the project stove. No one of the respondents stated to have currently more (or even the same amount) of respiratory problems or itchy eyes as in the baseline situation.

Relevant SDG Indicator	**SDG 7**
Data/parameter:	Number of project households using fuel efficient cookstove
Unit	-
Description	Number of households using the project cookstove
Measured/calculated/default	Monitored
Source of data	Project Database and Monitoring Survey
Value(s) of monitored parameter	2,965
Monitoring equipment	-
Measuring/reading/recording frequency:	Annually
Calculation method (if applicable):	Project Database regarding the number of project cookstoves credited and Monitoring Survey regarding the Usage Rate. Calculated as number of project cookstoves * Usage rate = $N_{p,y}$ * $U_{p,y}$ = 4,707 * 63% = 2,965
QA/QC procedures:	N/A
Purpose of data:	Monitoring of SDG 7
Additional comments:	N/A

D.3. Implementation of sampling plan

- **Description of implemented sampling design**

The sampling for this monitoring period was based on simple random sample method and it was selected within the stoves recorded in the Stove Selling Database[19]. Totally 100 project families were interviewed in line with the applied methodology requiring a minimum sample size of 100 for the target population larger than 1,000.
It can be noted that during this monitoring period there is present only one age-vintage of the project technologies as all the project stoves have been installed within 1 year of the start of the crediting period.

- **Data and parameters analysis**

The values of data and parameters monitored are discussed below and summarized in the Table 3 (in the column "5th Monitoring Period"):

a) Households using firewood as their baseline fuel: Based on the Usage Survey all the project families stated to have used firewood as their cooking fuel in the baseline situation, however a small part, 4% of the households, stated they use also charcoal as fuel in the baseline situation.

As the used Gold Standard methodology is applicable only for the baseline of firewood usage, 96% of the households should be eligible based on the above described results of the Usage Survey. However, in order to be more conservative, the same value of the previous monitoring periods is applied, so 95% sold cookstoves are accounted in the Emission Reduction calculations.

b) Usage rate ($U_{p,y}$): 63% of the respondents use the project stoves as their main cooking technology in daily basis, so 0.63 shall be used as Usage Rate value.

c) Discount factor to account for efficiency loss of project cookstoves (DF_n): The default value of the methodology (0.99) can be used as the monitored stoves were found all in good condition.

d) Discount factor to account for the baseline stove use in project scenario ($DF_{b,stove,y}$): Averagely 84.3% of all the meals cooked are prepared with the project stoves, therefore, discount factor ($DF_{P,stove,y}$) for this monitoring period is set as 15.7%.

Table 3: Summary of the values used for the emission reduction calculations. The column "5th Monitoring Period" is including the values used calculating the ER referred in this Monitoring Report. The values regarding the previous Monitoring Periods are showed here only for comparison.

	1st Monitoring Period	2nd Monitoring Period	3rd Monitoring Period	4th Monitoring Period	5th Monitoring Period

[19] Stove Selling Database ver02 has been uploaded to GS Registry (note: no changes from the last verification)

Households using firewood as their baseline fuel	96%	95%	95%	95%	95%[20]
Usage rate ($U_{p,y}$)	96%*	100%	100%	99%	63%
Discount factor to account for efficiency loss of project cookstoves (DF_n)	0.99	0.99	0.99	0.99	0.99
Discount factor to account for the baseline stove use in project scenario ($DF_{b,stove,y}$)	3%	7.5%	1.9%	6.8%	15.7%

*In the 1st monitoring period 100% of the families were found to use daily the project stove but conservatively (based on the unclarities in the stove ID numbers indicated the monitoring database) the usage rate was set as 96%.

- **Demonstration on whether the required confidence/precision has been met**

  As the monitoring is made through Survey of local usage (Option b of the section 4.2. of the applied methodology) there is no need to determine confidence/precision level.

SECTION E. Calculation of SDG outcomes

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

Calculations related to the SDG 13
See the Section E.3. and E.4. below. The complete ER calculations of the regarding the SDG 13 are provided in a separate Excel Spreadsheet uploaded to SustainCERT.

Calculations related to the SDG 1
No specific calculation method used for the baseline value, the estimation of baseline situation is made based on the Baseline Survey.

[20] To be conservative it is estimated that only 95% of the households in the area are using firewood as their baseline fuel and thus from 4,955 distributed stoves only 95% (corresponding 4,707 stoves) are accounted in the Emission Reduction calculations as described more in detail in Section D.3.

- Based on the baseline survey most of the household in the area use three stone fires and are thus consuming lots of firewood for their daily cooking activities. This means also that lots of time is spent and efforts made for firewood collection which reduces the available time for education and income generating activities.

Calculations related to the SDG 3
No specific calculation method used for the baseline value, the estimation of baseline situation is made based on the Baseline Survey.

- In the baseline situation large levels of smoke and TSPM are emitted by inefficient firewood combustion during the cooking with three stone fires which are associated with discomfort and health problems like itchy eyes.

Calculations related to the SDG 7
No specific calculation method used for the baseline value, but estimation of baseline situation is made based on the Baseline Survey.

- Based on the baseline survey most of the household in the area use three stone fires and no fuel efficient cookstoves are in use in the area.

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

Calculations related to the SDG 13
See the Section E.3. and E.4. below. The complete ER calculations of the regarding the SDG 13 outcomes are provided in a separate Excel Spreadsheet uploaded to SustainCERT.

Calculations related to the SDG 1
The monitoring of SDG 1 is made through a qualitative auto-evaluation of the sample families during the annual monitoring survey and thus no specific calculation method used for calculating the SDG 1 outcomes.:

- Monitoring Survey studies qualitatively money and time spent for firewood collection activities in the project scenario in comparison with the baseline scenario. The sample of project households were asked to evaluate if they are using less, more or the same amount of money for acquiring firewood or if they are spending less, more or same time for collecting firewood.[21]

Calculations related to the SDG 3
The monitoring of SDG 3 is made through a qualitative auto-evaluation of the sample families during the annual monitoring survey and thus, no specific calculation method used for calculating the SDG 3 outcomes:

- Monitoring Survey studies qualitatively the smoke levels, itchy eyes and respiratory problems in the project scenario in comparison with the baseline scenario. The sample of project households were asked to evaluate if they experience less, more or the same amount of smoke, itchy eyes and respiratory problems as before the project.

[21] In line with the Transition Annex of this VPA accepted in November 2018, in future the Monitoring Survey will moreover study qualitatively the types of the activities done with the time and money saved through the use of the project cookstoves (The sample of project households are asked firstly to evaluate if they are using less, more or the same amount of money for acquiring firewood or if they are spending less, more or same time for collecting firewood. For the families stating to use less time/money in project scenario is asked a further specification regarding the types of the activities which are done with the saved time/money).

Calculations related to the SDG 7

The number of households using the project cookstove is estimated based on the Project Database on the distributed stoves and Monitoring Survey regarding the Usage Rate. Calculated as number of project cookstoves credited (units)* Usage rate in project scenario p during year y = $N_{p,y}$ * $U_{p,y}$.

E.3. Calculation of net benefits as difference of baseline and project values or direct calculation for each SDG outcome

Calculations related to the SDG 13

The outcomes of the SDG 13 are measured as reduced CO_2e emissions applying "The Gold Standard Simplified Methodology for Efficient Cookstoves (February 2013)". Below are described the equations on which the methodology is based. The complete ER calculations of the regarding the SDG 13 are provided in a separate Excel Spreadsheet uploaded to Sustaincert. The values used for each parameter are indicated in the above sections D.1 and D.2.

The emission reductions are calculated with the following equation:

$$ER_y = \sum_{0\text{to}1}^{\text{xtoy}} N_{P,y} * P_y * U_{P,y} * (f_{NRB,y} * EF_{b,fuel,CO2} + EF_{b,fuel,non\_CO2}) * (1 - DF_{b,Stove,y}) \quad \text{.....(1)}$$

Where:

$N_{P,y}$	Number of project cookstoves of each age group operational in the year y
P_y	Quantity of firewood that is saved in the year y (tonnes per household in year y)
$U_{P,y}$	Usage rate for project cookstoves in year y, based on adoption rate and drop off rate revealed by usage survey (fraction)
$f_{NRB,b,y}$	Fraction of biomass, used in year y for baseline scenario, which can be established as non renewable. The project proponents shall estimate project specific national/regional value or apply the default f_{NRB} value provided by CDM Executive Board and endorsed by the host country DNA.
$EF_{b,fuel,CO2}$	CO_2 emission factor of firewood that is substituted or reduced. (Default value for wood fuel 1.747 tCO_2/ton of wood)
$EF_{b,fuel,non\_CO2}$	Non-CO_2 emission factor of firewood that is substituted or reduced. (Default value for wood fuel 0.455 tCO_2/ton of wood)
$DF_{b,Stove,y}$	Discount factor to account for the baseline stove use in project scenario p during the year y
y	Year of the crediting period

Determination of quantity of biomass saved (P_y)

Quantity of firewood that is saved (P_y) is estimated as follows:

$$P_y = B_{b,y} * (1-\eta_b/\eta_{p,y}) \quad \text{.....(2)}$$

$B_{b,y}$	Quantity of firewood consumed in baseline scenario during year y
η_b	Efficiency of the baseline cookstove being replaced (fraction). A default value of 10% shall be used if the replaced cookstoves is a three stone fire, or a conventional device without a grate or a chimney i.e. with no improved combustion air supply or flue gas ventilation
$\eta_{p,y}$	Efficiency of project cookstove in year y (fraction)

Determination of quantity of firewood consumed in the baseline ($B_{b,y}$)
The quantity of firewood consumed in the baseline is determined based on the estimated average annual consumption of firewood per household (tones/year). For this purpose, the option (c) "Minimum service level" (0.5 tons per capita per year) of the applied methodology is chosen as described in the registered PDD. In accordance with the methodology, the household size shall be determined in this case by using credible references/literature or target population specific survey.

As described in the registered PDD and according to the data of Ethiopia's Central Statistical Agency (CSA), the mean household size in Ethiopia, in 2012, was 5.0 persons/household in rural and 3.0 persons/household in urban areas [22]. For estimating the baseline wood consumption in the project area, it is chosen conservatively to use the national mean household size of rural areas (5.0 persons/household). This can be considered conservative choice in respect to the results of the Baseline Survey (included 587 households), according to which the majority of the families (64%) living in the project area are having 6 or more family members[23] and according to the national average fertility rate of 4.6 live births per woman in 2010-2015 as per UN Data.[24]
According to the above, the average annual consumption of firewood per household can be estimated to be 2.5 tons/year (0.5 tons/person/year * 5 persons/household = 2.5 tons/household/year).

Determination of project cookstove efficiency ($\eta_{p,y}$ and η_p)
Efficiency of project cookstoves in year y ($\eta_{p,y}$) is estimated as follows:

$$\eta_{p,y} = \eta_p * (DF_\eta)^{y-1} * 0.94 \quad \ldots\ldots(3)$$

$\eta_{p,y}$	Efficiency of project cookstove in year y (fraction)
η_p	Efficiency of project cookstove (fraction) determined at the start of the project activity
DF_η	Discount factor to account for efficiency loss of project cookstove per year of operation (Fraction). The default value for this parameter is 0.99 i.e. 1% efficiency loss/year
0.94	Adjustment factor to account for uncertainty related to project cookstove efficiency test

In accordance with the applied methodology, the efficiency of the project cookstove is determined by an independent expert or entity, in the field or laboratory, following the Water Boiling Test (WBT) protocol (available at http://www.pciaonline.org/node/1048). As described in registered PDD, the project cookstove efficiency was carried out by independent entity, GIZ, who performed the efficiency test in laboratory in accordance with the above described requirements.

In line with the applied methodology and the registered PDD, the option to make the efficiency test at the time of installation and to use the default factor for determining the efficiency for the latter is chosen to be used.

[22] As reported in "Population Stabilisation Report, Ethiopia" published in March 2014 provided to Gold Standard during the validation process

[23] BAGER SAFE ENVIRONMENT FOR HEALTH SERVICES PLC, 2012. A Baseline Report on the assessment of the social and technical acceptability of Fuel Saving Stove (FSS) in Filtu and Liben Woreda.

[24] http://data.un.org/CountryProfile.aspx?crName=Ethiopia (site visited 24/03/2015)

Calculation of leakage

In accordance with the applied methodology leakage related to non-renewable biomass saved by the project activity is not considered as the proposed project is a stand-alone micro-scale project activity.

Calculations related to the SDG 1

As discussed in the above section E.2, the monitoring of SDG 1 is made through a qualitative auto-evaluation of the sample families during the annual monitoring survey and thus no specific calculations are made for the determining the SDG 1 outcomes, while the results are reported as percentage of users as per the results of Usage Surveys analysis.

Calculations related to the SDG 3

As discussed in the above section E.2, the monitoring of SDG 3 is made through a qualitative auto-evaluation of the sample families during the annual monitoring survey and thus no specific calculations are made for the determining the SDG 3 outcomes, while the results are reported as percentage of users as per the results of Usage Surveys analysis.

Calculations related to the SDG 7

Number of project households using fuel efficient cookstove

$N_{p,y} * U_{p,y} = 4,707 * 63\% = 2,965$

E.4. Summary of ex-post values of each SDG outcome for the current monitoring period

Item	Baseline estimate	Project estimate	Net benefit
SDG 13 2019 (01/04/2019-31/12/2019)	**17,181 tCO_2e**	**11,762 tCO_2e**	**5,419 tCO_2e**
SDG 13 2020 (01/01/2020-31/03/2020)	**5,623 tCO_2e**	**3,861 tCO_2e**	**1,761 tCO_2e**
SDG 13 Total	**22,804 tCO_2e**	**15,623 tCO_2e**	**7,180 tCO_2e**
SDG 1	No money or time saved for fuel purchasing/collection.	Less money spent for 21% of households and less time consumed for woodfuel collection for 23% of households, in comparison with the baseline, hence more time is available for other tasks, like education or income generating activities.	Less money spent for 21% of households and less time consumed for woodfuel collection for 23% of households, in comparison with the baseline, hence more time is available for other tasks, like education or income generating activities.
SDG 3	No improvement in air quality conditions related to cooking devices usage.	Less smoke related inconveniences for 100% of households in comparison with the baseline.	Less smoke related inconveniences for 100% of households in comparison with the baseline.
SDG 7	0 households using efficient cookstoves.	2,965 households using efficient cookstoves.	2,965 households using efficient cookstoves.

E.5. Comparison of actual value of outcomes with estimates in approved PDD

Item	Values estimated in ex ante calculation of approved PDD [25]	Actual values achieved during this monitoring period
SDG 13 2019 (01/04/2019-31/12/2019)	**5,087 tCO_2e**	**5,419 tCO_2e**
SDG 13 2020 (01/01/2020-31/03/2019)	**2,799 tCO_2e**	**1,761 tCO_2e**

E.6. Remarks on difference from estimated value in approved PDD

The estimated value calculated ex ante and presented in the registered PDD is very slightly different from the actual value calculated for this Monitoring Period. This difference is due the following aspects:

First of all, in the ex ante estimations the number of the distributed stoves were estimated to be in totally 5,090. The real number of the distributed stoves was instead 4,955 from which only 95% (corresponding 4,707 eligible stoves) has been considered eligible as described in Section D.3 above.

Moreover, the values of used for Usage Rate ($U_{p,y}$) and Discount factor to account for the baseline stove use in project scenario ($DF_{b,Stove,y}$) have been updated for the ex post calculations based on the monitoring results; in ex ante estimations the Usage rate for the first four project years was estimated to be conservatively 80% to 50% during the monitoring period, instead, based on the current monitoring the Usage rate was 63%. The discount factor to account for the baseline stove use was instead estimated ex-ante to be 20% while the current monitoring survey confirmed it to be currently 15.7 %.

[25] The approved PDD estimated the annual ERs for the period of 365 days starting from 12th of October each year. To convert these estimations to the period of 365 days starting from 1st of April each year the following simplified procedure has been used: The amount of ERs estimated ex-ante for the monitoring period of 365 days have been divided firstly with 365 days for achieving the corresponding daily ER estimation. This value has been then multiplied with 275 days for achieving the estimation for the period 01/04/2019 – 31/12/2019 and with 90 days for achieving the estimation for the period 01/01/2020 – 31/03/2020. Please refer the ER spread sheet (tab "Summary") for more details.

SECTION F. Stakeholder inputs and legal disputes

F.1. List all inputs/grievances which have been received for the project during the monitoring period together with their respective answers/actions

During this Monitoring Period no inputs/grievances were received.

F.2. List all inputs/grievances from previous monitoring period where follow up action is to be verified in this monitoring period

During the previous monitoring period no inputs/grievances were received.

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

No dispute or legal problems occurred in the project during this monitoring period.