# Gold standard for the global goals
# Monitoring report


June 2017, version 1

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|---|---|
| **Title of the project** | GS1340 Efficient cookstoves in Burkina Faso – VPA-11– Tiipaalga – F3PA cookstoves in Kourwéogo<br><br>GS1340 Efficient cookstoves in Burkina Faso – VPA-12– Tiipaalga – F3PA cookstoves in Kourwéogo |
| **Gold Standard project id** | GS6152 (VPA-11)<br>GS6419 (VPA-12) |
| **Version number of the monitoring report** | 1 |
| **Completion date of the monitoring report** | 29/07/2020 |
| **Date of project design certification** | GS6152 (VPA-11): 04/02/2019<br>GS6419 (VPA-12): 04/02/2019 |
| **Start date of crediting period** | GS 6152 (VPA-11): 13/01/2018<br>GS 6419 (VPA-12): 21/01/2019 |
| **Duration of this monitoring period** | GS6152 (VPA-11): Monitoring period #2 (first and last days included): 01/01/2019 to 31/12/2019<br>GS6419 (VPA-12): Monitoring period #1 (first and last days included): 21/01/2019 to 31/12/2019 |
| **Duration of previous monitoring period** | GS6152 (VPA 11): Monitoring period #1 13/01/2018 to 31/12/2018 |
| **Project representative(s)** | Association Tiipaalga<br>CO2logic |
| **Host Country** | Burkina Faso |
| **Certification pathway (activity certification/impact certification)** | Impact certification |
| **SDG Contributions targeted (as per approved PDD)** | SDG 3: Good Health and Well-being<br>SDG 4: Quality Education<br>SDG 5: Gender Equality<br>SDG 7: Affordable and Clean Energy<br>SDG 13: Climate Action |
| **Gold Standard statement/product certification sought (GSVER/ADALYs/RECs etc.)** | GSVER |
| **Selected methodology(ies)** | The Gold Standard Simplified Methodology for Efficient Cookstoves - Version 1 |
| **Estimated amount of annual average certified SDG impact (as per approved PDD)** | SDG 13:<br>GS6152 (VPA-11): 9,737 VER/year<br>GS6419 (VPA-12): 9,737 VER/year<br>Total: 19 474 VER |
| **Total amount of certified SDG impact (as per approved methodology) achieved in this monitoring period** | SDG 3: GS6152 (VPA-11) & GS6419 (VPA-12)<br>- Smoke level reduction: 100%<br>- Incidence of coughing reduction: 100%<br>- Incidence of respiratory illness reduction: 100%<br>- Incidence of itchy eyes reduction: 100% |

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|---|---|
| | SDG 4:<br>- Trainings initiatives for staff: 1 for GS6152 (VPA-11) & GS6419 (VPA-12)<br>- Workshops for women: i) GS6152 (VPA-11): 24; ii) GS6419 (VPA-12): 60<br><br>SDG 5: GS6152 (VPA-11) & GS6419 (VPA-12)<br>- Reduced amount of time spent on wood fuel collection: 100%<br>- Reduced amount of money spent on wood fuel purchase: 100%<br><br>SDG 7: Number of F3PA efficient cookstoves disseminated:<br>- GS 6152 (VPA-11): 10,385<br>- GS 6419 (VPA-12): 10,161<br>Total: 20,<br><br>SDG 13: Vintage 2019<br>- GS6152 (VPA-11): Monitoring period #2 9,590 VER<br>- GS6419 (VPA-12): Monitoring period #1 7,870 VER<br>Total: 17,460 VER |

## SECTION A. Description of project

### A.1. Purpose and general description of project

The group of micro-scale VPA 11 and VPA 12 projects promotes the distribution and utilisation of the mud made 3 stones efficient woodstove "F3PA" in the province of Kourwéogo in the region Plateau Central in the centre of Burkina Faso. This microscales VPA 11 and VPA 12 are part of a group of 3 VPA's, which will be implemented together in the province of Kourwéogo between 2018 and 2020. The efficient F3PA cookstoves will replace the traditional stove whilst respecting the local three stone cooking culture. This is possible as the efficient F3PA cookstove, seen in the figure below, will integrate the three stones from each household inside its design. These three stones represent the pillar of the household's marital union.

The improved technology F3PA is significantly more efficient than the traditional open fire three stone cooking method[1]. The project will thus help reduce wood consumption by more than half in each household and therefore preserve the local forests and their biodiversity. This will also help combat the ever increasing threat of desertification in the area. The F3PA has further benefits like the reduction of harmful smoke in the local rural village households and the reduction of time spent in collecting wood. The project does not consist a fuel switch as locally available wood is still being used.

*Locally produced efficient F3PA cookstove*

Tiipaalga, a local association in Burkina Faso, has been working on reforestation and agriculture since 2003. On the demand of the women and the urgent need to better protect woody resources, Tiipaalga introduced a project of efficient cookstoves in Burkina Faso. Tiipaalga adapted and improved an already existing efficient mud made cookstove model and attached importance to the monitoring system. This innovative distribution system is based on a tight collaboration with the women to ensure the training and monitoring in the villages.

The project's approach involves training of women in the rural zones to build, use and maintain these efficient cookstoves themselves using local material. The training includes as well education on hygienic usage and on the threat of climate change and health hazards related to the old cooking system and inform on the health and environmental benefits of using such efficient cookstoves.

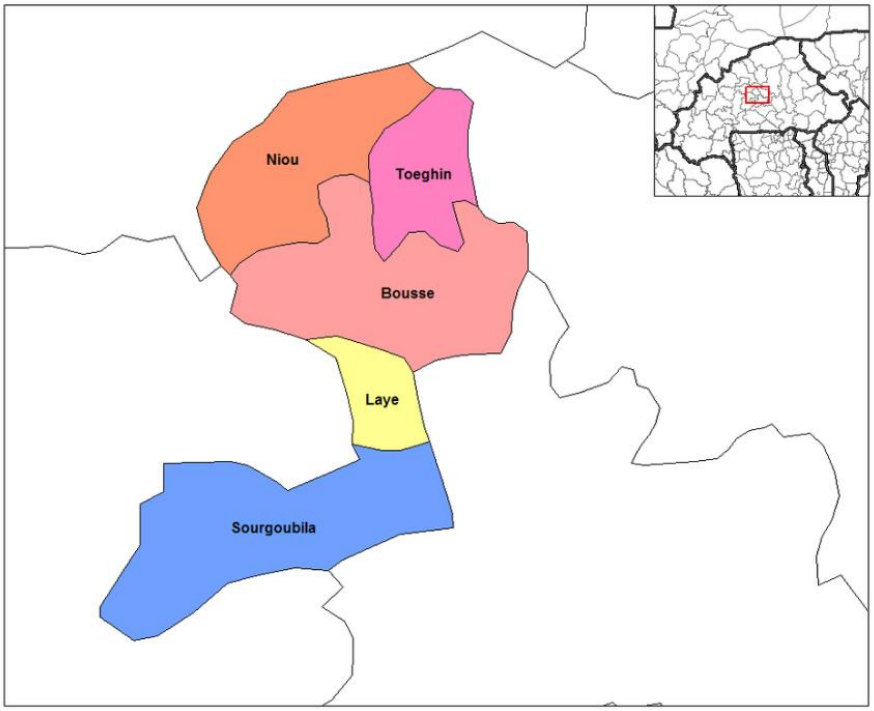
[1] Rapport sur les tests de performances énegétiques des Foyers trois pierres améliorés (F3PA) de l'association Tiipaalga, Laboratoire Biomasse Energie et Biocarburnat de 2IE, Ouagadougou, July 2015 (see document « tiipaalga_Rapport de tests de performance énergétiques_F3PA_24_07_2015_VF.pdf » or in English : « tiipaalga_Report WBT thermal efficiency_F3PA_24_07_2015_VF_EN » )

The monitoring report applies to the F3PA efficient cookstove which is the primary technology disseminated and installed for households in the province Kourwéogo in the Plateau central region of Burkina Faso within VPA-11 and VPA-12 (which are part of group of 3 VPA's).

During this monitoring period from 01/01/2019 to 31/12/2019, it is calculated that VPA-11 and VPA-12 have generated **17,460** tons of CO2eq emissions reductions.

### A.2. Location of project

Burkina Faso, province Kourwéogo. The project boundary of the current mirco-scale VPA are 4 out of the 5 municipalities located in the province in Kourwéogo in the Plateau Central region, which are Boussé, Niou, Toéghin and Sourgoubila.




*Location of the province of Kourwéogo with its 5 municipalities*

| GS/VPA number | Province | Municipality | Latitude | Longitude |
|---|---|---|---|---|
| GS6152 (VPA-11) GS6419 (VPA-12) | Kourwéogo | Boussé | 12° 39' 38" N | 1° 53' 32" E |
| | Kourwéogo | Niou | 12° 46' 08" N | 1° 56' 11" E |
| | Kourwéogo | Toéghin | 12° 48' 58" N | 1° 43' 35" E |
| | Kourwéogo | Sourgoubila | 12° 25' 03" N | 1° 48' 25" E |

### A.3. Reference of applied methodology

"The Gold Standard Simplified Methodology for Efficient Cookstoves", version 1

### A.4. Crediting period of project

GS6152 – VPA 11: 13/01/2018 – 12/01/2025 (7 years)
GS6419 – VPA-12: 21/01/2019 – 20/01/2026 (7 years)

## SECTION B. Implementation of project

### B.1. Description of implemented project

The implemented project is a group of three VPA's, ie VPA-11 (GS6152), VPA-12 (GS6419) and VPA-13 (GS6420), which will be implemented in three years between 2018 and 2020 (as according the PDD). The project activities have served the following number of households with F3PA efficient cookstoves with a corresponding calculated GHG offsets generated during the second monitoring period for VPA-11 and first monitoring period for VPA-12 :

| GS/VPA number | Number of households | Dissemination calendar | Generated VER's |
|---|---|---|---|
| GS6152 (VPA-11) | 3,435 | 13/01/2018 – 23/07/2018 | 9,590 VER |
| GS6419 (VPA-12) | 3,329 | 21/01/2019 – 27/06/2019 | 7,870 VER |

### 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

Not applicable

#### B.2.2. Corrections

Not applicable

#### B.2.3. Changes to start date of crediting period

The start date of crediting period of VPA-12 differs from the start date in the registered PDD of VPA-12 (01/01/2019). This start date was postponed until 21/01/2019[2] due to a delay in starting up the installations of the cookstoves.

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

Not applicable

#### B.2.5. Changes to project design of approved project

Not applicable

## SECTION C. Description of monitoring system applied by the project

**Process of unique identification of stove users:**

Significant part of the households in the project area are polygamous. Most of the wives within a household included in the carbon project have a cookstove set of at least two F3PA efficient cookstoves of different sizes. The project cookstoves are single pot stoves. As every cooking pot size has its specific size of cookstove, different sizes of project cookstoves have been implemented according the cooking habits of the stove users.

[2] The contract between Association tiipaalga and stove user where first F3PA efficient cookstoves of the VPA-12 has been constructed is used as evidence for the start date of the VPA-12: « Contract VPA-12 2657-01». The construction date in the contract is 14/1/2019, whereas the installation date (registered in project database) is 21/1/2019, which is 7 days after the construction date. The installation date is to be considered as the first date of usage of the F3PA efficient cookstove.

The sizes of the cooking pots and so the cookstoves used in the VPA's are 2, 3, 4, 5, 6, 7, 8, 10, 12 and 15 due to its frequency of utilization. The women using different cookstove sets in a polygamous household are credited as one single household.

The individual identification of the micro scale – VPA's is ensured with the identification of each household and each wife within the household using the project cookstoves by a unique serial number referring to the micro scale – VPA 11 or VPA 12. The syntax of the unique serial number is defined as GS1340-VPA-xx-yyyy/z, where (i) GS1340 is the Gold Standard number of the PoA "Efficient cookstoves in Burkina Faso" to which the VPA belongs, (ii) VPA-xx is the number of the VPA of the PoA, (iii) yyyy is the number of the household from 1 to 9999 and (iv) z is the number of the wife in the household from 1 to 9.

The following information is documented for each household of which each wife of the household (when polygamous) has replaced all traditional three stones cookstoves for domestic use with project cookstoves:

i. Unique VPA ID number of each household and each wife within the household;
ii. Type and size of appliance (ex. F3PA – size 2);
iii. GPS Coordinates of the household;
iv. Name/Address/national ID Number/Mobile Number/Picture of wife with her project cookstoves;
v. Stove Installation Date;

All data are stored in an electronic database using AKVO Flow software (www.akvo.org). The following files are raw data files of data stored in the cloud:

- *DR_Tiipaalga_VPA-11_VPA-12_HH_20200220:* distribution records (DR) of households with the following data:
    - Identifier (Unique internal ID number);
    - GS number: GS PoA-nr / VPA-nr / Household nr;
    - Location info;
    - Data on head of household;
- *DR_Tiipaalga_VPA-11_VPA-12_ICS_20200220:* data on wives and type of stoves used per wife within the household with the following data:
    - Identifier (Unique internal ID number) which is the unique key to household info (*DR_Tiipaalga_VPA-11_VPA-12_HH_20200220*):
    - Identification data per wife: name, picture of wife with its stoves;
    - Data on stoves used per wife: size of stoves, installation dates of each stove, location of stoves, …

The start of the crediting period of each household is considered as the latest installation date of all stoves within the cooking sets of the different wives within the household (See file DR_Tiipaalga_VPA-11-MP2_VPA-12-MP1_ICS_20200220_Recent date v1.0). For each household the number of days in age group 0-1 and age-group 1-2 are calculated.

**Data concerning double counting:**

The project developer Tiipaalga monitors any risks of double counting in this project, specifically determining whether any of the efficient cookstoves part of this project are counted in any other emission reduction project. There is another registered GHG reduction project in Burkina Faso promoting the F3PA efficient cookstoves. This project is implemented in the north of Burkina Faso, in the provinces of Bam and Loroum, ie VPA-01 to 10 GS2456 and GS3516 to GS3524 under the same PoA GS1340. It is also monitored by Tiipaalga, that makes sure there is no double counting. Tiipaalga is also aware of another cookstove project[3] in Burkina Faso registered under the Gold Standard. However, this project promotes a different kind of stoves rather for non-household cooking purposes.

Tiipaalga continues to monitor whether any other projects with same technology exist. In such cases, Tiipaalga will make every effort to compare total distribution databases with the other project developer(s) to ensure

[3] The project (https://registry.goldstandard.org/projects/details/665) is an initiative of SNV, the Netherland Development Organization, to promote improved "dolo" stoves in the Boucle du Mouhoun Region of Burkina Faso. These stoves are used for brewing of "Dolo", a traditional local drink made from sorghum which is is consumed during any ceremony, rituals, festivities and non-special occasions.

that there is no overlap. In addition, the project continues to use all legal documentation outlined in the VPA-DD to ensure legal ownership over offsets, a step that further avoids double counting.

**Data processing and archiving:**

Distribution records are captured with Smartphones using the AKVO Flow software with necessary pictures and GPS coordinates. Monitoring data are extracted to Microsoft Excel for analyse. Records will be kept for two years after the project activity is completed.

**Quality assurance and quality control measures**

Quality control rules were developed for the F3PA efficient cookstoves and were explained during the stove construction trainings. Quality control rules included in the construction protocol of the F3PA efficient cookstove are among others:

- It should be possible to move a hand between the wall of the cookstove and the cookpot;
- The height of the wood entrance of the cookstove is at most half the total height of the cookstove;
- The distance between the cooking pot and floor of cookstove should either not be higher than a hand or the handles of the cooking pot should be higher than the wall of the cookstove.

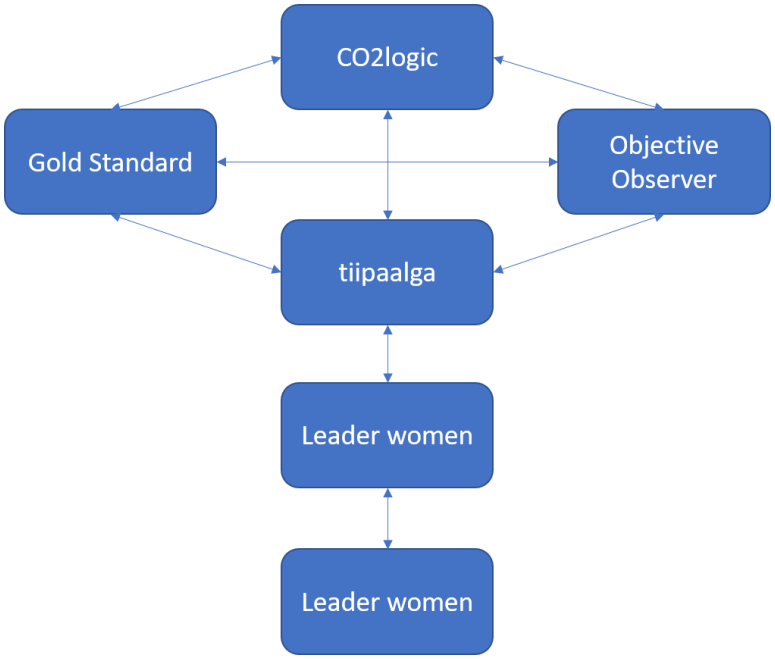
During monitoring surveys the F3PA efficient cookstoves are evaluated with the following statuses:

- *Green*: the construction norms have been respected and the F3PA efficient cookstove doesn't need any maintenance action. It means that (i) the outer surface of the F3PA efficient cookstove are not washed by rain, (ii) there is no hole in the floor of the efficient stove;
- *Orange*: the construction norms have been respected, but the efficient cookstove has not well been maintained. It concerns F3PA efficient cookstoves (i) from which the outer surface has been washed by rain and that need re-polishing; (ii) that have been constructed more than two years ago and that need re-polishing of internal and outer surface; (iii) that have some cracks, but which are external and do not affect the quality of the combustion of the wood. For these cases the application of the reparation protocol will fix the cracks and repolish the surface, so that the status will turn again into green.
- *Red*: the construction norms are not respected, or the F3PA efficient cookstoves have not been well maintained or used in a proper way. If the F3PA efficient cookstove has not been well constructed, the cookstove will not be registered in the initial database. An example of poor usage is sitting before the entrance of the stove. The combustion will not happen in an appropriate way and the risk that the cookstove will crack at the level of the entrance is high. A red cookstove needs to be reconstructed.

Orange cookstoves will be monitored, so that the maintenance activities of these stoves bring them again in green status. If these maintenance activities do not take place, they probably will in the short term, get into the red status. Orange F3PA efficient cookstoves are considered to have the same efficiency as the green F3PA efficient cookstoves of the same age group. The red F3PA efficient cookstoves will be monitored, as long as the cookstove has not been reconstructed. After reconstruction, the status of the F3PA efficient cookstove will turn to green. Red F3PA efficient cookstoves do not have the targeted efficiency of the F3PA efficient cookstove anymore, and so are not considered in the emission reduction calculations as long as they are not reconstructed.

**Diagram of Responsibilities**

As there are several entities involved in initial data collection and project monitoring it is important to clearly designate the relationships between and responsibilities of entities. Tiipaalga will act as the managing entity of the project and be responsible for communication with the Gold Standard Foundation and the Objective Observer. CO2logic provides technical support in the initial data collection, data quality assurance, monitoring, drafting of the verification report. A diagram of responsibilities is shown here below.




Tiipaalga employees train leader women, who are selected by the women in the villages, for the construction, the use and maintenance of mud made 3 stones efficient woodstoves. These leader women conduct the same training sessions with the women in their villages and help them to build the cookstoves. Tiipaalga employees in collaboration with the leader women, will perform quality checks and collect the initial stove data.

End user information is collected by Tiipaalga agents with mobile smartphone, and is consolidated into an electronic database in the cloud from which project monitoring can be conducted. The central electronic database is accessible by Tiipaalga and CO2logic. Data can be made available through data extraction. CO2logic performs quality checks.

Monitoring tasks such as monitoring surveys are managed by Tiipaalga and realized by the Tiipaalga surveyors. They are the most capable of collecting these data because of extensive knowledge of the technology and end-users. The Tiipaalga surveyors are trained and retrained prior conducting surveys during a 5-days training session conducted from 3/3/2020 till 7/3/2020[4]. CO2logic assists Tiipaalga in cross-checking the integrity of data with other variables to ensure consistency and accuracy, and to avoid mistakes.

## SECTION D. Data and parameters

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

| **Relevant SDG Indicator** | **SDG 13, Climate Action** |
|---|---|
| **Data/parameter:** | **$EF_{b,fuel,CO2}$** |
| Unit | $tCO_2$/ton 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 $tCO_2$/ton of firewood |
| Choice of data or measurement methods and procedures | As defined under the Gold Standard Simplified Methodology for Efficient Cookstoves |
| Purpose of data | Calculation of emission reductions |
| Additional comments | |

[4] Report of the training session *Compte rendu de la formation des enqueteurs_Verification VPA 11 et 12 Kourwéogo_with translation*

| Relevant SDG Indicator | SDG 13, Climate Action |
|---|---|
| **Data/parameter:** | **$EF_{b,fuel,non\_CO2}$** |
| Unit | $tCO_2$/ton of firewood |
| Description | Non-$CO_2$ emission factor arising from use of firewood in baseline scenario |
| 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) | 0.530 $tCO_2$/ton of firewood |
| Choice of data or measurement methods and procedures | As defined under the Gold Standard Simplified Methodology for Efficient Cookstoves |
| Purpose of data | Calculation of emission reductions |
| Additional comments | |

| Relevant SDG Indicator | SDG 13, Climate Action |
|---|---|
| **Data/parameter:** | **$\eta_b$** |
| Unit | Fraction |
| Description | Efficiency of the cookstove being used in the baseline scenario |
| Source of data | Gold Standard Simplified Methodology for Efficient Cookstoves |
| Value(s) applied) | 0.10 |
| Choice of data or measurement methods and procedures | As defined under the Gold Standard Simplified Methodology for Efficient Cookstoves |
| Purpose of data | Calculation of emission reductions |
| Additional comments | |

| Relevant SDG Indicator | SDG 13, Climate Action |
|---|---|
| **Data/parameter:** | **$\eta_p$** |
| Unit | Fraction |
| Description | Efficiency of the cookstove being used in the project scenario |
| Source of data | Determined following the Water Boiling Test Protocol |
| Value(s) applied) | 0.234[5] |
| Choice of data or measurement methods and procedures | As defined under the Gold Standard Simplified Methodology for Efficient Cookstoves |

[5] Rapport sur les tests de performances énergétiques des Foyers trois pierres améliorés (F3PA) de l'association Tiipaalga, Laboratoire Biomasse Energie et Biocarburnat de 2IE, Ouagadougou, July 2015 (see document « tiipaalga_Rapport de tests de performance énergétiques_F3PA_24_07_2015_VF.pdf » or in English : « tiipaalga_Report WBT thermal efficiency_F3PA_24_07_2015_VF_EN » )

| | |
|---|---|
| Purpose of data | Calculation of emission reductions |
| Additional comments | For each wife of one household included in the VPA, at least two efficient cookstoves of the defined project sizes 2, 3, 4, 5, 6, 7, 8, 10, 12 and 15 will be installed according the local cooking habits. Each size of project cookstove is tested according to the WBT protocol. To determine the project cookstove efficiency of one particular size, three sample runs have been carried out on one randomly selected project cookstove. The average of the three results is taken as the efficiency for the project cookstove of this particular size.<br><br>The lowest value of project cookstove efficiency of the various sizes is taken as reference value for the efficiency of the cookstoves being used in the project scenario to calculate the emission reductions.<br><br>The project cookstove efficiency in the year y $\eta_{p,y}$ will be determined using the discount factor $DF_{\eta}$ to account for efficiency loss of project cookstove per year of operation (fraction). |

| **Relevant SDG Indicator** | **SDG 13, Climate Action** |
|---|---|
| **Data/parameter:** | **$f_{NRB,b,y}$** |
| Unit | Fractional non-renewability |
| Description | Non-renewability status of wood fuel during year y |
| Source of data | Default NRB value provided by the CDM executive board and endorsed by the host country DNA (http://cdm.unfccc.int/DNA/fNRB/docs/burkina.pdf) |
| Value(s) applied) | 0.90 |
| Choice of data or measurement methods and procedures | As defined under the Gold Standard Simplified Methodology for Efficient Cookstoves |
| Purpose of data | Calculation of emission reductions |
| Additional comments | The project activity may choose to update the $f_{NRB,b,y}$ during the crediting period |

| **Relevant SDG Indicator** | **SDG 13, Climate Action** |
|---|---|
| **Data/parameter:** | **$B_{b,y}$** |
| Unit | Tonnes firewood per household per year |
| Description | Firewood consumption for cooking in the baseline |
| Source of data | Average household size within the project boundary is determined using data from the latest population census in 2006 in the National institute for Statistics and Demography[6]. The minimum service level or the default baseline biomass consumption according the Gold Standard Simplified Methodology for Efficient Cookstoves is set at 0.5 tonnes per capita per year. |
| Value(s) applied) | Ex ante:<br>• 3.32 for the whole project boundary<br>Ex post:<br>• 3.24 for the municipality of Boussé<br>• 3.27 for the municipality of Niou<br>• 3.45 for the municipality of Sourgoubila<br>• 3.33 for the municipality of Toeghin |

[6] INSD, recensement général de la population et de l'habitation de 2006, juillet 2008, Ministère de l'Economie et des Finances, p49 (tableau 15), 52 pages : (Document « *Resultats_definitifs_RGPH_2006_with EN translation* »)

| | |
|---|---|
| Choice of data or measurement methods and procedures | Option c of Minimum service level has been chosen to determine the firewood consumption for cooking in the baseline as detailed information per municipality on average household size is available in the "Recensement général de la population et l'habitation (RGPH) de 2006 du Burkina Faso" or the general census of the population and habitat of Burkina Faso, table 15. Other sources show that the population in Burkina Faso is growing each year[7]. This means that the used value can be considered as conservative to calculate the $CO_2$ reduction emissions. |
| Purpose of data | Calculation of emission reductions |
| Additional comments | The average household size across the four municipalities of the project boundary is 6.65, whereas for the municipalities Boussé 6.49, Niou 6.53, Sourgoubila 6.91 and Toeghin 6.67: |

| **Municipality** | **# HH** | **# persons** | **#pers/HH** | **$B_{b,y}$** |
|---|---|---|---|---|
| Boussé | 6,682 | 43,352 | 6.49 | 3.24 |
| Niou | 4,133 | 26,998 | 6.53 | 3.27 |
| Sourgoubila | 5,654 | 39,044 | 6.91 | 3.45 |
| Toeghin | 2,475 | 16,500 | 6.67 | 3.33 |
| Total | 18,944 | 125,894 | 6.65 | 3.32 |

Based on the minimum service level of 0.5 tonnes per capita per year the average annual consumption of firewood per household is estimated at 3.32 tonnes/year for the total project boundary and more specifically for the municipality of Boussé 3.32 tonnes/year, for Niou 3.27 tonnes/year, for Sourgoubila 3.45 tonnes/year and for Toeghin 3.33 tonnes/year.

### D.2. Data and parameters monitored

| **Relevant SDG Indicator** | **SDG 3, Good health and well-being** |
|---|---|
| **Data/parameter:** | **Smoke level reduction**<br>**Incidence of coughing reduction**<br>**Incidence of respiratory illness reduction**<br>**Incidence of itchy eyes reduction** |
| Unit | Fraction |
| Description | Proportion of households perceiving less often smoke levels, incidence of coughing, incidence of respiratory illness, incidence of itchy eyes since the implementation of F3PA efficient cookstoves |
| Measured/calculated/default | Measured |
| Source of data | Monitoring surveys |
| Value(s) of monitored parameter | Smoke level reduction: 100%<br>Incidence of coughing reduction: 100%<br>Incidence of respiratory illness reduction: 100%<br>Incidence of itchy eyes reduction: 100% |
| Monitoring equipment | N/A |
| Measuring/reading/recording frequency: | Annual |
| Calculation method (if applicable): | The measurement of the parameter is based on qualitative information collected during Monitoring surveys. The end users are asked whether, since they have the F3PA efficient cookstoves, smoke level occurs for each more often, less often among the family members or the situation has not changed. The same is asked for coughing, respiratory illnesses and itchy eyes. |

[7] INSD, Annuaire Statistique 2011, Ministère de l'Economie et des Finances, Edition 2013, p24 - 27 (table 02.18), 420 p.). Document « *Annuaire_statistiques_finale2011_with EN translation* »

| | |
|---|---|
| QA/QC procedures: | The data is analyzed in the monitoring report and raw data of the Monitoring surveys will be made available for review. |
| Purpose of data: | Calculation of the parameter "Proportion of households perceiving less often smoke levels, incidence of coughing, incidence of respiratory illness, incidence of itchy eyes" |
| Additional comments: | See Document GS1340_MS_VPA-11_MP2_VPA-12_MP1_20200430_v1.0 |

| **Relevant SDG Indicator** | **SDG 4, Quality Education** |
|---|---|
| **Data/parameter:** | **Number of trainings initiatives for staff involved in the programme** |
| Unit | Number |
| Description | Number of trainings initiatives for staff involved in the programme in order to increase their performance in the programme |
| Measured/calculated/default | Measured |
| Source of data | Reports regarding the training initiatives |
| Value(s) of monitored parameter | 1 |
| Monitoring equipment | N/A |
| Measuring/reading/recording frequency: | Annual |
| Calculation method (if applicable): | The list of trainings initiatives during the corresponding monitoring period |
| QA/QC procedures: | The data will be analysed in the reports regarding the training initiatives, which will be made available for review. |
| Purpose of data: | Calculation of the parameter "Number of trainings initiatives for staff involved in the programme" |
| Additional comments: | In total 1 training has been organized during the monitoring period:<br>• March 2020: 5 days;<br>• Tiipaalga office in Ouagadougou and on the field<br>• 5 staff members<br>• Utilization of smartphones with AKVO Flow software for monitoring survey<br>• Documentation: file *Compte rendu de la formation des enqueteurs_Verification VPA 11 et 12 Kourwéogo_with translation* |

| **Relevant SDG Indicator** | **SDG 4, Quality Education** |
|---|---|
| **Data/parameter:** | **Number of workshops carried out for women** |
| Unit | Number |
| Description | Number of workshops carried out for women in order to increase their empowerment |
| Measured/calculated/default | Measured |
| Source of data | Reports regarding the workshops carried out for women |
| Value(s) of monitored parameter | VPA-11: 24<br>VPA-12: 60 |
| Monitoring equipment | N/A |
| Measuring/reading/recording frequency: | Annual |
| Calculation method (if applicable): | The list of workshops carried out for women during the corresponding monitoring period |

| | |
|---|---|
| QA/QC procedures: | The data has been analysed in the report regarding the workshops carried out for women, which will be made available for review |
| Purpose of data: | Calculation of the parameter "Number of workshops carried out for women" |
| Additional comments: | Two types of workshops were organized: i) sensitisation workshops; and ii) training workshops of leader women for the construction of F3PA efficient cookstoves. During the sensibilisation sessions stove users are informed about the advantages of the project cookstoves, on how the banco or mud should be prepared for the construction of the cookstoves etc. During training sessions leader women are trained on how the F3PA efficient cookstoves should be constructed. The table below gives an overview of the number of sessions and number of women participating to the sessions: |

VPA-11:

| **Municipality** | **Sensitisationsessions** | | **Total** | |
|---|---|---|---|---|
| | **# session** | **# women** | **# session** | **# women** |
| Niou | 10 | 599 | 10 | 599 |
| Sourgoubila | 9 | 561 | 9 | 561 |
| Toéghin | 5 | 250 | 5 | 250 |
| **Total** | 24 | 1 410 | **24** | **1 410** |

VPA-12:

| **Municipality** | **Sensitisation sessions** | | **Training workshops of leader women** | | **Total** | |
|---|---|---|---|---|---|---|
| | **# session** | **# women** | **# session** | **# women** | **# session** | **# women** |
| Niou | 6 | 317 | 6 | 497 | 12 | 814 |
| Sourgoubila | 6 | 399 | 6 | 381 | 12 | 780 |
| Toéghin | 10 | 891 | 10 | 677 | 20 | 1 568 |
| Boussé | 8 | 209 | 8 | 347 | 16 | 556 |
| **Total** | 30 | 1 816 | 30 | 1 902 | **60** | **3 718** |

Evidences of the sensitisation sessions can be found in following documents:

- *VPA 11 – 2019 - Niou*
- *VPA 11 – 2019 - Sourgoubila*
- *VPA 11 – 2019 – Toeghin*
- *Animation Générale_VPA-12_MP1_Niou*
- *Animation Générale_VPA-12_MP1_Sourgoubila*
- *Animation Générale_VPA-12_MP1_Toeghin*
- *Animation Générale_VPA-12_MP1_Bousse*

Evidences of the training sessions of the leader women (monitrices endogènes) can be found in the following documents:

- *Formation_VPA-12_MP1_Bousse_Goala*
- *Formation_VPA-12_MP1_Bousse_Goundrin*
- *Formation_VPA-12_MP1_Bousse_Laogo*
- *Formation_VPA-12_MP1_Bousse_Likenkelsé*
- *Formation_VPA-12_MP1_Bousse_Sandogo*

- *Formation_VPA-12_MP1_Niou_Bélé*
- *Formation_VPA-12_MP1_Niou_Gasgo*
- *Formation_VPA-12_MP1_Niou_Nabzinigma*
- *Formation_VPA-12_MP1_Niou_Natenga*
- *Formation_VPA-12_MP1_Niou_Tanghin*

| | |
|---|---|
| | - *Formation_VPA-12_MP1_Niou_Yarcé*<br><br>- *Formation_VPA-12_MP1_Sourgoubila_Damsi*<br>- *Formation_VPA-12_MP1_Sourgoubila_Gasma*<br>- *Formation_VPA-12_MP1_Sourgoubila_Guesna*<br>- *Formation_VPA-12_MP1_Sourgoubila_Koukin*<br>- *Formation_VPA-12_MP1_Sourgoubila_Nakamtenga*<br>- *Formation_VPA-12_MP1_Sourgoubila_Salsé*<br>- *Formation_VPA-12_MP1_Sourgoubila_Sangnabai*<br>- *Formation_VPA-12_MP1_Sourgoubila_Secteur 2*<br><br>- *Formation_VPA-12_MP1_Toeghin_Douré*<br>- *Formation_VPA-12_MP1_Toeghin_Gogse*<br>- *Formation_VPA-12_MP1_Toeghin_Kangé*<br>- *Formation_VPA-12_MP1_Toeghin_Moetenga*<br>- *Formation_VPA-12_MP1_Toeghin_Sandogo*<br>- *Formation_VPA-12_MP1_Toeghin_Tanghin*<br>- *Formation_VPA-12_MP1_Toeghin_Toussoutenga*<br>- *Formation_VPA-12_MP1_Toeghin_Youbga*<br>- *Formation_VPA-12_MP1_Toeghin_Zéguedeghin*<br><br>Pictures of the sessions: see document "*Quelques photos des seances de sensibilisations_2019* » |

| **Relevant SDG Indicator** | **SDG 5, Gender equality** |
|---|---|
| **Data/parameter:** | **Proportion of stove users perceiving reduced amount of time spent on wood fuel collection and/or reduced amount of money spent on wood fuel purchase** |
| Unit | Fraction |
| Description | Proportion of stove users perceiving reduced time spent on wood fuel collection and/or reduced money spent on wood fuel purchase since the implementation of the F3PA efficient cookstoves |
| Measured/calculated/default | Measured |
| Source of data | Monitoring surveys |
| Value(s) of monitored parameter | Reduced amount of time spent on wood fuel collection: 100%<br>Domestic tasks$_p$: 44%<br>Income generating activities$_p$: 61%<br>Field labour$_p$: 3%<br>Gardening$_p$: 5%<br>Participation to a literacy program$_p$: 1%<br>Community work$_p$: <1%<br>Doing nothing$_p$: 23%<br>Religious activities$_p$: 1%<br>Reduced amount of money spent on wood fuel purchase: 100%<br>School fees$_p$: 50%<br>Purchase of medical drugs$_p$: 42%<br>Purchase of food$_p$: 75%<br>Income generating activities$_p$: 25% |
| Monitoring equipment | N/A |
| Measuring/reading/recording frequency: | Annual |

| | |
|---|---|
| Calculation method (if applicable): | The measurement of the parameter is based on qualitative information collected during Monitoring surveys. The end users are asked whether, since they have the F3PA efficient cookstoves, they spent more, less time to collect the wood or the situation has not changed. In case of purchase wood fuel, the end users are asked they spent more, less money on the purchase of wood fuel or the situation has not changed. |
| QA/QC procedures: | The data has been analysed in the monitoring report and raw data of the monitoring surveys will be made available for review |
| Purpose of data: | Calculation of the parameter "Proportion of stove users perceiving reduced amount of time spent on wood fuel collection and/or reduced amount of money spent on wood fuel purchase" |
| Additional comments: | See Document *GS1340_MS_VPA-11_MP2_VPA-12_MP1_20200430_v1.0* |

| **Relevant SDG Indicator** | **SDG 7, Affordable and clean energy** |
|---|---|
| **Data/parameter:** | **Number of F3PA efficient cookstoves disseminated** |
| Unit | Number |
| Description | Number of F3PA efficient cookstoves included in the project database for project scenario p |
| Measured/calculated/default | Measured |
| Source of data | Project database |
| Value(s) of monitored parameter | VPA 11: 10,385<br>VPA 12: 10,161<br>**Total: 20,546** |
| Monitoring equipment | N/A |
| Measuring/reading/recording frequency: | Continuous |
| Calculation method (if applicable): | The project database provides a list of end-users with number of F3PA efficient cookstoves per end-user |
| QA/QC procedures: | The data has been analysed in the monitoring period and project database is made available for review. |
| Purpose of data: | Calculation of the parameter "Number of F3PA efficient cookstoves disseminated" |
| Additional comments: | See document *DR_Tiipaalga_VPA-11_VPA-12_ICS_20200220* |

| **Relevant SDG Indicator** | **SDG 13, Climate Action** |
|---|---|
| **Data/parameter:** | **$U_{p,1}$** |
| Unit | Percentage |
| Description | Usage rate in project scenario p during year 1 |
| Measured/calculated/default | Measured |
| Source of data | Annual usage/Monitoring survey |
| Value(s) of monitored parameter | 88.00% for the age group 0-1 |
| Monitoring equipment | N/A |
| Measuring/reading/recording frequency: | Annual |
| Calculation method (if applicable): | The measurement of the usage rate is based on qualitative information collected in the usage/monitoring survey. A question concerning the current use of the technology is asked to each end user of the sample and is validated by the observation of the surveyor in order to determine the usage rate of each technology age category. |

| | |
|---|---|
| QA/QC procedures: | Transparent data analysis and reporting |
| Purpose of data: | Calculation of emission reductions |
| Additional comments: | A usage parameter is derived for each age group of project cookstove being credited. The usage survey will determine if the project cookstoves can be considered as 'in use' or 'not in use' and if the project cookstoves are in 'good condition' or 'not in good condition'.<br><br>The record keeping system of this VPA is at household level (with household number) for which all baseline cookstove set(s) (comprising of several traditional three stone cookstoves for domestic use) have been replaced by project cookstove set(s) . Cookstove set(s) within a household can only be considered 'in use' if all the cookstoves in the set(s) (in polygamous households all cookstoves of all cookstove sets of all women in the household) are being used. Similarly, cookstove set(s) can only be considered in 'good condition' as long as all cookstoves within the cookstove set(s) (in polygamous households all cookstoves of all cookstove sets of all women in the household) are in a 'good condition'.<br>See document *GS1340_MS_VPA-11_MP2_VPA-12_MP1_20200430_v1.0* |

| | |
|---|---|
| **Relevant SDG Indicator** | **SDG 13, Climate Action** |
| **Data/parameter:** | **$U_{p,2}$** |
| Unit | Percentage |
| Description | Usage rate in project scenario p during year 2 |
| Measured/calculated/default | Measured |
| Source of data | Annual usage/Monitoring survey |
| Value(s) of monitored parameter | 73.33% for the age group 1-2 |
| Monitoring equipment | N/A |
| Measuring/reading/recording frequency: | Annual |
| Calculation method (if applicable): | The measurement of the usage rate is based on qualitative information collected in the usage/monitoring survey. A question concerning the current use of the technology is asked to each end user of the sample and is validated by the observation of the surveyor in order to determine the usage rate of each technology age category. |
| QA/QC procedures: | Transparent data analysis and reporting |
| Purpose of data: | Calculation of emission reductions |
| Additional comments: | A usage parameter is derived for each age group of project cookstove being credited. The usage survey will determine if the project cookstoves can be considered as 'in use' or 'not in use' and if the project cookstoves are in 'good condition' or 'not in good condition'.<br><br>The record keeping system of this VPA is at household level (with household number) for which all baseline cookstove set(s) (comprising of several traditional three stone cookstoves for domestic use) have been replaced by project cookstove set(s) . Cookstove set(s) within a household can only be considered 'in use' if all the cookstoves in the set(s) (in polygamous households all cookstoves of all cookstove sets of all women in the household) are being used. Similarly, cookstove set(s) can only be considered in 'good condition' as long as all cookstoves within the cookstove set(s) (in polygamous households all cookstoves of all cookstove sets of all women in the household) are in a 'good condition'.<br>See document *GS1340_MS_VPA-11_MP2_VPA-12_MP1_20200430_v1.0* |

| **Relevant SDG Indicator** | **SDG 13, Climate Action** |
|---|---|
| **Data/parameter:** | **$N_{p,1}$** |
| Unit | Number of households included in the project (Units), based on days of usage of age group 0-1 during the monitoring period related to one year. |
| Description | Household in the project database for project scenario p through year 1 for which all baseline cookstove set(s) (comprising of several traditional three stone cookstoves for domestic use) have been replaced by project cookstove set(s) |
| Measured/calculated/default | Measured |
| Source of data | Project database |
| Value(s) of monitored parameter | VPA-11 – Niou: 415<br>VPA-11 – Sourgoubila: 507<br>VPA-11 – Toeghin: 156<br>Total VPA-11: 1,078<br>VPA-12 – Niou: 408<br>VPA-12 – Sourgoubila: 555<br>VPA-12 – Toeghin: 723<br>VPA-12 – Bousse: 801<br>Total VPA-12: 2,487 |
| Monitoring equipment | N/A |
| Measuring/reading/recording frequency: | Continuous |
| Calculation method (if applicable): | For the determination of the number of usage days at household level for age group 0-1 during the first monitoring period, the latest start day of use of all constructed F3PA efficient cookstoves within the household will be taken in order to have conservative approach.<br><br>Number of households included in the project (Units) are calculated based on days of usage of age group 0-1 during the first monitoring period related to one year. |
| QA/QC procedures: | Transparent data analysis and reporting |
| Purpose of data: | Calculation of emission reductions |
| Additional comments: | A part of the households in the project area of the VPA are polygamous. Each wife of the household included in the carbon project must have at least two F3PA efficient cookstoves. This is a local cooking requirement as one is for the Mush "Tô", the other for the sauce "Sauce". Additional cookstoves could be used for boiling water or preparing the soup. All the traditional three stone cookstoves for domestic use will be replaced by the F3PA efficient cookstoves. This means that according to the needs of the household, an un-predetermined number of project cookstoves will be constructed and used at household level.<br><br>As the quantity of firewood consumed in the baseline is determined at household level, the number of households will be monitored instead of project cookstoves to determine the emissions reductions.<br><br>Women will be trained by the Tiipaalga instructors or leader women to build the project cookstoves themselves using local materials according a strict construction protocol. In tight collaboration of the project coordinator, the instructor and the leader women the logistical management, quality assurance of the project cookstoves according the construction protocol and the management of the project database recording all constructed project cookstoves will be ensured.<br><br>See document *DR_Tiipaalga-VPA-11-MP2_VPA-12-MP1_ICS_20200220 - Recent date v1.0* |

| **Relevant SDG Indicator** | **SDG 13, Climate Action** |
|---|---|
| **Data/parameter:** | **$N_{p,2}$** |
| Unit | Number of households included in the project (Units), based on days of usage of age group 1-2 during the monitoring period related to one year. |
| Description | Household in the project database for project scenario p through year 2 for which all baseline cookstove set(s) (comprising of several traditional three stone cookstoves for domestic use) have been replaced by project cookstove set(s) |
| Measured/calculated/default | Measured |
| Source of data | Project database |
| Value(s) of monitored parameter | VPA-11 – Niou: 957<br>VPA-11 – Sourgoubila: 1,069<br>VPA-11 – Toeghin: 331<br>Total: 2,357 |
| Monitoring equipment | N/A |
| Measuring/reading/recording frequency: | Continuous |
| Calculation method (if applicable): | For the determination of the number of usage days at household level for age group 1-2 during the first monitoring period, the latest start day of use of all constructed F3PA efficient cookstoves within the household will be taken in order to have conservative approach.<br><br>Number of households included in the project (Units) are calculated based on days of usage of age group 1-2 during the first monitoring period related to one year. |
| QA/QC procedures: | Transparent data analysis and reporting |
| Purpose of data: | Calculation of emission reductions |
| Additional comments: | A part of the households in the project area of the VPA are polygamous. Each wife of the household included in the carbon project must have at least two F3PA efficient cookstoves. This is a local cooking requirement as one is for the Mush "Tô", the other for the sauce "Sauce". Additional cookstoves could be used for boiling water or preparing the soup. All the traditional three stone cookstoves for domestic use will be replaced by the F3PA efficient cookstoves. This means that according to the needs of the household, an un-predetermined number of project cookstoves will be constructed and used at household level.<br><br>As the quantity of firewood consumed in the baseline is determined at household level, the number of households will be monitored instead of project cookstoves to determine the emissions reductions.<br><br>Women will be trained by the Tiipaalga instructors or leader women to build the project cookstoves themselves using local materials according a strict construction protocol. In tight collaboration of the project coordinator, the instructor and the leader women the logistical management, quality assurance of the project cookstoves according the construction protocol and the management of the project database recording all constructed project cookstoves will be ensured.<br><br>See document *DR_Tiipaalga-VPA-11-MP2_VPA-12-MP1_ICS_20200220 - Recent date v1.0* |

| **Relevant SDG Indicator** | **SDG 13, Climate Action** |
|---|---|
| **Data/parameter:** | **$DF_{\eta}$** |
| Unit | Fraction |
| Description | Discount factor to account for efficiency loss of project stoves |
| Measured/calculated/default | Default |
| Source of data | Gold Standard Simplified Methodology for Efficient Cookstoves |
| Value(s) of monitored parameter | Default value: 0.99 i.e., 1 % efficiency loss per year |
| Monitoring equipment | N/A |
| Measuring/reading/recording frequency: | Annual |
| Calculation method (if applicable): | N/A |
| QA/QC procedures: | N/A |
| Purpose of data: | Calculation of emission reductions |
| Additional comments: | The default value of 0.99 is 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 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 described in the Monitoring Plan should be used to capture the required information.<br><br>During annual surveys, 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. A site visit by an Objective Observer with relevant technical background would be required at the time of first internal verification and then subsequently after every 2 years from the previous issuance. The Objective Observer shall use the guidance provided in the Monitoring Plan to carry out field studies. |

| **Relevant SDG Indicator** | **SDG 13, Climate Action** |
|---|---|
| **Data/parameter:** | **$DF_{b,stove,1}$** |
| Unit | Percentage |
| Description | Discount factor to account for the baseline stove use in project scenario p during the year 1 |
| Measured/calculated/default | Measured |
| Source of data | Monitoring surveys |
| Value(s) of monitored parameter | 0.59% |
| Monitoring equipment | N/A |
| Measuring/reading/recording frequency: | Annual |
| Calculation method (if applicable): | The measurement of the discount factor to account for the baseline stove use is based on qualitative information collected in the usage/monitoring survey. A question concerning the current use of the baseline technology is asked to each end user of the sample and is validated by the observation of the surveyor in order to determine the discount factor to account for the baseline stove use in project scenario p of each technology age category. |
| QA/QC procedures: | Transparent data analysis and reporting |
| Purpose of data: | Calculation of emission reductions |

| | |
|---|---|
| Additional comments: | The discount factor for the baseline-stove shall be determined based on the number of meals cooked using the baseline stove. The required information shall be captured through sample surveys carried out following a random sampling approach for age-group 0-1 of the project stove. The impact of seasonal variation on use of baseline stove should be considered as part of the monitoring survey. The survey format for sample question to capture this information is described in the Monitoring Plan.<br><br>In case of polygamous households the discount factor shall be determined for each cookstove set and the highest value of all cookstove sets within the household shall be used as representative discount factor for the household.<br><br>See document *GS1340_MS_VPA-11_MP2_VPA-12_MP1_20200430* |

| **Relevant SDG Indicator** | **SDG 13, Climate Action** |
|---|---|
| **Data/parameter:** | **$DF_{b,stove,2}$** |
| Unit | Percentage |
| Description | Discount factor to account for the baseline stove use in project scenario p during the year 2 |
| Measured/calculated/default | Measured |
| Source of data | Monitoring surveys |
| Value(s) of monitored parameter | 2.23% |
| Monitoring equipment | N/A |
| Measuring/reading/recording frequency: | Annual |
| Calculation method (if applicable): | The measurement of the discount factor to account for the baseline stove use is based on qualitative information collected in the usage/monitoring survey. A question concerning the current use of the baseline technology is asked to each end user of the sample and is validated by the observation of the surveyor in order to determine the discount factor to account for the baseline stove use in project scenario p of each technology age category. |
| QA/QC procedures: | Transparent data analysis and reporting |
| Purpose of data: | Calculation of emission reductions |
| Additional comments: | The discount factor for the baseline-stove shall be determined based on the number of meals cooked using the baseline stove. The required information shall be captured through sample surveys carried out following a random sampling approach for age-group 1-2 of the project stove. The impact of seasonal variation on use of baseline stove should be considered as part of the monitoring survey. The survey format for sample question to capture this information is described in the Monitoring Plan.<br><br>In case of polygamous households the discount factor shall be determined for each cookstove set and the highest value of all cookstove sets within the household shall be used as representative discount factor for the household.<br><br>See document *GS1340_MS_VPA-11_MP2_VPA-12_MP1_20200430* |

| **Relevant SDG Indicator** | **SDG 13, Climate Action** |
|---|---|
| **Data/parameter:** | **Number of tCO2e reduced by the project** |
| Unit | Ton of $CO_2e$ |
| Description | Number of $tCO_2e$ reduced thanks to the implementation of the project during the corresponding monitoring period. |

| | |
|---|---|
| Measured/calculated/default | Measured |
| Source of data | See the specific monitoring tables used for calculating this parameter |
| Value(s) of monitored parameter | VPÄ-11: 9,590 $tCO_2$<br>VPA-12: 7,870 $tCO_2$<br>Total: 17,460 $tCO_2$ |
| Monitoring equipment | N/A |
| Measuring/reading/recording frequency: | Annual |
| Calculation method (if applicable): | See section E.3 |
| QA/QC procedures: | Transparent data analysis and reporting |
| Purpose of data: | Calculation of emission reductions |
| Additional comments: | See document *GS1340 - VPA-11-12 – MP2 - Consolidated ER calculation v1.0* |

### D.3. Implementation of sampling plan

In parallel with the distribution of the F3PA efficient cookstoves, and as per monitoring plan in the respective registered VPA-DD's (VPA-11 and VPA-12), tiipaalga conducted the following monitoring activities:

| Date | Activity | Purpose |
|---|---|---|
| Ongoing | Project database | Establish total distribution record to track number of households for which all baseline cookstove set(s) (comprising of several traditional three stone cookstoves for domestic use) have been replaced by project cookstove set(s) |
| 10th of March 2020 – 31nd of March 2020 | Monitoring survey | (i) To establish single usage rate factor of age group 0-1 and age group 1-2 based on if the project cookstoves can be considered as 'in use' or 'not in use' and if the project cookstoves are in 'good condition' or 'not in good condition';<br>(ii) To establish single discount factor age group 0-1 and age group 1-2 to account for the baseline stove use;<br>(iii) To measure the parameters regarding SDG 3 and SDG 5. |

The parameters which need to be monitored through surveys for the VPA are (i) $U_{p,y}$ Usage rate in project scenario p during year y; and (ii) $DF_{b,stove,y}$ Discount factor to account for the baseline stove use in project scenario p during the year y. A single survey with cross sampling of households has been undertaken using a single random sampling plan. The sample size is calculated for the population of VPA-11 and VPA-12, using the sampling guidelines described below.

The number of households of which each wife of the household (when polygamous) has replaced all traditional three stones cookstoves for domestic use with project cookstoves, is recorded in the project database (see data base records file). Only the households recorded in the database are part of the project activity.

Since the project activities started in January 2018, there are two age groups, i.e. 0-1 age group and 1-2 age group; The start of the crediting period of each household is considered as the latest installation date of all stoves within the cooking sets of the different wives within the household (See file *DR_Tiipaalga-VPA-11_ICS_20200220- MP2 - Recent date v1.0* & *DR_Tiipaalga-VPA-12_ICS_20200220- MP2 - Recent date v1.0)*. For each household the number of technology-days during MP2 are calculated per age group: (i) age group 0-1 (i.e. construction date + 365days), (ii) age group 1-2 (i.e. construction date + 2*365). The number of households per age-group are determined after cumulation of the technology-days per age group of the households in the project database divided by the number of days in a year, i.e. 365 days.

The minimum household sample size of each age group is determined according the following guidelines (according the Gold Standard Simplified Methodology for Efficient Cookstoves):

- Project target population < 300: Minimum sample size 30;
- Project target population 300 to 1000: Minimum sample size 10 % of group size;
- Project target population > 1000: Minimum sample size 100.

As the number of recorded households for VPA-11 and VPA-12 per age-group is more than 1000, the minimum sample size per age-group is 100. For this monitoring survey the household size was set at 150 households (see file *Sample_VPA-11_MP2_AG 1-2 & Sample_VPA-12_MP2_AG 0-1*). The method of selecting households for the sample list for the monitoring survey is random sampling using the random functionality in excel (see file Tiipaalga_MS_Sampling_VPA-11-12_MP2_20200220_v1.0). For all parameters that are monitored via sampling it is understood that only the age of the project cookstove has an influence. Therefore, no geographic representativeness is deemed necessary for the selection of users participating in the sample groups. The monitoring surveys are performed by user interviews. Only people older than 18 years are interviewed.

The questions used during the survey are presented in the file "GS1340_VPA-11&12_Monitoring Survey_VPA-11 MP2_VPA-12 MP1_v1.0" [8]. Apart from information for the sustainable development indicators, the survey has been built up in order to collect reliable data to calculate the usage rate $U_{p,y}$ per age group and the discount factor to account for the baseline stove use $DF_{b,stove,y}$ per age group.

The files *Sample_VPA-11_MP2_AG 1-2 & Sample_VPA-12_MP2_AG 0-1* contains the 150 at random selected households across VPA-12 for the first monitoring survey of age group 0-1 and 150 at random selected households across VPA 11 for the second monitoring survey of age group 1-2.

The file *GS1340_MS_VPA-11_MP2_VPA-12_MP1_20200430_v1.0* of the monitoring survey contains the following data in worksheet "Group 2":

- Identifier (Unique internal ID number) which is the unique key of household info;
- Identification data per wife: name, picture of wife with it stoves;
- Data on stoves used per wife: size of stoves, installation dates of each stove, location of stoves, frequency of usage, condition of stove …;
- Data on cooking habits during dry and wet season;
- Data related to sustainable indicators.

Based on this information the usage rate $U_{p,y}$ is calculated per household in column S and the discount factor to account for the baseline stove use $DF_{b,stove,y}$ per households in column AT. The worksheet "Analysis" contains the evaluated parameters usage rate $U_{p,y}$ and discount factor to account for the baseline stove use $DF_{b,stove,y}$ per age group.

Out of the 150 at random selected households for the age group 0-1, eleven (11) households have not been surveyed for the following reasons:

- VPA 11 – Zouda – 5176 – Sawadogo Wambi: F3PA broken and not rebuilt
- VPA 12 – Alizeta – 1864 – Sanfo Assèta: Movement of the household out of the project area
- VPA 11 – Alizeta – 1021 – Kabore Urbain: F3PA broken and not rebuilt
- VPA 11 – Alizeta – 793 – Souli Mangre: Movement of the household out of the project area
- VPA 11 – Awa – 1396 – Kabre Hamed: Movement of the household out of the project area
- VPA 11 – Awa – 1415 – Koama Boukare: F3PA broken and not rebuilt
- VPA 11 – Awa – 4303 – Sinare Hamado: F3PA broken and not rebuilt
- VPA 11 – Awa – 3168 – Sampebgo Rimkogda Mathieu: F3PA broken and not rebuilt
- VPA 11 – Alizeta – 748 – Nakelse Wambi Bernard: Not satisfied with F3PA

[8] Document is in French. However, translation of the questions is foreseen in the monitoring survey result file "*GS1340_MS_VPA-11_MP2_VPA-12_MP1_20200430*"

- VPA 11 – Alizeta – 787 – Sam Jean Mari: Not satisfied with F3PA
- VPA 11 – Alizeta- 770 – Sam Pousga: Not satisfied with F3PA

For these 11 households a usage rate $U_{p,y}$ has been accounted of 0%.

The surveyed households are per age group presented with pictures of stove users and stoves in the following files: *GS6152_List of surveyed households_MP2_0-1_20200430 & GS6152_List of surveyed households_MP2_1-2_20200430*

The following points were considered when evaluating the usage rate $U_{p,y}$:

- All project cookstoves within the sample are assessed if they are still operational. If one stove user doesn't use any of its project cookstoves, the corresponding household is considered as drop-off;
- The working conditions of project cookstoves are evaluated on the status (i) Green: the stove is in good working conditions, (ii) Orange: the stove is in acceptable working conditions, but needs some maintenance activities; and (iii) Red: the stove is not working well, and needs to be reconstructed (see section C for more details). A household with at least one red project cookstove is considered as a drop-off;
- If a stove-user migrated even for a temporary period, the corresponding household is considered as a drop-off;

Based on the collected data during the survey for monitoring period 2 the usage rate $U_{p,1}$ of age group 0-1 is evaluated at 88.00%. In total 18 households out of the 150 households surveyed had an usage rate of 0% because of too bad condition of at least one F3PA efficient cookstove (status red), migration of the household or broken F3PA efficient cookstoves. The usage rate $U_{p,2}$ of age group 1-2 resulted in 73.33%. In total 40 households had an usage rate of 0% due to one of the above mentioned reasons. All other project cookstoves were used and in operational conditions.

The discount factor to account for the baseline stove use is calculated based on the number of meals that have been cooked with the baseline stove during the monitoring period. The impact of dry and wet season on the baseline stove use has been evaluated. The baseline stove usage has been questioned in the survey in two ways (see *GS1340_MS_VPA-11_MP2_VPA-12_MP1_20200430_v1.0)* (i) relative based on a week usage during dry and wet season (column AJ till column AS); (ii) absolute based on total number of usages during dry and wet season (column BA and BB).The following points were considered when evaluating the discount factor to account for the baseline stove use $DF_{b,stove,y}$:

- The wet season starts on the 1st of June and ends the 31nd of October, which is 152 days;
- Usage of baseline stove during wet and dry season has been surveyed, as well as the number of meals cooked during dry and wet season;
- Based on the number of meals cooked with the baseline cookstove compared to the number of cooked meals, the baseline usage fraction is calculated per stove user. In the case of more than one stove user per household, the highest value will be taken in order to identify the baseline cookstove usage at household level;
- In case the two ways of baseline usage reporting (relative on weekly basis and absolute) didn't match, the highest baseline usage has been calculated for the corresponding household;
- The discount factor for the baseline stove use is based on the average baseline stove use fraction of all the households within the sample;
- If a household has dropped off when evaluating the usage rate, it is not considered when calculating the average baseline stove use fraction;
- A conservative approach has been considered when evaluating the number of meals cooked with the baseline stove.

Based on the collected data during the survey, the baseline stove usage fractions have been evaluated at 0.59% for age group 0-1. This means that, on average, approximately 0.6 meals out of 100 meals are cooked with the baseline stove. For age group 1-2, the baseline stove usage fraction was 2.23%.

## SECTION E. Calculation of SDG outcomes

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

a) SDG 3, Good health and well-being

Not applicable, the direct outcome is calculated, see section E.3.

b) SDG 4, Quality Education

Not applicable, the direct outcome is calculated, see section E.3.

c) SDG 5, Gender equality

Not applicable, the direct outcome is calculated, see section E.3.

d) SDG 7, Affordable and clean energy

Not applicable, the direct outcome is calculated, see section E.3.

e) SDG 13, Climate Action

The methodology directly provides equation for emission reductions (without separate baseline, projector leakage emission reduction equations). See section E.3. for the calculation of the emission reductions.

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

a) SDG 3, Good health and well-being

Not applicable, the direct outcome is calculated, see section E.3.

b) SDG 4, Quality Education

Not applicable, the direct outcome is calculated, see section E.3.

c) SDG 5, Gender equality

Not applicable, the direct outcome is calculated, see section E.3.

d) SDG 7, Affordable and clean energy

Not applicable, the direct outcome is calculated, see section E.3.

e) SDG 13, Climate Action

The methodology directly provides equation for emission reductions (without separate baseline, projector leakage emission reduction equations). See section E.3. for the calculation of the emission reductions

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

a) SDG 3, Good health and well-being

**Smoke level reduction** = (Number of stove users perceiving less smoke since the implementation of F3PA efficient cookstoves) / (Number of respondents)

See Document 'GS1340_MS_VPA-11_MP2_VPA-12_MP1_20200430' - Tab 'Analysis' – Row 127 - 132

**Incidence of coughing reduction** = (Number of stove users perceiving less incidence of coughing since the implementation of F3PA efficient cookstoves) / (Number of respondents)

See Document 'GS1340_MS_VPA-11_MP2_VPA-12_MP1_20200430' - Tab 'Analysis' – Row 148 - 153

**Incidence of respiratory illness reduction** = (Number of stove users perceiving less incidence of respiratory illnesses since the implementation of F3PA efficient cookstoves) / (Number of respondents)

See Document 'GS1340_MS_VPA-11_MP2_VPA-12_MP1_20200430' - Tab 'Analysis' – Row 141 - 146**Incidence of itchy eyes reduction** = (Number of stove users perceiving less incidence of itchy eyes since the implementation of F3PA efficient cookstoves) / (Number of respondents)

See Document 'GS1340_MS_VPA-11_MP2_VPA-12_MP1_20200430' - Tab 'Analysis' – Row 134 - 139

b) SDG 4, Quality education

**Number of trainings initiatives for staff involved in the programme** = Number of trainings initiatives for staff involved in the programme during the monitoring period

**Number of workshops carried out for women** = Number of workshops carried out for women during the monitoring period

c) SDG 5, Gender equality

**Proportion of stove users perceiving reduced amount of time spent on fuel collection** = (Number of stove users perceiving reduced amount of time spent on fuel collection) / (Number of respondents collecting wood fuel)

See Document 'GS1340_MS_VPA-11_MP2_VPA-12_MP1_20200430' - Tab 'Analysis' – Row 155 - 159

Activities carried out by women during saved time:

**Domestic tasks$_p$** = (Number of women using their saved time to do domestic tasks) / (Number of women considering they save time thanks to the F3PA efficient cookstoves)

**Income generating activities$_p$** = (Number of women using their saved time to do income generating activities) / (Number of women considering they save time thanks to the F3PA efficient cookstoves)

**Field labour$_p$** = (Number of women using their saved time to do field labour) / (Number of women considering they save time thanks to the F3PA efficient cookstoves)

**Gardening$_p$** = (Number of women using their saved time to do gardening) / (Number of women considering they save time thanks to the F3PA efficient cookstoves)

**Participation to a literacy program$_p$** = (Number of women using their saved time to participate to a literacy program) / (Number of women considering they save time thanks to the F3PA efficient cookstoves)

**Community work$_p$** = (Number of women using their saved time to do community work) / (Number of women considering they save time thanks to the F3PA efficient cookstoves)

**Religious activities$_p$** = (Number of women using their saved time to participate to religious activities) / (Number of women considering they save time thanks to the F3PA efficient cookstoves)

See Document 'GS1340_MS_VPA-11_MP2_VPA-12_MP1_20200430' - Tab 'Analysis' – Row 193 - 205

**Proportion of stove users perceiving reduced amount of money spent on wood fuel purchase** = (Number of stove users perceiving reduced amount of money spent on wood fuel purchase) / (Number of respondents purchasing fuel)

See Document 'GS1340_MS_VPA-11_MP2_VPA-12_MP1_20200430' - Tab 'Analysis' – Row 213 - 216

Usage of saved money by women:

**School fees$_p$** = (Number of women using their saved money for the payment of school fees) / (Number of women considering they save money thanks to the F3PA efficient cookstoves)

**Purchase of medical drugs$_p$** = (Number of women using their saved money for the purchase of medical drugs) / (Number of women considering they save money thanks to the F3PA efficient cookstoves)

**Purchase of food$_p$** = (Number of women using their saved money for the purchase of food) / (Number of women considering they save money thanks to the F3PA efficient cookstoves)

**Investment for field crops$_p$** = (Number of women using their saved money to invest in field crops) / (Number of women considering they save money thanks to the F3PA efficient cookstoves)

**Purchase of equipments$_p$** = (Number of women using their saved money to purchase equipments like mobile, bicycle, …) / (Number of women considering they save money thanks to the F3PA efficient cookstoves)

**Income generating activities$_p$** = (Number of women using their saved money for income generating activities) / (Number of women considering they save money thanks to the F3PA efficient cookstoves)

**Savings$_p$** = (Number of women using their saved money for their savings) / (Number of women considering they save money thanks to the F3PA efficient cookstoves)

See Document 'GS1340_MS_VPA-11_MP2_VPA-12_MP1_20200430' - Tab 'Analysis' – Row 218 - 226

d) SDG 7, Affordable and clean energy

**Number of F3PA efficient cookstoves disseminated$_p$** = Number of F3PA efficient cookstoves included in the project database for project scenario p

e) SDG 13, Climate Action

The methodology directly provides equation for emission reductions (without separate baseline, projector leakage emission reduction equations). The emission reduction for the VPA are calculated using the following equation.

$$ER_y = \sum_{0to1}^{xtoy} N_{P,y} * P_y * U_{P,y} * (f_{NRB,y} * EF_{b,fuel,CO2} + EF_{b,fuel,nonCO2}) * (1 - DF_{b,Stove,y})$$

Where

| | |
|---|---|
| $N_{p,y}$ | Number of households with project cookstoves of each age group operational in the year y |
| $P_y$ | Quantity of firewood that is saved in the year y (tones 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 surveys (fraction) |
| $f_{NRB,y}$ | Factional non-renewability status of wood fuel during year y |

| | |
|---|---|
| $EF_{b,fuel,CO2}$ | CO2 emission factor of firewood that is substituted or reduced |
| $EF_{b,fuel,nonCO2}$ | Non CO2 emission factor of firewood that is substituted or reduced |
| $DF_{b,stove,y}$ | Usage of baseline cookstove during the year y (fraction) in project scenario |
| X | y-1 |
| Y | Year of the crediting period |

**Determination of quantity of biomass saved ($P_y$):**

Quantity of firewood that is saved ($P_y$) is estimated using the following equation:

$$P_y = B_{b,y} * (1 - \frac{\eta_b}{\eta_{p,y}})$$

Where:

| | |
|---|---|
| $P_y$ | Quantity of firewood that is saved in the year y (tones per household in year y) |
| $B_{b,y}$ | Quantity of firewood consumed in baseline scenario during year y (tones per household per year) |
| $\eta_{p,y}$ | Efficiency of project cookstove in year y (fraction) |
| $\eta_b$ | Efficiency of the baseline cookstove being replaced (fraction). A default value of 10% shall be used if the replaced cookstove 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 |
| y | Year of the crediting period |

**Determination of quantity of fire wood consumed in the baseline ($B_{b,y}$):**

The firewood consumed is the estimated average annual consumption of firewood per household (tones/year), which may be derived using option (c) of the methodology: minimum service level i.e. energy derived from the combustion of 0.5 tonnes per capita per year as the default baseline biomass consumption. The average household size per municipality is available in the "Recensement général de la population et de l'habitation (RGPH) de 2006 du Burkina Faso"[9] or the general census of the population and habitat of Burkina Faso, table 15.

**Determination of project cookstove efficiency ($\eta_{p,y}$ and $\eta_p$):**

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

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

Where

| | |
|---|---|
| $\eta_{p,y}$ | Efficiency of project cookstove in year y (fraction) |
| $\eta_p$ | Efficiency of project cookstove (fraction) determined at the start of the project activity |
| $DF_\eta$ | Discount factor to account for efficiency loss of project cookstove per year of operation (fraction) |
| 0.94 | Adjustment factor to account for uncertainty related to project cookstove efficiency test |

**Calculation of leakage**

As defined under The Gold Standard Simplified Methodology for Efficient Cookstoves, the net emission reductions (ERy) for a micro-scale programme of activities (mPOA) need to be discounted by a factor of 0.95 to account for leakages related to non-renewable biomass saved by the project activity.

[9] INSD, recensement général de la population et de l'habitation de 2006, juillet 2008, Ministère de l'Economie et des Finances, p43 (tableau 15), 52 pages

See documents:

- GS1340 - VPA 11 - ER - calculation sheet_MP2_AG0-1_Niou
- GS1340 - VPA 11 - ER - calculation sheet_MP2_AG0-1_Sourgoubila
- GS1340 - VPA 11 - ER - calculation sheet_MP2_AG0-1_Toeghin
- GS1340 - VPA 11 - ER - calculation sheet_MP2_AG1-2_Niou
- GS1340 - VPA 11 - ER - calculation sheet_MP2_AG1-2_Sourgoubila
- GS1340 - VPA 11 - ER - calculation sheet_MP2_AG1-2_Toeghin
- GS1340 - VPA 12 - ER - calculation sheet_MP1_AG0-1_Niou
- GS1340 - VPA 12 - ER - calculation sheet_MP1_AG0-1_Sourgoubila
- GS1340 - VPA 12 - ER - calculation sheet_MP1_AG0-1_Toeghin
- GS1340 - VPA 12 - ER - calculation sheet_MP1_AG0-1_Bousse
- GS1340 - VPA11-12 - MP2 - Consolidated ER calculation v1.0

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

| Item | Baseline estimate | Project estimate | Net benefit |
|---|---|---|---|
| **SDG 3, Good health and well-being**<br><br>**Proportion of households perceiving less often smoke levels, incidence of coughing, incidence of respiratory illness, incidence of itchy eyes** | | | Smoke level reduction: 100%<br><br>Incidence of coughing reduction: 100%<br><br>Incidence of respiratory illness reduction: 100%<br><br>Incidence of itchy eyes reduction: 100% |
| **SDG 4, Quality Education**<br><br>**Parameter 1: Number of trainings initiatives for staff involved in the programme**<br><br>**Parameter 2: Number of workshops carried out for women** | | | Parameter 1: 1<br><br>Parameter 2: 84 (VPA-11: 24 and VPA-12: 60) |
| **SDG 5, Gender equality**<br><br>**Proportion of stove users perceiving reduced amount of time spent on wood fuel collection and/or reduced amount of money spent on wood fuel purchase** | | | Reduced amount of time spent on wood fuel collection: 100%<br><br>Reduced amount of money spent on wood fuel purchase: 100% |
| **SDG 7, Affordable and clean energy**<br><br>**Number of F3PA efficient cookstoves disseminated** | | | VPA 11: 10,385<br>VPA 12: 10,161<br>**Total: 20,546** |
| **SDG 13, Climate Action**<br><br>**Number of tCO2e reduced by the project** | | | VPA-11: 9,590 VER<br>VPA-12: 7,870 VER<br>**Total: 17,460 VER** |

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

| Item | Values estimated in ex ante calculation of approved PDD | Actual values achieved during this monitoring period |
|---|---|---|

| | | |
|---|---|---|
| **SDG 3** | Smoke level reduction: >90%<br>Incidence of coughing reduction: >90%<br>Incidence of respiratory illness reduction: >90%<br>Incidence of itchy eyes reduction: >90% | Smoke level reduction: 100%<br>Incidence of coughing reduction: 100%<br>Incidence of respiratory illness reduction: 100%<br>Incidence of itchy eyes reduction: 100% |
| **SDG 4** | Number of trainings initiatives for staff involved in the programme: 1<br>Number of workshops carried out for women: 40 (VPA-11: 20 and VPA-12: 20) | Number of trainings initiatives for staff involved in the programme: 1<br>Number of workshops carried out for women: 84 (VPA-11: 24 and VPA-12: 60) |
| **SDG 5** | Reduced amount of time spent on wood fuel collection: >90%<br>Reduced amount of money spent on wood fuel purchase: >90% | Reduced amount of time spent on wood fuel collection: 100%<br>Reduced amount of money spent on wood fuel purchase: 100% |
| **SDG 7** | VPA-11: 6,200<br>VPA-12: 6,200<br>**Total: 12,400** | VPA-11: 10,385<br>VPA-12: 10,161<br>**Total: 20,546** |
| **SDG 13** | VPA-11: 9,787 VER<br>VPA-12: 9,870 VER<br>**Total : 19,657 VER** | VPA-11: 9,590 VER<br>VPA-12: 7,870 VER<br>**Total: 17,460 VER** |

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

- **SDG 4:** When starting the implementation of a new VPA, the number of workshops requested per village is higher than initially scheduled (e.g. VPA-12: 64 workshops instead of the 20 workshops scheduled)
- **SDG 7:** The ex-ante number of disseminated project stoves per VPA is estimated based on two ICS per household and 3,100 households per VPA. After project implementation it appears that VPA-11 has 3,435 households and VPA-12 3,329. In addition it appears that almost 24% of the households are polygamous, and so have more than two or more stove users per household. And the average number of project stoves per stove user is 2.3 instead of 2.
- **SDG 13:** The difference between the ex-ante and ex-post value of emissions reductions can be explained by a lower usage rate during the project scenario than expected. The ex-ante value was estimated 95%, while during this monitoring period the usage rate was only 88.00% for age group 0-1 and 73.33% for age group 1-2. Another explanation is that the implementation of the project is phased.

## 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

No inputs/grievances have been received for the project during this monitoring period.

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

No input/grievances have been received for the project during the previous monitoring period of VPA-11

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

No legal contest or dispute has arisen.