Standardized Crediting Framework (SCF) in Burkina Faso
Cadre normalisé d'attribution de crédits carbone (CACC)

Monitoring Report for Biodigesters and Biogas Cookstoves

Template Version	1.0	**Date approved**	XX/XX/XXXX

I. GENERAL ACTIVITY[1] INFORMATION

1	Activity title:	National Biodigester Programme Burkina Faso
2	National activity lead institution:	SNV-Netherlands Development Organisation
3	Activity ID#	2025-001
4	CACC methodology and version	Biodigesters and biogas cookstoves in Burkina Faso Version 1.5
5	Date of submission of monitoring report	05/06/2026
6	Version of submitted report	1.2
7	Activity contact: Name	Martin Van Dam
8	Activity contact: Email	mvandam@snv.org
9	Activity contact: Phone	+226 50 50 37 53
10	Activity start date (DD/MM/YYYY)	14/09/2013
11	Crediting period start date (DD/MM/YYYY)	01/01/2021
12	Crediting period end date (DD/MM/YYYY)	31/12/2025
13	Monitoring period number	2
14	Monitoring period start date (DD/MM/YYYY)	01/01/2023
15	Monitoring period end date (DD/MM/YYYY)	31/12/2025

[1] Activity refers to both project and program

II. MONITORED DATA

Parameter	Description	Value applied[2]	Reference to supporting documentation
All options			
	Biodigesters and biogas stove owner name and personal identification number	A full list is available in the project database	The project database which has as file name PNB 2023_2025 ER MP2 tabSCF 2023-2025 DB" columns B for biodigester ID and column F for biodigester owner name. Personal identification numbers are not collected in this project.
	Cookstove owner phone number	A full list is available in the project database	The project database which has as file name PNB 2023_2025 ER MP2 tab 2023_2025 ER MP2 tab: SCF 2023-2025 DB column: G for the list of cookstove phone numbers

[2] *For parameters that are specific to each consumer, these values are reported in the activity database, which will be subject to verification.*

Parameter	Description	Value applied[2]	Reference to supporting documentation
	Cookstove owner address (geographic coordinates)	A full list is available in the project activity database.	The project database which has as file name PNB 2023_2025 ER MP2 tab H:K for address details. Geographical coordinates are only available of the surveyed households in tab 2023-2024 and tab 2025 for both cases column: EU-EV in the same file[3]
	Unique serial number allocated to the biodigester and biogas stove	See project activity database	The project database which has as file name PNB 2023_2025 ER MP2 tab tab: SCF 2023-2025 DB column:B for serial number
	Date of installation of the cookstove to the end user	See project activity database	The project database which has as file name PNB 2023_2025 ER MP2 tab: SCF 2023-2025 DB column: M for date of installation
	Primary fuel used before receiving the biodigester and biogas stove (i.e., firewood or charcoal)	Firewood, SCF default for Burkina Faso	SCF_CACC_BFA Methodology v1.5 for Biodigesters and Biogas Cookstoves default for Burkina Faso
	Type of activity device (if more than one is installed)	N/A only one type is installed	N/A

[3] *Only for the physical survey, it was not possible to collect this data for the households surveyed telephonically*

Parameter	Description	Value applied[2]	Reference to supporting documentation
	Biodigester size	The size varies between 4 to 10 m^3. A full list of the size installed at each household is available in the project database	The project database which has as file name PNB 2023_2025 ER MP2 tab tab: SCF 2023-2025 DB column: E for biodigester size in cubic meter.
For all options			
$\mu_{y,j}$	Adjustment to account for any continued use of pre-activity devices of batch j (percentage)	Survey 1 covering 2023:2025: 87% Survey 2 covering 2025: 79%	The project database which has as file name PNB 2023_2025 ER MP2 tab: Conservative check cell: F7 and I7 respectively[4]
Options 1,2 and 4			
$N_{HH,y,j}$	Cumulative number of activity devices (combination of biodigester and biogas-using cookstove) of batch j commissioned up to year y (number).		
	Type *[biodigesters],* Batch *[N/A]*	Number in year 1 [2023]:12,405 Number in year 2 [2024]: 12,673 Number in year 1 [2025]: 12,733	The project database which has as file name PNB 2023_2025 ER MP2 tab: ER calculation cell G14, G26 and G38 respectively
SHH,y,j	Share of households with functional biodigesters and biogas stoves of batch j in year y (percentage).		

[4] *Most conservative value is taken from either the telephone or physical survey*

Parameter	Description	Value applied[2]	Reference to supporting documentation
	Batch *[N/A]*	Survey 1 covering 2023:2025: 66.67% Survey 2 covering 2025: 74.58% Adjusted ER rate[5]: Survey 1: 62.44% Survey 2: 65.38%	The project database which has as file name PNB 2023_2025 ER MP2 tab: conservative check cell: F6 and I6 for adjusted usage rate see cell D41 and E41
$N_{p,HH}$	Average number of persons served per household (number).	Survey 1 covering 2023:2025: 9.93 Survey 2 covering 2025: 10.39	The project database which has as file name PNB 2023_2025 ER MP2 tab: Conservative check cell F5 and I5 respectively

All surveys were implemented by an independent third party. The survey design details are described here below:

Survey Scope and Objectives

The 2023–2024 carbon survey is conducted within the framework of the **Ci-Dev project**, funded by the **World Bank** and implemented by **SNV Burkina Faso**.

- **Monitoring Period 2**: Two surveys were organised:
    - Survey 1: The survey specifically covers the monitoring interval from **January 1, 2023, to December 31, 2024**.
    - survey 2: focussed on the 2025 monitoring interval
- **Target Population**:
    - **Survey 1:** Households that acquired a biodigester between **October 14, 2013, and December 31, 2024**.
    - **Survey 2:** Households that acquired a biodigester between **October 14, 2013, and December 31, 2025**.

[5] The usage rate has been adjusted with the ratio of downtime of functioning digesters, as households would have to revert back to their baseline stove during these periods. That rate has been applied to the ER calculations

- **Data Points**: The primary objective is to collect technical data for CO2 equivalent reduction calculations, including operational status, fuel consumption (wood and charcoal) before and after installation, maintenance practices, and the use of by-products like compost and effluent.

Sampling Methodology

The sampling strategy was designed as per applied methodology while adapting to the current security context in Burkina Faso.

- **Two-Pronged Approach**:
    - **Field Survey**: Physical visits conducted in "accessible" areas.
    - **Telephone Survey**[6]: Conducted for households located in "insecure" or inaccessible zones to prevent geographic bias.
- **Sample Size**:
    - **Survey 1**: A total of 150 households were randomly selected for the physical survey and 150 for the telephone survey. This sample size was intentionally larger than stipulated by the methodology to account for sample attrition, households unwilling to participate or not picking up the phone.
    - **Survey 2:** A total of 90 households were randomly selected for the physical survey and 90 for the telephone survey. This sample size was intentionally larger than stipulated by the methodology to account for sample attrition, households unwilling to participate or not picking up the phone.
    -
- **Randomization**: Simple random sampling was performed using **STATA** software.
- **Valid samples**[7]**:**
    - **Survey 1:** 120 physical visits and 130 telephone surveys
    - Survey 2: 59 physical visits and 60 telephone surveys

Implementation and Training

The survey was executed by the consultant firm **Donald Services**.

- **Training Schedule**: A specialized training program for enumerators and supervisors took place on **April 15 and 16, 2026**, in Ouagadougou.
- **Training Components**: The sessions covered KoboCollect tool configuration, ethical principles (informed consent and confidentiality), and a practical field visit to a biodigester site in **Saaba**.
- **Survey Team**: The final selection included **11 field enumerators**, **4 telephone enumerators**, and supervisors from the **DGESS** (General Directorate of Sectoral Studies and Statistics) and **DGPA** (General Directorate of Animal Productions).

Quality Assurance and Control

To ensure the integrity of the carbon credit calculations, several layers of quality control were implemented:

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[6] *Due to safety reasons, not all areas could be visited. Households in these areas have been interviewed through telephone calls*

[7] *See sheet usage rate cell D28:E29 in the PNB 2023-2025 ER MP2*

- **Digital Collection**: Data is collected entirely via smartphones or tablets using **KoboCollect**, which includes integrated validation filters and GPS geolocation.
- **High-Frequency Checks (HFC)**: A STATA "do-file" was developed to perform daily automated checks on transmitted data to identify outliers or inconsistencies in real-time.
- **Spot Checks**: Supervisors conduct unannounced "spot checks" to observe interviews and ensure strict adherence to the survey protocol.

III. CALCULATION OF EMISSION REDUCTIONS

The accompanying excel file, PNB 2023-2025_SCF MR ER file contains the project database, the survey data and the ER calculations. The ER calculation approach is adopted from the Monitoring Calculation tool for Biodigesters and Cookstoves.

Emission reductions were calculated as per SCF methodology Equation 1:

$$ER_y = \sum_j BE_{y,j} - PE_{y,j} - LE_{y,j}$$

Where

j	=	Index for batch number of activity devices
ER_y	=	Emission reductions in year y, tCO2e
$BE_{y,j}$	=	Baseline emissions of batch j in the year y (tCO2e)
$PE_{y,j}$	=	Activity emissions of batch j in the year y (tCO2e)
$LE_{y,j}$	=	Leakage emissions of batch j in the year y (tCO2e)

Subsequently the Baseline Emissions were calculated as per SCF methodology Equation 2 :

$$BE_y = \sum_f B_{f,y,j} \times 0.95 \times \mu_{y,j} \times NCV_f \times (f_{NRB} \times EF_{CO2,f} + EF_{Non-CO2,f})$$

Where:

$B_{f,y,j}$	=	Quantity of fuel type f that is substituted or displaced in year y,batch j (tonnes).
BE_y	=	Baseline emission in year y (tCO2e)
0.95	=	Default factor to account for leakage due to use/diversion of non-renewable woody biomass saved under the activity by non-activity households year y.
$\mu_{y,j}$	=	Adjustment to account for any continued use of pre-activity devices next to biogas stoves installed in year y, batch j (percentage).
NCV_f	=	Net calorific value of the fuel type f that is substituted (TJ/tonne).
f_{NRB}	=	Fraction of woody biomass used in the absence of the activity that can be established as non-renewable biomass (fraction or percentage).
$EF_{CO2,f}$	=	CO2 emission factor of fuel type f that is substituted or reduced (tCO2e/TJ).
$EF_{Non-CO2,f}$	=	Non-CO2 emission factor of fuel type f that is substituted or reduced (tCO2e/TJ).

To determine **Bf,y,j** Option 2 of the SCF methodology was applied using Equation 4:

$$B_{f,y,j} = N_{HH,y,j} \times N_{p,HH} \times S_{HH,y,j} \times B_{BL,PP,f} \times S_{BL,f}$$

Where:

$N_{HH,y,j}$	=	Cumulative number of activity devices (combination of biodigester and biogas-using cookstove) of batch j commissioned up to year y(number).
$N_{p,HH}$	=	Average number of persons served per household (number).
$S_{HH,y,j}$	=	Share of activity devices (combination of biodigester and biogas-using cookstove) of batch j operating during year y (percentage)[8].
$B_{BL,PP,f}$	=	Average annual consumption of fuel type f per person before the start of the activity (tonnes/person/year).
$S_{BL,f}$	=	Share of households using fuel type f in the baseline scenario (percentage)

The project emissions consist of leakage emissions from methane leakage of the biodigester. A default adjustment factor of 0.025 tCO2e/hh/year was applied.

The calculated Baseline Emissions (BE) per unit is 2.268 based on survey 1 outcome and 2.269 based on survey 2 outcome[9]. The emission reductions at the biodigester fleet level are then calculated by multiplying the BE with the number of units in operation at a monthly interval, and then subtracting the project emissions calculated as per Equation 7.

To take into account digester start-up time, the ERs of month *y* are calculated based on the numbers installed in month *y-1*.

IV. SUMMARY OF EMISSION REDUCTIONS

Parameter	Description	• Value (tCO_2e)
BE_y	Baseline emissions in year *y*[10]	2023: 27,858 2024: 28,577 2025: 28,831 **total: 85,266**
PE_y	Activity emissions in year *y*[11]	2023: 307 2024: 314 2025: 317 **Total: 938**
ER_y	Emissions reductions in year *y*[12]	2023: 27,551 2024: 28,262

[8] For this parameter, the adjusted usage rate is applied, which takes non functionality into account for digesters in operation

[9] Activity database: PNB 2023_2025 SCF ER MP2 file sheet: SCF ER cell: E32 and F32

[10] Excel file PNB 2023_2025 SCF ER MP2 file sheet ER calculation cell I39:42

[11] Excel file PNB 2023_2025 SCF ER MP2 file sheet ER calculation cell J39:42

[12] Excel file PNB 2023_2025 SCF ER MP2 file sheet ER calculation cell K48:50

		2025: 28,513 Total: 84,326 Over crediting MP1[13]: 6. After subtracting, the MP2 claim **by vintage is**[14] 2023: 27,548 2024: 28,259 2025: 28,510 **Total: 84,317**
LE_y	Leakage emissions in year *y*	N/A leakage emission included in the project emissions

V. REFERENCES/DOCUMENTATION

Add extra lines as necessary.

Ref No	Description of documentation
1	Activity database: Excel file PNB 2023_2025 SCF ER MP2

[13] *2 digesters were erroneously not excluded from MP1,these were the second digester at a household which is not allowed. The ERs from these 2 digesters have been removed for the total claim in this MP by substracting the total overcredited. See Excel file PNB 2023_2025 SCF ER MP2 file sheet ER calculation cell J44:46*

[14] *During the preparation of this report, it was discovered that 2 units were duplicates but were in included in the MP1 ER claim. To adjust this, the over crediting has been subtracted from the MP2 ER claim. Each vintage is adjusted evenly by dividing the MP1 over crediting of 7 tCO2e by 3 (7/3 = 2.66 and rounded up 3).* See *Excel file PNB 2023_2025 SCF ER MP2 file sheet ER calculation cell K48:51*

VERSION HISTORY

Version	Date	Contents revised
1.0	XX/XX/XXXX	Initial adoption