Gold Standard®

Gold Standard for the Global Goals
Key Project Information & VPA Design Document (PDD)

Version 1 – July 2017

Gold Standard®

KEY PROJECT INFORMATION

Title of Project:	GS2489 Efficient cookstoves in Benin and Togo – VPA3 – EcoBenin – Women, Soils and Energy GS ID: GS6998
Title of PoA:	GS2489 Efficient cookstoves in Benin and Togo
Brief description of Project:	The new project "Women Soil and Energy" or FSE[1] - project is included as VPA-3 in the program of activities (PoA) GS2489 "Efficient cookstoves in Benin and Togo" and is implemented by EcoBenin. This project extends the distribution of the Wanrou efficient cookstove to more than 3,000 rural households. The final number of households might slightly differ depending on the parameters, like usage rate. This microscale VPA is part of a group of 2 VPA's, which will be implemented together in the municipalities Copargo, Natitingou and Boukoumbé. The Wanrou efficient cookstove is the same cookstove technology implemented by EcoBenin in VPA-01 and VPA-02 of the GS2489 PoA. The boundary of the project are the municipalities of Copargo, Natitingou and Boukoumbé and will take into account several villages for the diffusion of Wanrou efficient cookstoves. According to the National Human Development report of Benin 2015[2] the three municipalities have a human development index below the national average: Copargo (0.366), Natitingou (0.467), Boukoumbé (0.316) and Benin (0.485). Since the objective of FSE project is to reduce deforestation and land degradation by improving energy efficiency in rural households in the face of climate change in the Atacora/Donga Department, it therefore allows the mitigation of greenhouse gas emissions. This project will increase the capacity to reduce CO2 emissions by rural households through the usage of the Wanrou efficient cookstove. At least two Wanrou efficient cookstove will be constructed per user, as they are usually used simultaneously, one for the mush preparation and the other one for the sauce. The Wanrou efficient cookstoves will replace the traditional stove whilst respecting the local three stone cooking culture. The Wanrou efficient cookstove is significantly more efficient than the traditional open fire three stone cooking method. 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 deforestation in the area. The Wanrou efficient cookstove 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. The project also aims to promote agro-ecological practices to women in order to improve the management of the natural resources surrounding the rural households

[1] « Women, Soils and Energy » or « Femmes, Sols et Energie » in french

[2] UNDP, Rapport National sur le développement humain 2015, Agriculture, sécurité alimentaire et développement humain au Bénin (See document "RNDH_2015_Bénin" Table 4c page 126 - 127)

	and to improve soils for improving food security. No carbon credits will be claimed from this activity.
Expected Implemetation Date: Expected duration of Project:	4/12/2017 10 years
Project Developer:	EcoBenin
Project Representative:	CO2logic
Project Participants and any communities involved:	Villages located in the municipalities of municipalities Copargo, Natitingou and Boukoumbé in Atacora/Donga department
Version of PDD: Date of Version:	2 02/01/2019
Host Country / Location:	Benin
Certification Pathway (Project Certification/Impact Statements & Products	Pathway 1 (VER Project Certification)
Activity Requirements applied: (mark GS4GG if none relevant)	Community Services Activity Requirements
Methodologies applied:	The Gold Standard Simplified Methodology for Efficient Cookstoves Version 1 of February 2013.
Product Requirements applied:	GHG Emission Reductions & Sequestration Product Requirements
Regular/Retroactive:	Retroactive
SDG Impacts:	1 – SDG1 No poverty 2 – SDG 3 Good Health and Well-Being 3 – SDG 4 Quality education 4 – SDG 5 Gender Equality 5 – SDG 7 Affordable and Clean Energy 6 – SDG 13 Climate Action
Estimated amount of SDG Impact Certified	SDG 13: 8,461 Verified Emission Reductions (VERs)/year

SECTION A. Description of project

A.1. Purpose and general description of project

>> (Provide a brief description of the project including the description of scenario existing prior to the implementation of the project.)

With a population of about 10 million, of which more than 60% are rural, Benin remains one of the poorest countries in the world, with a Human Development Index[3] of 0.485 in 2014[4]. More than half of its population lives on less than US $ 1.25 a day. A large part of the population remains deprived of access to basic social services and economic opportunities, particularly in rural areas. In terms of food security, 1.1 million people (about 10% of the population) live in a situation of food insecurity. Atacora is with 25% one of the departments with the highest rates of food insecurity[5].

Women remain more vulnerable to poverty than men (39.9% non-monetary poverty among women versus 28.2% among men on national level and 73.3% versus 56.5% in the department of Atacora[6]). Many inequalities persist in access to education, employment, income, land, credit and health care, particularly in rural areas.

In a country where most people obtain their subsistence from land resources, population growth is a driving factor of land cover change. Benin's population tripled between 1975 and 2013, increasing from 3,263,000 to 10,600,000. As a result, urban and agricultural landscapes have extended to the detriment of Benin's natural ecosystems, such as savannas, forests, and woodland, which have drastically decreased over the years[7]. Forest covers decreased between 1990 and 2010 with more than 20% (5,761,000 ha in 1990 to 4,561,000 ha in 2010[8]). Benin's dependency on firewood and charcoal is forecasted to continue to increase in the coming decades. More specific 91% of the households in the Atacora/Donga departments use fuelwood as main combustion fuel[9] . Most rural poor households use for the cooking of meals the traditional three stones stoves[10], which have a very low energy efficiency.

Agriculture, the first form of economic activity occupying a majority of the active population, constitutes another factor in land degradation and can have major impacts on environmental sustainability.

The new project "Women Soil and Energy" is included as VPA-3 in the program of activities (PoA) GS2489 "Efficient cookstoves in Benin and Togo" and is implemented by EcoBenin. This project extends the distribution of the Wanrou efficient cookstove to more than 3,000 rural households. The final number of households might slightly differ depending on the parameters, like usage rate. This microscale VPA is part of a group of 2 VPA's, which will be implemented together in the municipalities Copargo, Natitingou and Boukoumbé. The Wanrou efficient cookstove is the same cookstove technology implemented by EcoBenin in VPA-01 and VPA-02 of the GS2489 PoA. The boundary of the project are the municipalities of Copargo, Natitingou and Boukoumbé and will take into account several villages for the diffusion of Wanrou efficient cookstoves. According to the National

[3] The Human Development Index is a composite statistic of life expectancy, education, and income indices used to rank countries or regions according human development,

[4] UNDP, Rapport National 2016 de Suivi de la Sécurité Humaine au Bénin (See document "Rapport_National_Suivi_SH_Benin_2016" Table 2 page 43)

[5] WFP, Analyse Globale de la Vulnérabilité et de la Sécurité Alimentaire (AGVSA) République du Bénin 2014 (See document « WFP_AGVSA_Benin_2014_Resumé » Table on page 4

[6] Institut National de la Statistique et de l'Analyse Economique de la République du Bénin, Enquête Modulaire Intégrée sur les Conditions de Vie des Ménages 2ième Edition (EMICoV 2011) (See document « Document-indicateurs -emicov-2011» Table 7 on page 15)

[7] CILSS Landscapes of West Africa. A window on a Changing World (See document "Landscapes_of_West_Africa_Republic_of_Benin_en")

[8] CEDEAO, Evaluation des ressources forestières dans l'espace CEDEAO, 2015 (See document "rapport_reginal_evaluation_des_ressources_forestieres_dans_lespace_cedeao" Table 10 on page 111)

[9] MEPA, 2007, Projet Bois de Feu Phase II – Inventaire Forestier National Rapport de mission page 22

[10] CEDEAO, Evaluation des ressources forestières dans l'espace CEDEAO, 2015 (See document "rapport_reginal_evaluation_des_ressources_forestieres_dans_lespace_cedeao" page 145)

Human Development report of Benin 2015[11] the three municipalities have a human development index below the national average: Copargo (0.366), Natitingou (0.467), Boukoumbé (0.316) and Benin (0.485).

Since the objective of FSE is to reduce deforestation and land degradation by improving energy efficiency in rural households in the face of climate change in the Atacora and Donga Department, it therefore allows the mitigation of greenhouse gas emissions. This project will increase the capacity to reduce CO2 emissions by rural households through the usage of the Wanrou efficient cookstove.

The Wanrou efficient cookstoves (see figure below) will replace the traditional stove whilst respecting the local three stone cooking culture. The Wanrou efficient cookstove is significantly more efficient than the traditional open fire three stone cooking method. 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 deforestation in the area. The Wanrou efficient cookstove 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 Wanrou efficient cookstove

The project also aims to promote agro-ecological practices to women in order to improve the management of the natural resources surrounding the rural households and to improve soils for improving food security. No carbon credits will be claimed from this activity.

The start of the project is December 2017.

A.2. Eligibility of the project under approved PoA

>> (Demonstrate how each VPA meets the eligibility criteria as defined in approved PoA)

Nr	Eligibility Criteria		Compliance rational / Evidence
	Description	Conditions to be met	
1	Boundary and location of the VPA	The VPA is located in Benin or Togo	The geographical boundaries of the VPA are defined as the municipalities of

[11] UNDP, Rapport National sur le développement humain 2015, Agriculture, sécurité alimentaire et développement humain au Bénin (See document "RNDH_2015_Bénin" Table 4c page 126 - 127)

			Copargo, Natitingou and Boukoumbé in the departments Atacora/Donga in the North of Benin.
2	Technological requirements	The VPA consists of the implementation or distribution of single pot or multi pot portable or in-situ wood burning cookstoves and hence appliances with a specified efficiency of at least 20%, as per Gold Standard Simplified Methodology for Efficient Cookstoves.	The VPA involves the implementation of efficient woodstoves. All the traditional three stones cookstoves for domestic use used by the different wives (if polygamous) of one household will be replaced with project stoves with an efficiency of at least 20%. The lowest efficiency of the introduced project cookstoves is 22.4%[12].
3	Baseline	The baseline fuel is only firewood and the baseline stove 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, as per Gold Standard Simplified Methodology for Efficient Cookstoves.	The baseline conditions are met: (i) wood is the primary energy source [13] in the project boundary (i.e. the municipalities of Copargo, Natitingou and Boukoumbé); and (ii) the baseline stove 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[14].
4	Avoiding Double Counting	The cookstoves counted in the proposed project activity are not included in any other voluntary market or CDM project activity (i.e. no double counting takes place). The project proponent must include a means of uniquely identifying (i) households using the efficient cookstoves distributed by the project; and/or (ii) distributed efficient cookstoves. Data is recorded electronically in a database. This mechanism will identify households and/or stoves as belonging to this PoA and not any other, ensuring there is no double-counting.	When a household is included in the VPA-03 project, all traditional cookstoves for domestic use used by the different wives (if polygamous) of one household will be replaced with project cookstoves. The VPA-03 project has set up a system whereby each wife of the household included in the VPA-03 project will receive a unique serial number referring to this micro scale – VPA: GS2489-VPA3-xxxx-yyyy/zz where xxxx is the ID of the village, yyyy the number of the household (1 to 9999) and zz is the number of the wife in the household. All necessary data related to the household will be included in an electronic database.
5	VER ownership		

[12] Laboratoire Biomasse Energie et Biocarburants de 2IE Ouagadougou Aout 2015 (size 2 and 4) / December 2015 (sizes 6, 8 and 10) Rapport sur les tests de performances énergétiques des foyers améliorés Wanrou de l'association EcoBénin

[13] ECOBENIN, 2018, « Projet Femmes, Sols et Energie (FSE) - Etude de référence sur le profil énergie des ménages ruraux dans les communes de Natitingou, Copargo et Boukombé » p. 12: The report mentions that 96% of the surveyed households in the municipalities of Copargo, Natitingou and Boukoumbé use wood as principal combustion fuel.

[14] ECOBENIN, 2018, « Projet Femmes, Sols et Energie (FSE) - Etude de référence sur le profil énergie des ménages ruraux dans les communes de Natitingou, Copargo et Boukombé » p. 12: The report mentions that 98% (=57% + 41%) of the surveyed households in the municipalities of Copargo, Natitingou and Boukoumbé use as baseline stove the three stone cookstove (F3P or "foyer trois pierres" in french) or the UNSO cookstove (F UNSO), which is a conventional device without a grate or a chimney, i.e. with no improved combustion air supply. Both stoves are considered as baseline stoves as per Simplified Methodology for Efficient Cookstoves of the Gold Standard.

		End users receiving efficient woodstoves under the specific VPA contractually cede their rights to claim and own emission reductions under the Gold Standard to the CME of the PoA. This must be communicated to the cookstoves producers, retailers and end users by contract or clear written assertions in the transaction paperwork.	Each wife of one household included in the project has signed a carbon waiver for the transfer of credit to EcoBenin.
6	Use of the baseline cookstove	The use of the baseline cookstove, as a backup or auxiliary technology, in parallel with the improved cookstove introduced by the project activity is permitted as long as a mechanism is put into place to encourage the removal of the old cookstove and there is a definitive discontinuity of its use. The PP should show that all users of the new stoves included in the VPA are sensitized to remove the old cookstove. The project documentation must provide a clear description of the approach chosen and the monitoring plan must provide a good understanding of the extent to which the baseline technology is still in use after the introduction of the improved technology (whether the existing baseline cookstove is not surrendered at the time of the introduction of the improved technology, or whether a new baseline cookstove is acquired and put to use by targeted end users during the project crediting period). The success of the mechanism put into place must therefore be monitored, and the approach must be adjusted if proven unsuccessful. If the baseline cookstove remains in use in parallel with the project cookstove,	Awareness workshops for stove users are foreseen to explain the multiple advantages of Wanrou efficient cookstoves compared to traditional cookstoves. Specific sensitisation materials have been developed for this purpose[15]. The use of the baseline cookstove will be limited to exceptional events, like celebrations, in case the household don't dispose of Wanrou efficient cookstove for big cooking pot sizes. Other reason for usage of baseline stove is the customary usage like preparation of traditional medicine which is very common in the rural areas. The monitoring plan describes how to measure the usage of the baseline technology during crediting period of the VPA through the to be monitored parameter $DF_{b,Stove,y}$.

[15] See document « Boite à images foyer Wanrou »

		corresponding emissions must be accounted for as part of the project emissions.	
7	Micro-scale limit for VPAs	The VPA will remain under the limit of 10,000 tonnes of CO2e.	The stoves installed in VPA-03 are expected to represent an annual CO2 reduction of less than 10,000 tonnes of CO2e.
8	Technology and target groups	Target groups eligible under this PoA are rural and peri-urban households using woody biomass for household cooking with emphasis on low income communities. Information obtained from the new efficient cookstove users (name, location, contact details, etc) should be transferred to an electronic database. The promoted new efficient cookstove should be tested by an international stove testing centre and should have set specifications (single pot or multi pot portable or in-situ wood burning cookstoves and hence appliances with a specified efficiency of at least 20%, size and dimensions). The mechanisms for distribution of efficient cookstoves under this PoA are direct distribution/installation, delivery, community sales events, direct sales or sales through commercial/retail outlets.	As described in the VPA-03-DD the target groups are rural households using woody biomass for household cooking. The promoted project stove Wanrou has a thermal efficiency of at least 20%: the lowest efficiency of the project cookstove sizes is 22.4%[16]. The distribution mechanism of the Wanrou efficient cookstoves is direct distribution and installation.
9	Local stakeholder consultations	Each VPA will conduct a local stakeholder consultation (LSC) in order to gain feedback from stakeholders representing the specific project areas. A single LSC meeting can be organised for several micro-scale project activities if approved by The Gold Standard Foundation.	The Local Stakeholder Consultation meeting was held on 8/3/2018. The LSC report includes a description of how local stakeholders were invited, a summary of the comments received and an outline of how comments were taken into account.
10	Environmental impact assessment	Each VPA will conduct an environmental impact assessment or provide by the Ministry of Environment a	The Letter of exemption for the environmental impact assessment has

[16] Laboratoire Biomasse Energie et Biocarburants de 2IE Ouagadougou Aout 2015 (size 2 and 4) / December 2015 (sizes 6, 8 and 10) Rapport sur les tests de performances énergétiques des foyers améliorés Wanrou de l'association EcoBénin

		letter of exemption for the environmental impact assessment.	been provided by the Beninese Agency for Environment[17].
11	Non-Diversion of ODA	Provide an affirmation that funding from Annex I Parties, if any, does not result in a diversion of official development assistance.	A declaration confirming that there is no diversion of official development assistance for this VPA is attached with the VPA-DD[18].
12	Avoiding Double Counting of Programme Activities	Each VPA will show that it is exclusive to the PoA and not registered as another project activity or VPA under another PoA. Eligibility will be confirmed at VPA level through the signature of an agreement with the CME stating that the VPA will uniquely be part of the "Efficient Cookstoves in Benin and Togo" PoA.	The micro-scale VPA is neither registered as an individual GS Project Activity or with any other standard, nor is it part of another Registered PoA. The registries Gold Standard and CDM have been accessed on 28/10/2018 to confirm this. Signature of an agreement between the CME and VPA implementer is not necessary, as the CME implements the VPA.
13	The Micro-scale-VPA-DD has been reviewed by the CME and submitted to the GS for inclusion into the PoA	The VPA implementer shall submit a Micro-scale-VPA-DD to the CME for each Micro-scale-VPA and with all underlying evidence.	N/A as the VPA implementer and CME are the same.
14	Start date of the regular VPA	The VPA shall not begin before the organization of the Local Stakeholder Consultation (LSC) as per Gold Standard requirements. Documentary evidence should be provided by way of receipts/sales/distribution records.	The LSC has been conducted on the 8th of March 2018. The first installation has been realized on the 4/12/2017 in household GS2489-VPA-03-005[19], which means that the VPA will be considered as retroactive VPA.
15	Prior consideration of the carbon revenues in case of retroactive VPA	In case of retroactive VPA, it shall be demonstrated that carbon finance was a decisive factor to implement the VPA. Documentary evidence should be provided to confirm prior consideration of VER income.	Initial finance allows to install Wanrou stoves for the first 816 households. Carbon finance will allow to extend the VPA to more than 3000 households.
16	Sampling requirements	The monitoring plan of the VPA should adhere to the applied methodology – Microscale Methodology for efficient cookstoves	The elaborated monitoring plan in section B.7 adheres to the applied methodology – Microscale Methodology for efficient cookstoves.
17	Demonstration of additionality	All project activities under this micro-programme PoA will be implemented in Benin and Togo, which are both	The VPA is deemed additional, as the project boundary of the VPA is Benin, which is a LDC.

[17] ABE, Letter of EIE exemption : see document « lettre exemption EIE_ABE »

[18] See document « 501-ER-T-ODA-Declaration_GS2489_GS6998_signed »

[19] See document « Carbon waiver VPA-03-005 »

		LDCs. As per Gold Standard "Micro-programme rules and procedures" the PoA and associated VPAs can be deemed additional.	
18	Sustainable development	All VPA's should develop a Sustainable Development monitoring plan with at least 3 indicators	As elaborated in section B.6.1 the VPA will contribute to 5 SDG's.

A.3. Legal ownership of products generated by the project and legal rights to alter use of resources required to service the project

>> The project owner, Eco-Benin, has full and uncontested legal ownership of the carbon credits that are generated under the Gold Standard Certification. Each end user included into the project will have to sign a waiver for the transfer of credit to the project owner, Eco-Benin.

A.4. Location of project

A.4.1. Host Country

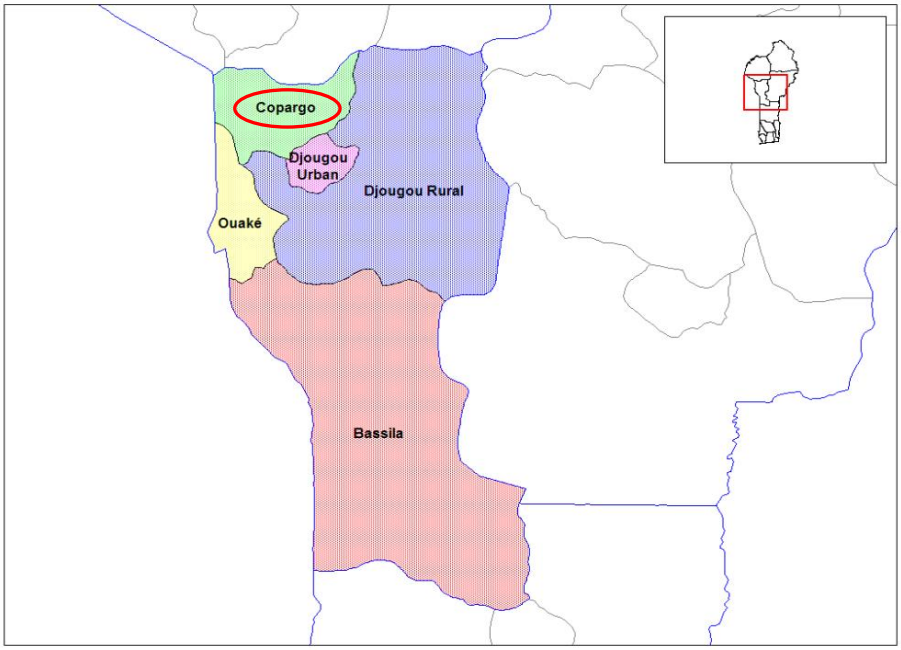
Benin

A.4.2. Region/State/Province etc.

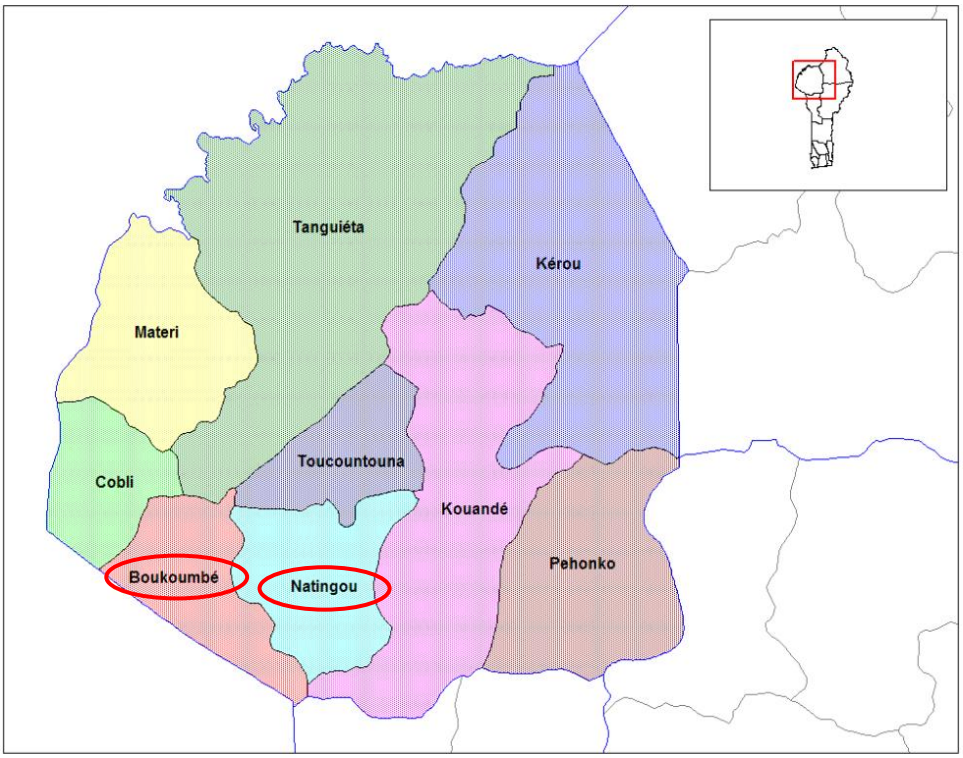
Atacora/Donga

A.4.3. City/Town/Community etc.

The project boundary of the current micro-scale VPA are the municipalities Copargo, Natitingou and Boukoumbé.



Location of the municipality of Copargo



Location of the municipalities of Natitingou and Boukoumbé

A.4.4. Physical/Geographical location

>>

Municipality	Latitude	Longitude
Copargo	09°50'17" N	01°32'49"
Natitingou	10°17'41" N	01°22'54"
Boukoumbé	10°11'01" N	01°05'57"

A.5. Technologies and/or measures

>>

Description of the technology

The project technology included in the VPA (and claiming carbon credits) is the Wanrou efficient cookstove, a mud stove with separate air and wood supply, a grate and a chimney. Wanrou means life in the local language Bambara in the North of Benin. The basic principle common to mud stoves is the shielding of the fire against draughts and the canalization of the produced heat to the pot. Cow dung mixed with mud is the most common material for shielding fires.

Mud stoves are the oldest improved stove technologies in West-Africa. Other improved stove technologies are clay-lined fired stoves and improved all-metal stoves. How appropriate a technology is, is determined by the rate at which communities take it up and continues to use it. The Wanrou efficient cookstove has been developed by EcoBenin in close collaboration with the rural community in the North of Benin and is already used in VPA-01 and VPA-02). The art of mixing mud is still very common in this region, since the walls of most houses and granaries are smeared with mud. The main benefit of involving the community from the beginning in the development of the technology is local ownership of the technology to ensure its sustainability.

The mud used for the construction of the Wanrou efficient cookstove does not need to be fired before use. The project cookstoves will be constructed by trained monitrices and do not require special skills. The skills involved in making mud stoves like the Wanrou efficient cookstove are easy to transfer, adopt and replicate. The Wanrou efficient cookstoves are cheap since only local materials are used. The Wanrou efficient cookstove is the most appropriate technology in biomass energy use for the rural communities in the region of Atacora/Donga, as

these communities are not financially endowed, and the mud stoves has been adapted to their needs. The materials used to make them are easily available and the cost is minimal.

The basic features of the Wanrou efficient cookstove are:

- enclosed combustion chamber;
- separated air and wood supply;
- insulated walls due to the thickness of the wall (thick walls conserve heat and reduce chances of cracking);
- chimney to evacuate the flue gases.

The steps below explain the construction of the Wanrou efficient cookstove. More details can be found in the construction protocol[20].

Step 1 : Manufacture of bricks in banco

Step 2: Preparation of mixture (clay soil + straw or rice balls ± cow dung)

Step 3 : Measurement of dimensions of the pot, tracing and realization of the foundation

[20] See document « Manuel de construction des Foyers Wanrou 2017 »

Step 4 : Realization of the aeration chamber with the bricks and installation of the grid



Step 5 : Construction of the combustion chamber with the mixture



Step 6: Construction of the supporting chamber of the pot, cutting/trimming of the cookstove



Step 7 : Removal of molds, realization of chimney and wood support, smoothing of stove



Step 8: Plastering or polishing, use and maintenance of efficient cookstoves



The Wanrou efficient cookstove is a mono pot cookstove. As stove users can have different pot sizes, they may choose between the sizes 2, 4, 6, 8 and 10. At least two Wanrou efficient cookstove will be constructed per user, as they are usually used simultaneously, one for the mush preparation and the other one for the sauce. All Wanrou efficient cookstoves of sizes 2, 4, 6, 8 and 10 have a specified efficiency of at least 20%[21] (measured by an independent entity in the laboratory according the WBT protocol). The average measures of the Wanrou efficient cookstoves can be found in the table below.

Size of cook stove	Height of wood entrance (cm)	Width of wood entrance (cm)	Height under cooking pot (cm)	Diameter of combustion chamber (cm)	Height of combustion chamber (cm)	Total height of cookstove (cm)	Diameter of chimney (cm)	Height of chimney (m)
2	13	15	16	23	24	40	7	1.3
4	13	15	18	30	26	45	8	1.3
6	18	18	24	30	32.5	50	9	1.3
8	18	18	26	37	31	55	9	1.3
10	20	20	28	40	32	60	9	1.3

The Wanrou efficient cookstove has a life span of three years, as the women take an active role to maintain their cookstove. Training is provided by the monitrice to the women how to maintain and maintain their Wanrou efficient cookstove. The figure below shows an example of illustration material that is used during public awareness sessions concerning proper usage and maintenance of the Wanrou efficient cookstove. The EcoBenin animators will visit all Wanrou efficient cookstoves at least once a year and will also be available to assist the monitrice and Wanrou efficient cookstove users how to maintain and repair their stoves. All Wanrou efficient cookstoves will be replaced after three years of operation with a Wanrou efficient cookstove of similar efficiency.

[21] Laboratoire Biomasse Energie et Biocarburants de 2IE Ouagadougou Aout 2015 (size 2 and 4) / December 2015 (sizes 6, 8 and 10) Rapport sur les tests de performances énergétiques des foyers améliorés Wanrou de l'association EcoBénin

Each project cookstove is built with assistance of the user by the monitrice, who is selected by the women in the villages, and who is trained by the animator of EcoBenin. The Wanrou efficient cookstove has a strict construction protocol with diagrammatic presentation materials to support the EcoBenin animator and the monitrice on the ground and ensure that the project stoves are systematically built in a similar manner.

Distribution mechanism

In order to have the best mobilization for the diffusion of the Wanrou efficient cookstoves in the different villages of project boundary, public awareness sessions will be organized in village markets with the help of the municipality focal point and the community focal point (which is most of the time the village chief). This allows reaching all social groups of the village community during the training phase. Most women will attend the training sessions taking place on a public location selected in accordance with the village community. After the training the community will designate 10 women as monitrices who will be responsible for the construction of the Wanrou efficient cookstoves. This diffusion mechanism will ensure qualitative and quantitative distribution of Wanrou efficient cookstoves in the households of the village according the standards defined in the construction protocol. These monitrices, which are an essential link in the distribution chain of the Wanrou efficient cookstoves, will work in close collaboration with the animators of EcoBenin and the community. The capacity building topics used during the public awareness sessions and skills training of the monitrices are (i) impact of fuel wood consumption on the environment; (ii) the objective of the training and the mission of the monitrices within the diffusion mechanism; (iii) description of the Wanrou efficient cookstove with its specificities and necessary materials and equipment tools for its construction; (iv) supply of local materials and construction of the Wanrou efficient cookstoves; and (v) use and maintenance of the Wanrou efficient cookstove. These themes are elaborated during three days and in three phases: the theoretical phase, the practical phase and the evaluation phase. Training materials as banners, construction materials and technical support materials are provided in order to facilitate the learning path of constructing a Wanrou efficient cookstove. An example of supporting material used during the training sessions is presented in the figure below.

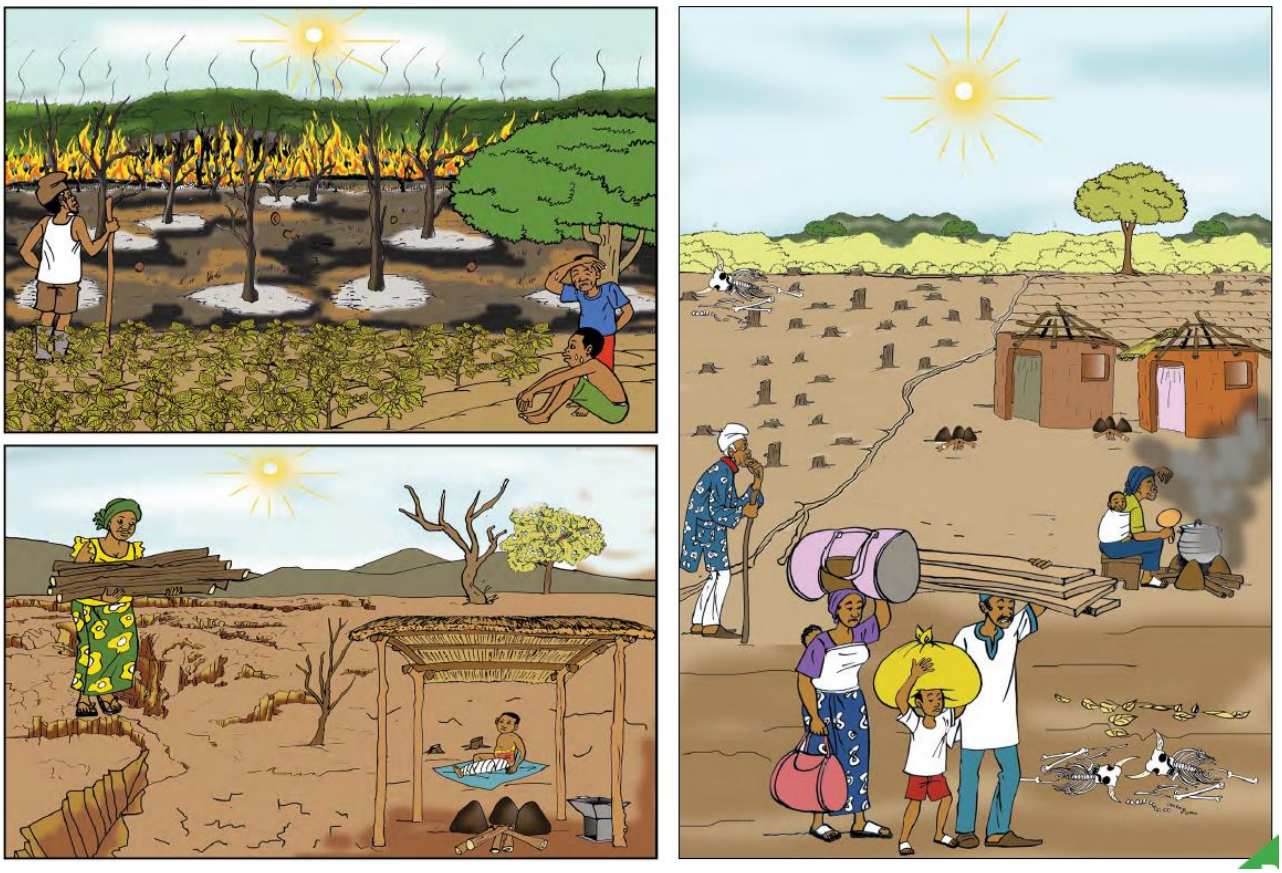


Figure: supporting materials used during training sessions

Each village will have a tool kit for the construction of the Wanrou efficient cookstoves. The tool kit consists of moulds, machete, buckets, and other equipments, and the pre-fabricated combustion grates. All equipment will be put under the responsibility of the 10 designated monitrices per village. The tool kits will be used for the construction of the Wanrou efficient cookstoves at first demand of the end-users.

Monitrices are working in pairs in order to facilitate the diffusion of the Wanrou efficient cookstoves and to enhance the skill learning. First they start with a census of households willing to acquire the Wanrou efficient cookstoves with assistance of the local animator of EcoBenin. The construction cost of two Wanrou efficient cookstoves to be paid by the end users to the monitrice is 1,500 FCFA or 2.3 € or 3 bowls of rice or grains. The Wanrou end-user is required to collect clay and to participate in constructing the Wanrou efficient cookstove

by kneading the clay. In order to keep an overview of the deployed Wanrou efficient cookstoves, the census and the construction of the stoves will be realized per zone of the village in the project boundary.

The roles of the different parties involved in the diffusion of the Wanrou efficient cookstove:

- *Eco-Benin*: ensures the general coordination of the project with the planning of the activities and the administrative aspects of the project, the training and set-up of the diffusion mechanism in collaboration with the animators;
- *Municipality Focal point*: agent of the municipality appointed by municipal decree. He is responsible for making the link between Eco-Benin and the municipality, facilitating the administrative aspects and the link between Eco-Benin and the villages through its contacts with the village chiefs as representative of the municipality;
- *Animator*: recruited by Eco-Benin, he is responsible for field operations. It is the field manager who coordinates awareness-raising and dissemination activities based on the community relays and the committees of monitrices. He monitors daily usage and gives feedback to the project office on weekly and monthly basis;
- *Community focal point*: ensures the mobilization of women and promote the usage of the Wanrou efficient cookstove;
- *Committee of monitrices*: ensures the construction of the Wanrou efficient cookstoves in households. They are selected based on their skills to construct the Wanrou efficient cookstoves and motivation. This committee is being formed over time;
- *Cookstove users*: they are the final beneficiaries and are in charge of the preparation of the clay and the manufacture of the briquettes. They are instructed to properly use and maintain their Wanrou efficient cookstove.

Contribution to SDG

The project will help the host country Benin to meet SDG 1 – No poverty, since the project will generate income generating activities through the production of grids for the Wanrou efficient cookstoves

The project will help the host country Benin to meet SDG 3 - Good Health and Well-Being, since the usage of the Wanrou efficient cookstove will reduce smoke and thus improve air quality.

The project will help the host country Benin to meet SDG 5 - Gender equality, since women will spend less time in collecting wood, which they can use for other activities or own purposes.

The project will help the host country Benin to meet SDG 7 - Affordable and clean energy, since the Wanrou efficient cookstove is more than 50% more efficient than the traditional stoves used in the baseline scenario.

A.6. Scale of the project

>> (Define whether project is micro scale, small scale or others. Justify the scale referring to relevant activity requirement.)

The project is microscale as the stoves that will be used in this project are expected to represent an annual CO2 reduction of 10.000 tonnes of CO2e.

A.7. Funding sources of project

>> (Provide the public and private funding sources for the project. Confidential information need not be provided.)

Start-up finance for the project is provided by Fast Start Finance of Walloon Region of Belgium within the framework of sustainable development in partner countries of Wallonia. In addition, carbon finance will provide additional finance to extend the project and will allow monitoring and replacing all the project stoves at the end of its life time.

A.8. Assessment that project complies with 'gender sensitive' requirements

>> (Answer the four mandatory questions included under Step 1 to 3 in "Gold Standard Gender Equality Guidelines and Requirements" available here.)

Step 1

Question 1: Does the project reflect the key issues and requirements of gender-sensitive design and implementation as outlined in the gender policy? Explain how.

The Project takes into account gender roles and the abilities of women and men to participate in the decision/designs of the project activities. For example, the stakeholder consultation made in the project design phase included both women (73%) and men (27%) participating in the consultation meeting. However more women were invited than men, as they are the most important beneficiaries in the project. Moreover, for example, the future public awareness sessions and trainings for the construction of Wanrou efficient cookstoves will be planned and organized in the way to avoid any discrimination of women or other marginalized groups. In fact, the women's participation will be essential for guaranteeing the success in the dissemination of the Wanrou efficient cookstoves.

In most households in Benin, fuel collection activities are handled by women. In fact, the reduction of fuel wood consumption will significantly reduce women's work load related to collection of fuel. It can be further expected that sexual harassment and violence happening during fuel collection may be reduced. Hence, largely women will benefit from the project activity.

Question 2: Does the project align with existing country policies, strategies and best practices? Explain how.

In March 2008 the government of Benin has adopted a National Policy for the Promotion of Gender (PNPG) to correct imbalances in gender relations[22]. This policy has the objective to eliminate discriminatory behavior and practices, significantly improve the status of women, offering both sexes the same opportunities provided by the Strategic Development Guidelines of the Republic of Benin. These guidelines are aimed in concrete terms at promoting women's education and training, valuing women's work and enabling cultures or traditions, promoting gender equality and women's economic empowerment relations[23]. It will be ensured that the project is committed to equal gender rights following the National Gender Policy of Benin.

Step 2

Question 3: Does the project address the questions raised in the Gold Standard Safeguarding Principles & Requirements document? Explain how.

All assessment questions related to all relevant safeguarding principles, amongst others principle 2 'Gender Equality and Women's Rights', have been responded. See Table in section D.1 of the PDD.

Step 3

Question 4: Does the project apply the Gold Standard Stakeholder Consultation & Engagement Procedure, Requirements & Guidelines

The project has followed the GS Stakeholder Consultation & Engagement Procedure, Requirements & Guidelines when carrying out the local stakeholder consultation. See the LSC report for more details.

[22] https://www.ilo.org/dyn/natlex/natlex4.detail?p_lang=en&p_isn=99954

[23] http://www.inpf.bj/IMG/pdf/politique_nationale_promo_genrebenin.pdf

SECTION B. Application of selected approved Gold Standard methodology

B.1. Reference of approved methodology

>> The Gold Standard Simplified Methodology for Efficient Cookstoves v1.0

B.2. Applicability of methodology

>> The applicability conditions of the Gold Standard Simplified Methodology for Efficient Cookstoves are:

Methodology applicability requirement	Justification related to the project activity	Confirmation
This methodology is applicable to the micro-scale programmes and micro-scale activities introducing new wood fired cookstoves that reduce use of non-renewable fire wood or switch from non-renewable to renewable fire wood to meet thermal energy requirement for household cooking.	The project is a VPA of a micro-scale programme and introduces new wood fired cookstoves that reduce use of non-renewable fire wood. The targeted end-users are households which use a three stone open fire and are lacking access to improved cooking technology in the absence of this project activity. The introduced improved cookstove technology is the Wanrou efficient cookstove, which has successfully been introduced in other municipalities of Benin, ie Ouaké and Toucountouna.	Yes
A project proponent implements the activity or programme of activities. The individual households and institutions do not act as project proponents.	Eco-Benin with technical support of CO2logic will implement the project. No institutions will be involved in the project. The individual households do not act as project proponent.	Yes
This methodology is applicable, *i. If the baseline fuel is only fire wood; and* *ii. If the baseline stove 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; and* *iii. If the project stove is single pot or multi pot portable or in-situ cook stoves with specified efficiency of at least 20%.*	According the baseline survey[24] realized in the project boundary 96% of the surveyed households use fire wood as their main baseline fuel. Almost all surveyed households (98%) use the traditional 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. The project stove is the Wanrou efficient cookstove, which is a single pot and in-situ cookstove. The Wanrou efficient cookstove may have different sizes according the used cooking pot, ie sizes 2, 4, 6, 8, and 10. All Wanrou stoves of different sizes have a specified efficiency of at least 20%[25].	Yes
The project boundary can be clearly identified, and the cookstoves counted in the proposed project activity are not included in another voluntary market or CDM project activity (i.e. no double counting takes place). The project proponent must have a mechanism in place	The project activity is implemented in the municipalities of Copargo, Boukoumbé and Natitingou located in Benin. Details about the project location are provided in section A.4 of this document. The unique identification including GPS coordinates of each household where all	Yes

[24] See document « *Rapport_de_l'étude_de_base_FSE_2018_Final* »

[25] Laboratoire Biomasse Energie et Biocarburants de 2IE Ouagadougou Aout 2015 (size 2 and 4) / December 2015 (sizes 6, 8 and 10) Rapport sur les tests de performances énergétiques des foyers améliorés Wanrou de l'association EcoBénin

together with appropriate mitigation measures to prevent double counting.	traditional three stones cookstoves for domestic use used by all the different wives within the household (if polygamous) have been replaced with project stoves, will be recorded in AKVO[26].	
The project proponent must clearly communicate that the entity is claiming ownership rights and selling of the emission reductions resulting from the project activity. This must be communicated to the efficient cookstoves producers, retailers and end users by contract or clear written assertions in the transaction paperwork.	The ownership and selling rights of the emission reductions resulting from the project activity are clearly defined, defining Eco-Benin as the entity claiming ownership rights of and selling the emission reductions resulting from the project activity. The transfer of carbon credit ownership from end-users to the project owner Eco-Benin is stipulated in a signed carbon waiver.	Yes
The use of the baseline cookstove as a backup or auxiliary technology in parallel with the improved cookstove introduced by the project activity is permitted as long as a mechanism is put into place to encourage the removal of the old cookstove (e.g. discounted price for the improved cookstove) and the definitive discontinuity of its use. The project documentation must provide a clear description of the approach chosen and the monitoring plan must allow for a good understanding of the extent to which the baseline technology is still in use after the introduction of the improved technology, whether the existing baseline cookstove is not surrendered at the time of the introduction of the improved technology, or whether a new baseline cookstove is acquired and put to use by targeted end users during the project crediting period. The success of the mechanism put into place must therefore be monitored, and the approach must be adjusted if proven unsuccessful. If the baseline cookstove remains in use in parallel with the project cookstove, corresponding emissions must of course be accounted for as part of the project emissions.	Awareness workshops for stove users are foreseen to explain the multiple advantages of Wanrou efficient cookstoves compared to traditional cookstoves. Specific sensitisation materials have been developed for this purpose[27]. The use of the baseline cookstove will be limited to exceptional events, like celebrations, in case the household don't dispose of Wanrou efficient cookstove for big cooking pot sizes. Other reason for usage of baseline stove is the customary usage like preparation of traditional medicine which is very common in the rural areas. The monitoring plan describes how to measure the usage of the baseline technology during crediting period of the VPA through the to be monitored parameter $DF_{b,Stove,y}$.	Yes

B.3. Project boundary

>> (Present a flow diagram of the project boundary, physically delineating the project, based on the description provided in section A.5 above.)

The project boundary is the physical, geographical site of baseline and project cookstoves and fuel collection area, in other words the physical location of the households using the Wanrou efficient cookstoves after implementation of the project activity in the municipalities of Copargo, Boukoumbé and Natitingou in the North of Benin and the fuel collection area as the locations from where households source their biomass used for domestic cooking.

[26] www.akvo.org

[27] See document « Boite à images foyer Wanrou »

The target area are the locations of the households using the Wanrou efficient cookstoves after implementation of the project activity, where the usage of the open three stone fire as baseline cookstove is prevalent and uniform.

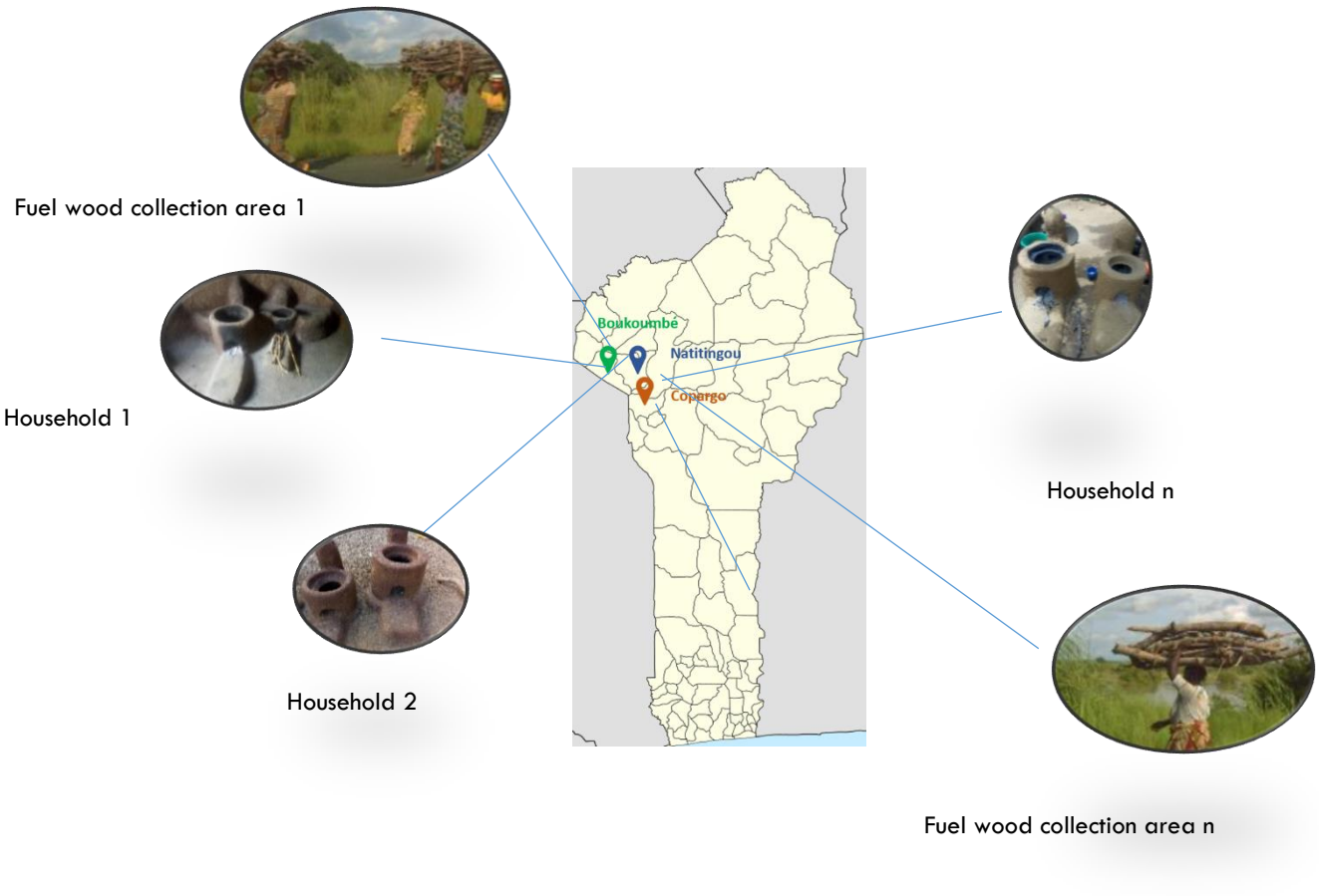


Diagram: Project boundary and target area of the project activity in the 3 municipalities Copargo, Natitingou and Boukoumbé

Source		GHGs	Included?	Justification/Explanation
Baseline scenario	Heat delivery	CO_2	Yes	Important source of emissions as CO2 is emitted any time biomass or fossil fuels are burned.
		CH_4	Yes	Important source of emissions released during partial or incomplete combustion of biomass during domestic cooking.
		N_2O	Yes	Important source of emissions released during partial or incomplete combustion of biomass during domestic cooking.
Project scenario	Heat delivery	CO_2	Yes	Important source of emissions as CO2 is emitted any time biomass or fossil fuels are burned.
		CH_4	Yes	Important source of emissions released during partial or incomplete combustion of biomass during domestic cooking.
		N_2O	Yes	Important source of emissions released during partial or incomplete combustion of biomass during domestic cooking.

B.4. Establishment and description of baseline scenario

>>

In accordance with the methodology, the baseline scenario is non-renewable fire wood consumption to meet thermal energy requirement for household cooking. The Baseline Survey[28] realized in the project boundary, shows that fire wood is the main baseline fuel for 96% of the surveyed households. The same report shows that almost all surveyed households (98%) use the traditional three stone fire as baseline stove, or a conventional device without a grate or a chimney i.e. with no improved combustion air supply or flue gas ventilation.

The concept of suppressed demand is not applied.

B.5. Demonstration of additionality

>>

The table below is only applicable if the proposed project is deemed additional, as defined by the applied approved methodology or activity requirement or product requirement.

Specify the methodology or activity requirement or product requirement that establish deemed additionality for the proposed project (including the version number and the specific paragraph, if applicable).	Gold Standard for the Global Goals Renewable Energy Activity Requirements, Version 1, July 2017 2.5.3 Microscale Micro scale projects that meet any one of the criteria defined below (and meet the eligibility requirements) shall be deemed additional: (a) The project is located in a Least Developed Country (LDC), Small Island Developing States (SIDS) or Land Locked Developing Country (LLDC)
Describe how the proposed project meets the criteria for deemed additionality.	The project activity is located in Benin, which is an LDC, therefore the activity is automatically deemed additional.

B.6. Sustainable Development Goals (SDG) outcomes

B.6.1. Relevant target for each of the three SDGs

>> *(Specify the relevant SDG target for each of three SDGs addressed by the project. Refer most recent version of targets here .)*

SDG	Chosen SDG target
Goal 1 – No poverty	1.2 By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions implement nationally appropriate social protection systems and measure for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable.
Goal 3 – Good health and well being	3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.
Goal 4 – Quality education	4.3 By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university.
Goal 5 - Gender	5.4. Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate.

[28] See document « Rapport_de_l'étude_de_base_FSE_2018_Final »

Goal 7 – Affordable and clean energy	7.1 By 2030, ensure universal access to affordable, reliable and modern energy services.
Goal 13 – Climate Action	13.B Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities

B.6.2. Explanation of methodological choices/approaches for estimating the SDG outcome

>> (Explain how the methodological steps in the selected methodology(ies) or proposed approach for calculating baseline and project outcomes are applied. Clearly state which equations will be used in calculating net benefit.)

a) SDG 1, No poverty

Sales revenues in FCFA or € for grids for Wanrou efficient cookstoves = Total amount received by the Women Association for the production and sales of grids for Wanrou efficient cookstoves during the monitoring period

b) SDG 3, Good health and well-being

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

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

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

Incidence of itchy eyes reduction = (Number of stove users perceiving less incidence of itchy eyes since the implementation of Wanrou efficient cookstoves) / (Number of respondents)

c) 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

d) 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)

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 Wanrou 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 Wanrou 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 Wanrou efficient cookstoves)

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

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)

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 Wanrou 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 Wanrou 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 Wanrou 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 Wanrou 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 Wanrou 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 Wanrou efficient cookstoves)

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

e) SDG 7, Affordable and clean energy

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

f) SDG 13, Climate Action

The baseline scenario is considered by default fixed
In the project activity, cookstoves are installed at the start of the project activity or installed progressively, the baseline is considered by-default fixed until the end of the cookstoves (introduced in the project activity) useful life or the registered crediting period, whichever occurs earlier. If the project cookstove is replaced with a cookstove of similar efficiency prior to the end of the crediting period, the original baseline shall be applicable till the end of the replaced cookstoves useful life or the registered crediting period, whichever occurs earlier.

Only one project scenario is considered

The project scenario is the adoption of the Wanrou efficient cookstove by end users in the target area of the municipalities of Copargo, Natitingou and Boukoumbé in Atacora/Donga, defined as the project boundary of the VPA.
Only one type of efficient cookstove will be installed, which is the Wanrou efficient cookstove. Most households in the project boundary are composed of one husband with several wives. Each wife in a household will have at least two Wanrou efficient cookstoves according the local cooking requirement. All the traditional three stone cookstoves for domestic use used by the wives within the household in the VPA will be replaced by Wanrou efficient cookstoves. Five different sizes (2, 4, 6, 8 and 10) are regularly used and will be taken account. The determination of quantity of fire wood consumed in the baseline is at household level. For this reason, the number of households will be monitored instead of project cookstoves to determine the emissions reductions. The Wanrou efficient cookstoves installed at a household can have different sizes according the cooking habit within the household. If the efficiency of these Wanrou cookstoves with different sizes differs, the lowest value will be taken as reference value for the efficiency of the cookstove being used in the project scenario to calculate the emission reductions.

Calculation of the emission reductions
The methodology directly provides equation for emission reductions (without separate baseline, projector leakage emission reduction equations). The emission reductions 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

<u>Determination of quantity of biomass saved (P_y):</u>
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);
η_b	Efficiency of the baseline cookstove being replaced (fraction). A default value of 10% is used as 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 "Effectifs de la population des villages et quartiers de ville du Bénin (RGPH-4, 2013)"[29] or the general census of the population and habitat of Benin.

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

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

Where

$\eta_{p,y}$	Efficiency of project cookstove in year y (fraction)
η_p	Efficiency of project cookstove (fraction) determined at the start of the project activity
DF_η	Discount factor to account for efficiency loss of project cookstove per year of operation (fraction)
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 program 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.

B.6.3. Data and parameters fixed ex ante for monitoring contribution to each of the three SDGs

(Include a compilation of information on the data and parameters that are not monitored during the crediting period but are determined before the design certification and remain fixed throughout the crediting period like IPCC defaults and other methodology defaults. Copy this table for each piece of data and parameter.)

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 values, 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 comment	

Relevant SDG Indicator	**SDG 13, Climate Action**
Data/parameter:	**EFb,fuel,non_CO2**
Unit	tCO_2/ton of firewood

[29] See document « Cahier_VillageRGPH4_2013 »

Description	Non-CO_2 emission factor arising from use of firewood in baseline scenario
Source of data	IPCC default values, 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:	η_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:	η_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)	0.224[30]
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	For each wife of one household included in the VPA most of the times two efficient cookstoves of the sizes 2, 4, 6, 8 and 10 are 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 has 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. The result of the WBT for each size are: (i) size 2: 22.4%; (ii) size 4: 23.0%; (iii) size 6: 23.3%; (iv) size 8: 23.5%; (v) size 10: 23.0%. 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. The project cookstove efficiency in the year y $\eta_{p,y}$ will be determined using the discount factor DF_η to account for efficiency loss of project cookstove per year of operation (fraction).

[30] Laboratoire Biomasse Energie et Biocarburants de 2IE Ouagadougou Aout 2015 (size 2 and 4) / December 2015 (sizes 6, 8 and 10) Rapport sur les tests de performances énergétiques des foyers améliorés Wanrou de l'association EcoBénin

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 proposed by the CDM executive board[31]
Value(s) applied)	0.81
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 DNA of Benin didn't endorse the default f_{NRB} value provided by the CDM executive board. According to the DNA the proposed value is too low. Following GS TAC rule update from June 2012 (https://www.goldstandard.org/articles/tac-rule-updates) feedback has been collected by the project developer on the appropriateness of the applied NRB fraction through stakeholder consultation. There were no objections from any of the stakeholders during the stakeholder consultation held on the 8/3/2018 to use the proposed value of 0.81 in the carbon project activity. This value may be updated when the DNA of Benin and the EB of CDM have endorsed a new default value for the $f_{NRB,b,y}$ of Benin[32], which has been validated during the national workshop organized on the 4/5/2016.

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 (which are the municipalities of Copargo, Boukoumbé and Natitingou), is determined using data from the population census in 2013 of the National Institute for Statistics and Economic Analysis [33]. The average household size across the three municipalities of the project boundary is 6.66, whereas for the municipality of Copargo 9.79, Boukoumbé 6.06 and Natitingou 5.84. 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. Therefore, the average annual consumption of firewood per household is estimated at 3.33 tonnes/year for the total project boundary and more specifically for the municipality of Copargo 4.89 tonnes/year, Boukoumbé 3.03 tonnes/year and Natitingou 2.92 tonnes/year.
Value(s) applied)	Ex ante: • 3.33 for the whole project boundary Ex post: • 4.89 for the municipality of Copargo • 3.03 for the municipality of Boukoumbé • 2.92 for the municipality of Natitingou

[31] CDM Executive Board, EB 67 Report Annex 22

[32] The approval of the standardised baseline PSB0040 'Fraction of Non Renewable Biomass of Benin' (see https://cdm.unfccc.int/methodologies/standard_base/2015/sb97.html) is still missing. The proposed standardized baseline suggests a fNRB of 0.93.

[33] INSAE, République du Bénin, 2016, Effectifs de la population des villages et quartiers de ville du Bénin (RGPH-4, 2013), 85 pages. http://www.insae-bj.org/recensement-population.html?file=files/publications/RGPH4/Cahier_VillageRGPH4_2013.pdf

<table>
<tr><td>Choice of data or measurement methods and procedures</td><td>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 “Effectifs de la population des villages et quartiers de ville du Bénin (RGPH-4 2013)</td></tr>
<tr><td>Purpose of data</td><td>Calculation of emission reductions</td></tr>
<tr><td>Additional comments</td><td>The average household size across the four municipalities of the project boundary is 6.66, whereas for the municipalities Copargo 6.49, Boukoumbé 6.06 and Natitingou 5.84:

<table>
<tr><th>Municipality</th><th># HH</th><th># persons</th><th>#pers/HH</th><th>$B_{b,y}$</th></tr>
<tr><td>Copargo</td><td>7,246</td><td>70,938</td><td>9.79</td><td>4.89</td></tr>
<tr><td>Boukoumbé</td><td>13,608</td><td>82,450</td><td>6.06</td><td>3.03</td></tr>
<tr><td>Natitingou</td><td>17,772</td><td>103,843</td><td>5.84</td><td>2.92</td></tr>
<tr><td>Total</td><td>38,626</td><td>257,231</td><td>6.66</td><td>3.33</td></tr>
</table>

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 3.33 tonnes/year for the total project boundary and more specifically for the municipality of Copargo 4.89 tonnes/year, for Boukoumbé 3.03 tonnes/year and for Natitingou 2.92 tonnes/year.</td></tr>
</table>

B.6.4. Ex ante estimation of outcomes linked to each of the three SDGs

>> (Provide a transparent ex ante calculation of baseline and project outcomes (or, where applicable, direct calculation of net benefit) during the crediting period, applying all relevant equations provided in the selected methodology(ies) or as per proposed approach. For data or parameters available before design certification, use values contained in the table in section B.6.3 above. For data/parameters not available before design certification and monitored during the crediting period, use estimates contained in the table in section B.7.1 below)

Ex-ante calculations related to the outcome for SDG 13

The transparent ex-ante calculations of the outcome for SDG 13 (i.e. CO2e reductions) are provided in a separate Excel Spreadsheet uploaded to GS Registry. For data/parameters available at the time of design certification, values contained in section B.6.3 and for data/parameters only available after monitoring the estimates contained in section B.7.1 have been used.

Ex-ante calculations related to the outcomes of SDG 3

N/A

Ex-ante calculations related to the outcomes of SDG 4

N/A

Ex-ante calculations related to the outcomes of SDG 5

N/A

Ex-ante calculations related to the outcomes of SDG 7

N/A

B.6.5. Summary of ex ante estimates of each SDG outcome

Ex-ante estimation of SDG 13 Outcome

Year	Emission reduction (tCO2e/year)	Leakage adjustment (tCO2e/year)	Net Emission Reduction (tCO2e/year)
2018	2,204	110	2,093
2019	5,271	264	5,007
2020	10,403	520	9,883
2021	10,036	502	9,535
2022	10,137	507	9,630
2023	10,403	520	9,883
2024	10,036	502	9,535
2025	10,137	507	9,630
2026	10,403	520	9,883
2027	10,036	502	9,535
Total	89,068	4,453	84,615
Total number of crediting years	10		
Annual average over the crediting period	8,907	445	8,461

Ex-ante estimation of SDG 1 outcome

Sales revenues in FCFA or € for grids for Wanrou efficient cookstoves = 3,000,000 FCFA or 4,573 €

Ex-ante estimation of SDG 3 outcome

Smoke level reduction = more than 90%

Incidence of coughing reduction = more than 90%

Incidence of respiratory illness reduction = more than 90%

Incidence of itchy eyes reduction = more than 90%

Ex-ante estimation of SDG 4 outcome

Number of trainings initiatives for staff involved in the programme = 1

Number of workshops carried out for women = 20

Ex-ante estimation of SDG 5 outcome

Proportion of stove users perceiving reduced amount of time spent on fuel collection = more than 90%

Proportion of stove users perceiving reduced amount of money spent on wood fuel purchase = more than 90%

Ex-ante estimation of SDG 7 outcome

Number of Wanrou efficient cookstoves disseminated = 8,000

B.7. Monitoring plan

B.7.1. Data and parameters to be monitored

Relevant SDG Indicator/Safeguarding Principle	**SDG 1, No poverty**
Data / Parameter	**Sales revenues of grids for Wanrou efficient cookstoves**
Unit	FCFA or €
Description	Total amount received by the Women Association for the production and sales of grids for Wanrou efficient cookstoves during the monitoring period
Source of data	Invoices of the purchase of grids by EcoBenin from women groups
Value(s) applied	N/A
Measurement methods and procedures	The measurement of the parameter is based on quantitative information collected from invoices for the purchase of grids by EcoBenin from women groups.
Monitoring frequency	Yearly
QA/QC procedures	The data from the invoices will be analyzed and will be made available for review.
Purpose of data	Calculation of the parameter "Sales revenues of grids for Wanrou efficient cookstoves"
Additional comment	N/A

Relevant SDG Indicator	**SDG 3, Good health and well-being**
Data / Parameter	**Smoke level reduction** **Incidence of coughing reduction** **Incidence of respiratory illness reduction** **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 Wanrou efficient cookstoves
Source of data	Monitoring surveys
Value(s) applied	Ex-ante estimation: 90% 90% 90% 90%
Measurement methods and procedures	The measurement of the parameter is based on qualitative information collected during Monitoring surveys. The end users are asked whether, since they have the Wanrou 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.
Monitoring frequency	Annual
QA/QC procedures	The data will be 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 comment	N/A

Relevant SDG Indicator/Safeguarding Principle	**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
Source of data	Reports regarding the training initiatives
Value(s) applied	Ex-ante estimation: 1
Measurement methods and procedures	The list of training initiatives during the corresponding monitoring period
Monitoring frequency	Annual
QA/QC procedures	The data will be analyzed 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 comment	N/A

Relevant SDG Indicator/Safeguarding Principle	**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
Source of data	Reports regarding the workshops carried out for women
Value(s) applied	Ex-ante estimation: 20
Measurement methods and procedures	The list of workshops carried out for women during the corresponding monitoring period
Monitoring frequency	Annual
QA/QC procedures	The data will be analyzed in the reports 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 comment	N/A

Relevant SDG Indicator/Safeguarding Principle	**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** Various activities which women spend after saving time required for collecting fuel wood: (i) Domestic $tasks_p$; (ii) Income generating $activities_p$; (iii) Field $labour_p$; (iv) $Gardening_p$; (v) Participation to a literacy $program_p$; (vi) Community $work_p$; (vii) Religious $activities_p$. Various expenses which women do after saving money required for the purchase of wood: (i) School $fees_p$; (ii) Purchase of medical $drugs_p$; (iii) Purchase of $food_p$; (iv) Investment for field $crops_p$; (v) Purchase of $equipments_p$; (vi) Income generating $activities_p$; (vii) $Savings_p$.

Unit	Fraction
Description	Proportion of stove users perceiving reduced time spent on wood fuel collection since the implementation of the Wanrou efficient cookstoves Domestic tasks$_p$ = Proportion of stove users using their saved time to do domestic tasks Income generating activities$_p$ = Proportion of stove users using their saved time to do income generating activities Field labour$_p$ = Proportion of stove users using their saved time to do field labour Gardening$_p$ = Proportion of stove users using their saved time to do gardening Participation to a literacy program$_p$ = Proportion of stove users using their saved time to participate to a literacy program Community work$_p$ = Proportion of stove users using their saved time to do community work Religious activities$_p$ = Proportion of stove users using their saved time to do religious activities Proportion of stove users perceiving reduced money spent on wood fuel purchase since the implementation of the Wanrou efficient cookstoves School fees$_p$: Proportion of stove users using their saved money to school fees; Purchase of medical drugs$_p$: Proportion of stove users using their saved money to purchase of medical drugs; Purchase of food$_p$: Proportion of stove users using their saved money to Investment for field crops$_p$: Proportion of stove users using their saved money to investments for field crops; Purchase of equipments$_p$: Proportion of stove users using their saved money to purchase of equipments; Income generating activities$_p$: Proportion of stove users using their saved money to income generating activities; Savings$_p$: Proportion of stove users using their saved money to savings.
Source of data	Monitoring surveys
Value(s) applied	Ex-ante estimation: Proportion of stove users perceiving reduced time spent on wood fuel collection since the implementation of the Wanrou efficient cookstoves = 90% Proportion of stove users perceiving reduced money spent on wood fuel purchase since the implementation of the Wanrou efficient cookstoves = 90%
Measurement methods and procedures	The measurement of the parameter is based on qualitative information collected during Monitoring surveys. The end users are asked whether, since they have the Wanrou 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.
Monitoring frequency	Annual
QA/QC procedures	The data will be 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 stove users perceiving reduced amount of time spent on wood fuel collection and/or reduced amount of money spent on wood fuel purchase"
Additional comment	N/A

Relevant SDG Indicator/Safeguarding Principle	**SDG 7, Affordable and clean energy**
Data / Parameter	**Number of Wanrou efficient cookstoves disseminated**
Unit	Number
Description	Number of Wanrou efficient cookstoves included in the project database for project scenario p
Source of data	Project database
Value(s) applied	Ex-ante estimation 8,000
Measurement methods and procedures	The project database provides a list of end-users with number of Wanrou efficient cookstoves per end-user.
Monitoring frequency	Continuous
QA/QC procedures	The data will be analyzed in the monitoring report and Project database will be made available for review.
Purpose of data	Calculation of the parameter "Number of Wanrou efficient cookstoves disseminated"
Additional comment	It is foreseen that each household will have at least two Wanrou efficient cookstoves.

Relevant SDG Indicator/Safeguarding Principle	**SDG 13, Climate Action**
Data / Parameter	**$U_{p,i}$**
Unit	Percentage
Description	Usage rate in project scenario p during year i
Source of data	Annual usage/monitoring survey
Value(s) applied	Ex-ante estimation: 90%
Measurement methods and procedures	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.
Monitoring frequency	Annual
QA/QC procedures	Transparent data analysis and reporting
Purpose of data	Calculation of emission reductions
Additional comment	N/A

Relevant SDG Indicator/Safeguarding Principle	**SDG 13, Climate Action**
Data / Parameter	**$N_{p,i}$**
Unit	Number of households included in the project (Units), based on days of usage of age group i during the corresponding monitoring period related to one year.
Description	Household in the project database for project scenario p through year i 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)
Source of data	Project database
Value(s) applied	Ex-ante estimation: 4,000

Measurement methods and procedures	For the determination of the number of usage days at household level for age group I during the corresponding monitoring period, the latest start day of use of all constructed Wanrou efficient cookstoves within the household will be taken in order to have conservative approach. Number of households included in the project (Units) are calculated based on days of usage of age group I during the corresponding monitoring period related to one year.
Monitoring frequency	Annual
QA/QC procedures	Transparent data analysis and reporting
Purpose of data	Calculation of emission reductions
Additional comment	N/A

Relevant SDG Indicator/Safeguarding Principle	**SDG 13, Climate Action**
Data / Parameter	**DF_{η}**
Unit	Fraction
Description	Discount factor to account for efficiency loss of project stoves
Source of data	Gold Standard Simplified Methodology for Efficient Cookstoves
Value(s) applied	Default value: 0.99 i.e., 1 % efficiency loss per year
Measurement methods and procedures	N/A
Monitoring frequency	N/A
QA/QC procedures	N/A
Purpose of data	Calculation of emission reductions
Additional comment	N/A

Relevant SDG Indicator/Safeguarding Principle	**SDG 13, Climate Action**
Data / Parameter	**$DF_{b,stove,i}$**
Unit	Percentage
Description	Discount factor to account for the baseline stove use in project scenario p during year i
Source of data	Monitoring surveys
Value(s) applied	Ex-ante estimation: 10%
Measurement methods and procedures	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.
Monitoring frequency	Annual
QA/QC procedures	Transparent data analysis and reporting
Purpose of data	Calculation of emission reductions
Additional comment	N/A

B.7.2. Sampling plan

>> (If data and parameters monitored in section B.7.1 above are to be determined by a sampling approach, provide a description of the sampling plan.)

As described in the PoA-DD cross sampling across a group of VPA's is allowed if the VPA's are homogeneous relative to the parameters of interest. Cross sampling of households will be applied across the following VPAs of PoA 2456: VPA-03 (GS6998) and VPA-04 (GS7112).

The parameters which need to be monitored through surveys for the 2 VPA's are (i) $U_{p,y}$ Usage rate in project scenario p during year y; (ii) DF_{η} Discount factor to account for efficiency loss of project stoves; and (iii) $DF_{b,stove,y}$ Discount factor to account for the baseline stove use in project scenario p during the year y. The 2 VPA's included are assumed to be homogeneous with respect to the three parameters for the following reasons:

i. the 3 municipalities included in the 2 VPAs are very close to each other (furthest distance of 70 km);

ii. the intention is to implement the 2 VPAs within the timeframe of 3 years;

iii. all 2 VPAs will apply the same distribution/implementation mechanism. The distribution/implementation mechanism involves training local women in the rural zones to fabricate these stoves themselves using local material. Each efficient cookstove will be built according to a strict construction protocol. The efficient cookstove construction instructions are published in the training material provided and all levels of the distribution process will be trained to have full knowledge of this construction criterion. This innovative distribution system includes a tight collaboration with women associations. The construction protocol required to train the local rural inhabitants will give them the skills they require to build their own personally fabricated standardized Wanrou efficient cookstove under the supervision of EcoBenin and how to use and maintain it;

iv. the technology used in all 2 VPA's will be the same, the standardized Wanrou efficient cookstove constructed according a strict construction protocol. In all 2 VPA's the household will have the choice between different sizes according their needs. As all levels of the distribution mechanism are trained to construct according the strict construction protocol, the efficiency will be identical;

v. the 3 municipalities, where the 2 VPA's will take place, are located in the departments Atacora and Donga and are characterized by very similar socio-economic conditions. One way to measure the socio-economic conditions is the Human Development Index (HDI) reported by UNDP. The HDI is a composite statistic of life expectancy, education, and income indices used to rank countries or regions according human development. The department of Atacora has a HDI of 0.381 and Donga of 0.400, which are well below the average of 0.485 for Benin.

Since the three parameters of interest are assumed to be the same in each VPA at the time of sampling survey during the monitoring period, a single survey with cross sampling of households can be undertaken using a single random sampling plan. The populations of all 2 VPAs are combined and then the sample size is calculated 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. Only the households recorded in the database will be part of the project activity.

To successfully conduct a usage survey, the minimum household sample size of each age-group should be in line with 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.

The method of selecting households for the sample list for the monitoring survey will be random. All random selections will be stored for the crediting period and an additional two years, which allow traceability of the selection.

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 periodical checks will be performed by user interviews. Only persons older than 18 years will be interviewed.

B.7.3. Other elements of monitoring plan

>>

Initial Data Collection

The setup of the monitoring will start with the initial data collection after the construction of the Wanrou efficient cookstoves.

Most of the households in the project area of VPA-3 are polygamous. Each wife of the household included in the carbon project will most of the time have two Wanrou efficient cookstoves of size 2, 4, 6, 8 and 10.

In order to identify the households (where all wives of the household use the Wanrou efficient cookstoves) under this VPA and to avoid double-counting, a specific serial numbering protocol is put in place. The individual identification of this micro scale - VPA 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 this micro scale – VPA.

The following information will be 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. Wanrou size 2 - 5);
iii. GPS Coordinates of the household;
iv. Name/Address/national ID Number/Mobile Number of wife/Picture of wife;
v. Stove Construction Date;

The data collected by EcoBenin and their team on the ground will be uploaded to a central database online. The collection of each component is briefly described below.

As there is only one project scenario the project database doesn't need to be differentiated into different sections.

Unique VPA ID-card number of each wife of the household

Each wife of the household will receive a unique serial number. The syntax of the unique serial number is defined as GS2489-VPA-03-xxxx/yyyy/zz where (i) GS2489 is the Gold Standard number of the PoA "Efficient cookstoves in Benin and Togo" to which the VPA belongs; (ii) VPA-03 is the number of the VPA of the PoA; (iii) xxxx is the ID of the village; (iv) yyyy is the number of the household from 1 to 9999 and (v) zz is the number of the wife in the household from 1 to 99.

Type and size of appliance

In this VPA one type of appliance will be deployed, which is the Wanrou efficient woodstove. However different sizes of cookstoves can be constructed at the level of the households depending on their cooking habits and size of household.

GPS

After the construction of the project cookstoves, an EcoBenin team member will register the GPS coordinates of the stove location in front of at least two efficient stoves of each wife of the household.

Name/Address/national ID Number/Mobile Number of wife

Each wife of the household participating in the project will use at least two project cookstoves, with a GPS location. The unique VPA ID-number will identify the household and the wife included in the VPA-03. To ensure further traceability personal information of the stove recipient will be recorded in addition to the GPS coordinates and national ID number. Due to the fact that rural households in project locations do not have an official address, some description of the location of the household may be collected. If available, the national ID number and mobile phone number of each wife of the household will be collected. EcoBenin will strive to obtain as much unique information regarding each wife of the household as possible. In addition, a picture will be taken of each wife within the household.

Stove Construction Date

The construction date of each stove will be recorded by EcoBenin during the initial data collection. The construction date will be uploaded to the electronic database containing the previously described stove information.

The contract concerning the transfer of carbon rights between the user and EcoBenin will be signed by both parties after construction of at least two efficient cookstoves for each wife of the household.

A household for which all of this data has been collected for each wife of the household and uploaded to the electronic database is deemed to have completed the initial data collection. The hardcopy and virtual copy of the stove information will be stored for the crediting period and an additional two years

Monitoring Plan

In accordance with the Gold Standard Simplified Methodology for Efficient Cookstoves, the following data will be monitored over the crediting period of the project activity:

i. Usage rate in project scenario p during year y $U_{p,y}$ (%)
ii. Number of project cookstoves credited (units), $N_{p,y}$
iii. Discount factor to account for efficiency loss of project cookstoves DF_n
iv. Discount factor to account for the baseline stove use in project scenario p during the year y, DF_p, stove y

Monitoring consists of checking of a representative sample for each age-group of project cookstoves installed for each wife of a household included in the VPA, once every year (annually) to ensure that project cookstoves are still operating by carrying out the usage survey.

A usage survey will be conducted to estimate the drop off rates at household level as the project cookstove of one of the wives of the household may not be adopted or may be disposed of and potentially replaced again by a baseline stove. Prior to the verification, a usage survey for each cookstove age-group is required. For example, if only cookstoves in the first year of use (age 0-1) are being credited, a usage parameter must be established for age-group 0-1, through a usage survey for cookstove age 0-1. If cookstoves of age 0-1 and age 1-2 are being credited (as part of first request of issuance), usage parameters must be established for age-group 0-1 and 1-2, respectively through a usage survey. If cookstoves of age-group 0-1 and age-group 1-2 are being credited (as part of second request for issuance), usage parameter must be established for age-group 1-2 only through a usage survey as the usage rate for cookstoves of age group 0-1 can be applied from the previous issuance.

Usage rate in project scenario p during year y $U_{p,y}$ (%)

From the monitoring survey, a usage rate parameter (%) is derived from each age group of project cookstove installed for each wife of a household included in the VPA.

During the survey the project cookstove will be checked if it is in useable condition. If the project cookstove is not in useable condition, the household to which the project cookstove belongs will be excluded from the project database for the whole crediting year and subsequent years. The household will be included again after repairing or replacing it with new cookstove with similar efficiency. Guidance provided in Annex B of the methodology 'The Gold Standard Simplified Methodology for Efficient Cookstoves' will be followed to evaluate the condition of the cookstoves.

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 'useable condition'.

Number of households credited (units), $N_{p,y}$

This is the number of households from the project database based on the number of usage days per age group.

Discount factor to account for efficiency loss of project cookstoves DF_n

The default value of 1% efficiency loss per year can be used if the stove is found in good condition during annual survey.

For each year, the stoves of the age-group x-y should be physically verified. In the case of progressive installations, stove of age-group 0-1 shall also be physically verified each year through a random sampling approach.

During annual surveys, if it is found that the project cookstoves of some households are not in working conditions, the proportionate population of households should be excluded from the project database, until these cookstoves are repaired or 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 year from the previous issuance.

Discount factor to account for the baseline stove use in project scenario p during the year y, DF_p, stove y

This parameter will be determined based on 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 each age-group of the project stove.

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.

Database records

Electronic database(s) will be operated and maintained by EcoBenin with the technical support of CO2logic to ensure completeness and accuracy of monitoring information.
Project database[34]:

- Unique VPA ID-number of each wife of the household;
- Type and size of appliance (ex. Wanrou – size 2);
- GPS Coordinates of the household;
- Name/Address/national ID Number/Mobile Number/Picture of wife with her project cookstoves;
- Stove Construction Date;
- Status of stoves owned by the wife: used, unused, destroyed or replaced

The information in this database will be updated continuously.
Sample database:

- Unique ID-number of the household
- Household profile
- Fuel consumption pattern post project implementation per wife of the household with unique VPA-ID-number:
    - Cooking device
    - Place for cooking
    - Type of fuel and fuel consumption

The information in this database will be updated for every monitoring period. Data will be collected with Smart phones and transferred to the electronic database.

Monitoring Report

One single monitoring report will be written for the group of 2 VPA's at the end of every verification period and submitted to the Gold Standard Foundation. The report will indicate how the monitoring data has been collected and show detailed, conservative calculations of the emissions reductions for the verification period and project in question.

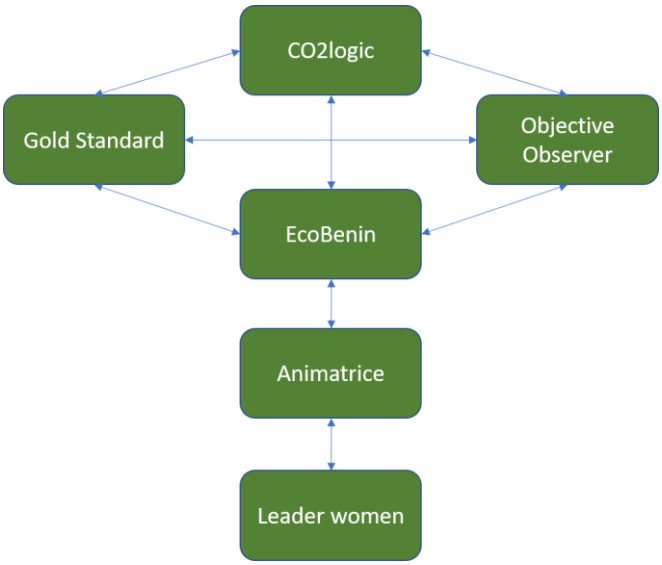
The initial and monitoring data for each verification period stored in the electronic database will serve as the backbone of the monitoring report. The report will contain extensive tables comparing the initial data collected during project implementation with the monitoring data. This allows for quick confirmation that the project cookstoves of each wife of the household in question are still operational.

[34] The record keeping system should collect as many information as necessary to facilitate the verification of the VERs. At the current point of time the list of information seems ideal but may be extended or condensed. The collection of all the items is therefore not mandatory and additional information may be collected as well.

Along with any other information required for project verification, the monitoring report will list any households deemed to have unoperational project cookstoves along with information regarding the repair or replacement of the project cookstove in question. For replaced project cookstoves, the initial data collection process will be repeated and uploaded to the electronic database.

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. EcoBenin will act as the managing entity of the project and be responsible for communication with the Gold Standard Foundation and the Objective Observer. A diagram of responsibilities is shown here below.



EcoBenin employees train leader woman who are selected by the women in the villages, in the construction, the use and maintenance of the Wanrou efficient cookstoves. These leader women conduct the same training sessions with the women in their villages and help them to build the cookstoves. EcoBenin employees with in collaboration with the leader women will perform quality checks and collect the initial stove data described earlier.

The collected data will be transferred electronically from the project site to the EcoBenin office. The initial project data will be processed and uploaded to the central electronic database accessible by EcoBenin and the Gold Standard Foundation and CO2logic. CO2logic will perform quality checks.

For project monitoring the EcoBenin surveyor in collaboration with the leader women will revisit the project site to monitor a representative sample of the project activity. Monitoring data will be collected and processed in the way the initial data was collected and processed.

EcoBenin with technical assistance of CO2logic will provide training to parties involved in the monitoring plan to assure accuracy and completeness of data recorded. The trainings will be conducted at the time when it is most appropriate during the project implementation phase.

SECTION C. Duration and crediting period

C.1. Duration of project

C.1.1. Start date of project

>> (Specify start date of the project, in the format of DD/MM/YYYY. Describe how this date has been determined as per the definition of start date provided in section 3.4.3 of GS4GG Principles & Requirements document and provide evidence to support this date.)

The start date of the project is 04/12/2017, which is the date on which the first Wanrou efficient cookstoves are disseminated in the project activity.

C.1.2. Expected operational lifetime of project

>> (Specify in years)

10 years

C.2. Crediting period of project

C.2.1. Start date of crediting period

>> (Specify in dd/mm/yyyy. This can be start of project operation or two years prior to the date of Project Design Certification, whichever is later.)

04/12/2017

C.2.2. Total length of crediting period

>> (Specify the total length of crediting period sought in line with GS4GG Principles & Requirements or relevant activity requirements.)

10 years

SECTION D. Safeguarding principles assessment

D.1. Analysis of social, economic and environmental impacts

>> (Refer the GS4GG Safeguarding Principles and Requirements document for detailed guidance on carrying out this assessment.)

Safeguarding principles	Assessment questions	Assessment of relevance to the project (Yes/potentially/no)	Justification	Mitigation measure (if required)
3.1 Human Rights	Not existent	No	The project is implemented under the laws of the Republic of Benin and doesn't lead to violations of human rights in any way. All households located within the project boundary that wish to have the Wanrou efficient cookstove, are able to do so and there is not any form of discrimination or exclusion to participate in the project. In addition, the Republic of Benin has acceded to the Human Rights Convention under the United Nations on 12th of March 1992[35].	N/A
3.2 Gender Equality and Women's Rights	Is there a possibility that the Project might reduce or put at risk women's access to or control of resources, entitlements and benefits?	No	The project has been developed in order to provide important benefits for women, which are the most important stove users. In addition, it involves significantly women in the design and implementation of the project. One of the core objectives is that women are mainly involved in the stove construction and maintenance.	N/A

[35] https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=IV-4&chapter=4&clang=_en

			Women have full access to project resources, entitlements and benefits. Women and men will have equal access opportunities to the new Wanrou efficient cookstove sets.	
	Is there a possibility that the Project can adversely affect men and women in marginalised or vulnerable communities (e.g., potential increased burden on women or social isolation of men)?	No	Among the project's main goals is decreasing women's burden of time spent on wood collection and cooking by reducing fuel wood consumption. Women will save time which they can utilize for other activities. Women and men will save economic resources since families' expenditure on fuel wood will decrease.	N/A
	Is there a possibility that the Project might not take into account gender roles and the abilities of women or men to participate in the decisions/designs of the project's activities (such as lack of time, child care duties, low literacy or educational levels, or societal discrimination)?	No	The roles, habits and planning of community members are taken into account during the implementation of project activities. This means that most activities or community meetings are organized after harvesting periods and mainly in dry season (January till May).	N/A
	Does the Project take into account gender roles and the abilities of women or men to benefit from the Project's activities (e.g., Does the project criteria ensure that it includes minority groups or landless peoples)?	No	The design of the project activity considers gender roles and the abilities of women and men to participate and benefit from the project activities. All members of the community can freely participate to the project and have access to the Wanrou efficient project cookstove.	N/A
	Does the Project design contribute to an increase in women's workload that adds to their care responsibilities or that prevents them from engaging in other activities?	No	The Wanrou efficient cookstoves supports the reduction of women's burden of firewood collection or purchase and time spent for cooking. Hence, women will have more time availability for other activities.	N/A

	Would the Project potentially reproduce or further deepen discrimination against women based on gender, for instance, regarding their full participation in design and implementation or access to opportunities and benefits?	No	The project involves women in the project activities by providing training on the construction and maintenance of the Wanrou efficient cookstoves. Women are the main beneficiaries of the project. The project therefore reduces the discrimination and exclusion of women in economic activities.	N/A
3.3 Community Health, Safety and Working Conditions	Not existent	No	The project activity doesn't expose the community to increased health risks and is not adversely affecting the health of workers and the community. More in general EcoBenin follows the national regulations of Benin on health, safety working conditions.	N/A
3.4 Cultural Heritage, Indigenous Peoples, Displacement and Resettlement *3.4.1 Sites of Cultural and Historical Heritage*	Does the Project Area include sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture (e.g., knowledge, innovations, or practices)?	No	The project activity doesn't include sites, structures or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture. The Project introduces the Wanrou efficient cookstoves in several villages across the municipalities of Boukoumbé, Copargo and Natitingou in the North of Benin and it does not require alteration, damage or removal of any historical, artistic, traditional, religious or cultural heritage issues. The republic of Benin is an active member of the United Nations Educational, Scientific and Cultural Organization (UNESCO)[36].	N/A

[36] http://www.unesco.org/eri/cp/ListeMS_Indicators.asp

3.4 Cultural Heritage, Indigenous Peoples, Displacement and Resettlement *3.4.2 Forced Eviction and Displacement*	Does the Project require or cause the physical or economic relocation of peoples (temporary or permanent, full or partial)?	No	The project activity consists of introducing the Wanrou efficient cookstove technology and therefore no physical or economic relocation of people is involved. The use of the improved cookstove technology is voluntarily.	N/A
3.4 Cultural Heritage, Indigenous Peoples, Displacement and Resettlement *3.4.3 Land Tenure and Other Rights*	Does the Project require any change to land tenure arrangements and/or other rights?	No	The project doesn't require any change inland tenure arrangements and/or other rights.	N/A
3.4 Cultural Heritage, Indigenous Peoples, Displacement and Resettlement *3.4.4 Indigenous Peoples*	Are indigenous peoples present in or within the area of influence of the Project and/or is the Project located on land/territory claimed by indigenous peoples?	No	There are no indigenous people present within the area of influence nor the project is located on territory claimed by indigenous people.	N/A
3.5 Corruption	Not existent	No	The Project doesn't involve, be complicit in or inadvertently contribute to or reinforce corruption or corrupt Projects. The project is implemented on the ground by Eco-Benin. The ethical codes of Eco-Benin is against corruption. Moreover, Benin has ratified the UN Convention against Corruption[37].	N/A

[37] https://treaties.un.org/Pages/ViewDetails.aspx?src=IND&mtdsg_no=XVIII-14&chapter=18&clang=_en

3.6 Economic Impacts *3.6.1 Labour Rights*	Not existent	No	The project is implemented on the ground by the NGO Eco-Benin in collaboration with CO2logic. The employees' rights are a cross-cutting issue and respected in all of the projects of Eco-Benin and other project partners. Benin has ratified many ILO Conventions, amongst others convention 87 (Freedom of Association and Protection of the Right to Organize Convention) and convention 98 (Right to Organize and Collective Bargaining Convention)[38]. All employees will work voluntarily for the project, no forced labour is used and all employment is in compliance with national laws and consistence with the principles and standards of the ILO conventions. In fact, Benin has ratified many ILO Conventions, amongst others convention 29 (Forced Labour Convention) and 105 (Abolition of Forced Labour Convention). [39]	N/A
3.6 Economic Impacts *3.6.2 Negative Economic Consequences*	Not existent	No	Project activity related costs, like e.g. for construction and maintenance of Wanrou efficient cookstoves, monitoring etc are covered with climate finance and carbon finance. The use of the Wanrou efficient cookstoves is accessible to everybody and therefore the	N/A

[38] http://www.ilo.org/dyn/normlex/en/f?p=1000:11200:0::NO:11200:P11200_COUNTRY_ID:103028

[39] http://www.ilo.org/dyn/normlex/en/f?p=1000:11200:0::NO:11200:P11200_COUNTRY_ID:103028

			project benefits can be considered socially-inclusive. There are not expected any direct economic impact or potential risks to the local economy.	
4.1 Climate and Energy *4.1.1 Emissions*	Will the Project increase greenhouse gas emissions over the Baseline Scenario?	No	The project does not lead to an increase in greenhouse gas emissions above the baseline emissions. The Wanrou efficient cook stoves will rather reduce the release of CO2 emissions compared to the traditional three stone fires.	N/A
4.1 Climate and Energy *4.1.2 Energy Supply*	Will the Project use energy from a local grid or power supply (i.e., not connected to a national or regional grid) or fuel resource (such as wood, biomass) that provides for other local users?	No	The project does not use energy from the local grid or power supply that is also being used by other users; hence it does not affect the availability and reliability of energy supply to other users.	N/A
4.2 Water *4.2.1 Impact on Natural Water Patterns/Flows*	Will the Project affect the natural or pre-existing pattern of watercourses, ground-water and/or the watershed(s) such as high seasonal flow variability, flooding potential, lack of aquatic connectivity or water scarcity?	No	The project will not have any impact on the water resources in the region. Thus, natural or pre-existing patterns of watercourses, ground-water and watersheds will not be affected.	N/A
4.2 Water *4.2.2 Erosion and/or Water Body Instability*	1. Could the Project directly or indirectly cause additional erosion and/or water body instability or disrupt the natural pattern of erosion? If 'Yes' or 'Potentially' proceed to question 2. 2. Is the Project's area of influence susceptible to excessive erosion and/or water body instability?	No	The project reduces the wood fuel consumption and hence protects the natural forest cover. Therefore, erosion will indirectly be reduced, and water body stability supported.	N/A
4.3 Environment, ecology and land use	Does the Project involve the use of land and soil for production of crops or other products?	No	The Project doesn't use land and soil for the production of crops or other products.	N/A

4.3.1 Landscape Modification and Soil				
4.3 Environment, ecology and land use *4.3.2 Vulnerability to Natural Disaster*	Will the Project be susceptible to or lead to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions?	No	The Project will not be susceptible to or lead to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions.	N/A
4.3 Environment, ecology and land use *4.3.3 Genetic Resources*	Could the Project be negatively impacted by the use of genetically modified organisms or GMOs (e.g., contamination, collection and/or harvesting, commercial development)?	No	The Project doesn't lead to the use of genetically modified organisms.	N/A
4.3 Environment, ecology and land use *4.3.4 Release of pollutants*	Could the Project potentially result in the release of pollutants to the environment?	No	The Project doesn't result in the release of pollutants to the environment.	N/A
4.3 Environment, ecology and land use *4.3.5 Hazardous and Non-hazardous Waste*	Will the Project involve the manufacture, trade, release, and/ or use of hazardous and non-hazardous chemicals and/or materials?	No	The Project doesn't involve the manufacture, trade, release, and/ or use of hazardous and non-hazardous chemicals and/or materials.	N/A
4.3 Environment, ecology and land use *4.3.6 Pesticides & Fertilisers*	Will the Project involve the application of pesticides and/or fertilisers?	No	The Project doesn't involve the application of pesticides and/or fertilisers.	N/A
4.3 Environment, ecology and land use *4.3.7 Harvesting of Forests*	Will the Project involve the harvesting of forests?	No	The Project doesn't involve the harvesting of forests.	N/A

4.3 Environment, ecology and land use *4.3.8 Food*	Does the Project modify the quantity or nutritional quality of food available such as through crop regime alteration or export or economic incentives?	No	The Project doesn't modify the quantity or nutritional quality of food.	N/A
4.3 Environment, ecology and land use *4.3.9 Animal husbandry*	Will the Project involve animal husbandry?	No	The Project doesn't involve animal husbandry.	N/A
4.3 Environment, ecology and land use *4.3.10 High Conservation Value Areas and Critical Habitats*	Does the Project physically affect or alter largely intact or High Conservation Value (HCV) ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified?	No	The introduction and usage of efficient cookstoves will not physically affect or alter largely intact or HCV ecosystems, critical landscapes or key biodiversity areas or sites in the region.	N/A
4.3 Environment, ecology and land use *4.3.11 Endangered Species*	1. Are there any endangered species identified as potentially being present within the Project boundary (including those that may route through the area)?	No	The project does not have a negative impact on biodiversity and endangered species. No construction is foreseen, and no additional resource extraction will happen.	N/A
4.3 Environment, ecology and land use *4.3.11 Endangered Species*	2. Does the Project potentially impact other areas where endangered species may be present through transboundary affects?	No	No transboundary effects from the project can be expected since the focus is on the dissemination of the Wanrou efficient cook stoves on household level and does not influence any resources which could have transboundary effects.	N/A

SECTION E. Local stakeholder consultation

E.1. Solicitation of comments from stakeholders

>> (Describe how stakeholder consultation was conducted in accordance with GS4GG Stakeholder Procedure Requirements and Guidelines.)

A local consultation meeting has been conducted in Natitingou on Thursday, March 8th of 2018. Several means were used to invite people.

Individuals, who couldn't attend the local stakeholder consultation meeting, were able to comment the non-technical summary of the program via mail, email or telephone. The stakeholders who didn't reply to the invitation were reminded on the meeting via telephone.

E.2. Summary of comments received

>> (Provide a summary of key comments received during the consultation process.)

The table below provides an overview of the comments received during the consultation process.

Stakeholder comment	Was comment taken into account (Yes/ No)?	Explanation (Why? How?)
Chief Service Domaniale Affairs / Municipality of Natitingou, Mr KANRI Sévérin: What is the number of Wanrou cookstoves already built in the municipality of Natitingou?	Yes	432 Wanrou cookstoves were built in the municipality of Natitingou. Other Wanrou cookstoves will follow in the coming year.
Chief Service Domaniale Affairs / Municipality of Natitingou, Mr KANRI Sévérin: How much does one tonne of CO2 cost?	Yes	The price varies according to the axes of collaboration with the customer. For the ProWAD, the agreed price per tonne is 6 euros. In general, the cost varies between 3 and 10 euros depending on the type of project.
Chief Service Domaniale Affairs / Municipality of Natitingou, Mr KANRI Sévérin: Which measures have been put in place for better communication to reach all social strata?	Yes	The project is limited to a few villages per municipality. So, we do not communicate too much initially to all communities. Communicating more towards the Municipality which helps to choose the most relevant villages in terms of urgency of intervention because of the level of deforestation. But later, we hope to add more villages through the sales of carbon credits.
Chief Service Domaniale Affairs / Natitingou Town Hall, Mr KANRI Sévérin: Are there women of the municipality of Natitingou that benefited from the credit savings projects initiatives and what were the access conditions?	Yes	Yes, 12 Village Savings and Loan Associations have been set up in the municipality of Natitingou. The associations are set up under the same conditions as the other project activities. There are no special conditions. You must be an active member of the association.
Mr. N'Dah Paulin Alpha Omega NGO: Besides the promotion of the Wanrou efficient cookstoves, what are other activities that impact or contribute to achieving SD?	Yes	The promotion of agro-ecological practices such as cultural associations, the use of organic matter, improved fallow land, etc., which also sustainably preserve the land, therefore the environment and the establishment of Village Saving & Lending Associations which allows women to obtain loans for other income-generating activities, such as processing agricultural production or artisanal production (Purchase, storage and sale of cereals when market prices are favorable , production of local beer cashew processing, transformation of

		soy into cheese, etc ...)
Mr. N'Dah Paulin Alpha Omega NGO: Which mechanism will be put in place to reach other wood fuel users and a greater number of women in order to increase the impact?	Yes	A 30-month project could not fully address all issues related to natural resource management. The FSE project is therefore a partial contribution, which is reinforced by the promotion of agroforestry measures and other multisectoral actions. Its carbon project will expand cookstoves in other villages of targeted municipalities.
Mr. N'Dah Paulin Alpha Omega NGO: Where have the two past VPAs been implemented?	Yes	VPAs 1 and 2 are those of Wanrou efficient cookstove projects. The VPA-1 considers the 5 municipalities around the Pendjari Park: Matéri, Tanguiéta, Kérou, Cobly and in 2 villages of Boukoumbé. The project boundary of VPA-2 are the municipalities of Ouaké and Toucountouna. Both projects are located in Benin.
Mr. N'Dah Paulin Alpha Omega NGO: Is it possible to include another project in the PoA promoting another type of efficient cookstoves?	Yes	This is possible provided that the used technology in the projects is woodfuel efficient cookstove with a minimum efficiency of 10%.
Representative of the Chief Service Domaniales Affairs / Municipality of Copargo *Mr SANNI Bantchi:* Apart from NGOs, can other structures sell carbon credits?	Yes	Indeed, each project developer can sell carbon credits from his project. There is not really a restriction on the nature of organization as a project developer.
Representative of the Chief Service Domaniales Affairs / Municipality of Copargo *Mr SANNI Bantchi:* Apart from the Gold Standard, are there other customers and how is the sale?	Yes	The Gold Standard is a Foundation that validates and certifies carbon project, audits carbon project verifications and then issues carbon credits. It is the project promoters who sell the carbon credits. Customers are often companies with the vision to reduce their climate impact by themselves and who want to offset their residual emissions from a project support that generates carbon credits.
Monitrice Koutchatahongou Boukombé Mrs. Solange N'Dah : How can other women get access to Wanrou efficient cookstoves? How much costs the grid? Where can grids be purchased? How much will cost a cookstove built for an applicant?	Yes	Discussions are underway for budget adjustments of the FSE project to increase the number of grids to meet demand. The Local Monitoring Committee will study the issue. The standard cost of cookstoves couple is 1,500 FCFA. At this moment, the diffusion of the cookstove is done by affinity between the monitrices and the beneficiary, considering the incapacity of the households to pay the expenses. However, we give the possibility to the monitrices to agree a modest sum or products exchangeable against the service offered.
Monitrice Koutchatahongou Boukombé Mrs. Solange N'Dah : Is it possible to receive more grid for the construction of Wanrou cookstoves?	Yes	Yes
Monitrice Koutchatahongou Boukombé Mrs. Solange N'Dah : Savings being less than loan demand, how to find loan support from an institution, in order to cope with requests for funds from women for IGAs to develop	Yes	The FSE project has provided for the establishment of a guarantee fund that will be managed by a Micro Finance Institution. However, there are principles to be followed and checks before an association contracts a loan.

		Recommendation: Preserve the amount saved by the women in their fund so that this sum serves to perpetuate the savings and credits of each association.
Monitrice Palapangou / Copargo Mrs ASSO Safouratou: How does the rapid implementation of activities depend on women?	Yes	The project wants a better motivation and availability of women on all activities. Precisely because the decision to make a cookstove belongs to the women in the household, since they are in charge of the preparation of household meals. To do this, they must get the clay, make the briquettes and after, maintain the cookstoves.
Monitrice Palapangou / Copargo Mrs ASSO Safouratou: Who owns the construction equipment of the Wanrou cookstoves (molds, ...)?	Yes	To the beneficiary villages. There is an Monitrice committee who manages the equipment.
Technical Advisor Energiser Development / GIZ Mrs Berthilde Nyiransambimana: What is the cost of a Wanrou cookstove? and the conditions of access, and sustainability of this access?	Yes	The methodology is open and left free. The official cost of the cookstove is 1500, but households cannot always pay 1500. The cookstoves are spread according to the links and affinities between women. The grids are produced in local production units set up by previous projects established by EcoBenin.
Technical Advisor Energiser Development / GIZ Mrs Berthilde Nyiransambimana: What is the energy efficiency of the Wanrou cookstove?	Yes	The energy efficiency of Wanrou cookstove varies from 22 to 25% depending on the size. For CO2 emission reduction calculations, the minimum is taken as a reference for all Wanrou cookstove sizes by principle of conservatism.
Technical Advisor Energiser Development / GIZ Mrs Berthilde Nyiransambimana: Continued from ProWAD, a 10-year financing, who is the donor?	Yes	Proximus with the aim of offsetting their residual CO2 emissions supports the VPA-2 project over a period of ten years in exchange for carbon credits. Proximus is an investor and not a donor, so collaboration is based on results.
Technical Advisor Energiser Development / GIZ Mrs Berthilde Nyiransambimana: How is carbon certification done, by whom and how? How to evaluate the difference between traditional stoves and Wanrou in terms of tonnes of CO2 avoided	Yes	This is a process that starts with the stakeholder consultation meeting of the project. We go to the design of the project, to the submission of the project design document explaining the methodology used to calculate the carbon reduction and its monitoring. Other parameters such as estimated wood consumption based on average household size, utilization rate, etc., are taken into account in the calculation of carbon reductions and the number of households to cover with improved cookstoves. After the construction of the Wanrou efficient cookstoves, they are registered, and data collection are organized. One year after the start of the project, starts the phase of verification and monitoring of installed project stoves. After verification, the project developer can have the first credits.
Assistant to the Departmental Director of Energy DJESSOUHO Roscelyn: Apart from the efficient cookstoves, how are mostly agricultural activities implemented?	Yes	Agricultural activities are implemented by ADG, which has all the expertise in promoting agro-ecological practices. Several plots of agricultural experimentation were set up with the reference women and their group in each village.
Chief Service Mitigation of the effects of climate change, Representative of the Designated National Authority Mr AMINOU Raphiou:	Yes	Some steps were lead and Eco-Benin submitted a project without follow-up. **Recommendation:** pursue discussions to have a support from the Climate Technology Center and Network of the UNFCCC secretariat

Are there any talks with the National Climate Fund for the extension of Wanrou efficient cookstove project ?		
Director Jura-Africa observer Objective Mr Maliki AGNORO: In terms of agro-ecological practices there are several, how to value them for carbon?	Yes	It is possible to value agricultural projects in the form of carbon projects, but this requires a different methodology than the one used for efficient cookstoves.
Departmental Director of the Living and Sustainable Development Framework Mr. CHABI Sero Tamou: FNEC (National Fund for the Environment and Climate) has just launched calls for proposals. Is it possible that projects are drafted to apply to include in this PoA?	Yes	Yes
Traditional stove user Mrs N'KOUE Agnès: Why semi-urban villages are often not taken into account for the diffusion of Wanrou cookstoves?	Yes	Because people are generally more reluctant than rural people. But it is not excluded to work with urban or semi-urban populations if they wish.

E.3. Report on consideration of comments received

>> (Describe how the comments have been addressed by providing a clarification to the stakeholder or by altering the design of the project or by proposing to monitor any anticipated negative impacts etc.)

The clarifications to the stakeholders has been provided in the table above. All the questions raised by the stakeholders during the consultation have been discussed with the participants and project developers and answered. As no major negative comment has been suggested, the sustainable development indicators will not be revisited.

The stakeholder's comments did not lead to major changes in the project design; this is probably due to the fact that the project has been designed in partnership with the local communities from the beginning.

As part of the Stakeholder Feedback Round the LSC report along with the PDD will be sent to all participants and invitees by email or by letter. To enable the stakeholders a better understanding, the meeting minutes and the presentation showed during the local stakeholder consultation will be provided in French. Additionally, the Local Stakeholder Consultation report along with PDD will be made available at office of EcoBenin in Natitingou, Benin. It will be ensured that stakeholders have at least two months to provide their comments.

Appendix 1. Contact information of project participants

Organization name	EcoBenin
Registration number with relevant authority	N° 2005/0087/DEPT-ATL-LITT/SG/SAG-ASSOC
Street/P.O. Box	03 BP 1667
Building	
City	Cotonou
State/Region	Littoral
Postcode	
Country	Benin
Telephone	+229 95 79 52 24
Fax	
E-mail	ecobenin@yahoo.fr
Website	www.ecobenin.org
Contact person	Mr Gautier Koffi AMOUSSOU
Title	Founder
Salutation	Mr
Last name	AMOUSSOU
Middle name	
First name	Gautier Koffi
Department	
Mobile	+229 95 79 52 24
Direct fax	
Direct tel.	
Personal e-mail	agautier@ecobenin.org

Organization name	CO2logic NV/SA
Registration number with relevant authority	BE 0886147359
Street/P.O. Box	Rue d'Accolay 15-17
Building	
City	Brussels
State/Region	
Postcode	1000
Country	Belgium
Telephone	+32 497053136
Fax	
E-mail	info@co2logic.com
Website	www.co2logic.com
Contact person	Herman Noppen
Title	Project Director
Salutation	Mr.
Last name	Noppen
Middle name	

First name	Herman
Department	
Mobile	+32 497053136
Direct fax	
Direct tel.	
Personal e-mail	herman@co2logic.com

Appendix 2. Summary of post registration design changes