

**COMBINED PROJECT INFORMATION DOCUMENTS / INTEGRATED
SAFEGUARDS DATA SHEET (PID/ISDS)
APPRAISAL STAGE**

Report No.: PIDISDSA20166

Date Prepared/Updated: 05-Dec-2016

I. BASIC INFORMATION

A. Basic Project Data

Country:	Burkina Faso	Project ID:	P156413
		Parent Project ID (if any):	
Project Name:	BF - Support to the National Biodigester Program (P156413)		
Region:	AFRICA		
Estimated Appraisal Date:		Estimated Board Date:	16-Dec-2016
Practice Area (Lead):	Environment & Natural Resources	Lending Instrument:	
Borrower(s):	SNV		
Implementing Agency:	Ministry of Environment and Sustainable Development, Ministry of Animal and Fishery Resources		
Financing (in USD Million)			
	Financing Source		Amount
	Borrower		0.00
	Carbon Fund		6.06
	Total Project Cost		6.06
Environmental Category:	C - Not Required		
Appraisal Review Decision (from Decision Note):	This is a Track 1 project - not requiring a Decision Meeting		
Other Decision:	This is a Transferred Project for Safeguard management.		
Is this a Repeater project?	No		

B. Introduction and Context

Country Context

Burkina Faso is a landlocked country in the middle of the West African Sahel region, and is one

of the smallest economies in the world. The population of Burkina Faso is estimated at 17 million according to official forecasts from 2013.

Burkina Faso has achieved significant and sustained economic growth over the last decade, but continues to face many challenges. A period of social and political unrest began in 2011 when an army mutiny and a series of protest marches and strikes jeopardized the country's longstanding stability. These events culminated in October 2014 with unprecedented public protests across the country, ultimately forcing the president to step down. New elections took place on November 29, 2015 with the election of Roch Marc Christian Kabore as the new President.

Burkina Faso's GDP has grown at an average rate of six percent over the past 10 years. Burkina has been classified as a strong performer in recent Country Policy and Institutional Assessments, scoring 3.8 on a 6-point scale in both 2012 and 2013. Recent conflicts in neighboring countries have failed to derail growth in Burkina, and the real growth rate rose from five percent in 2011 to nine percent in 2012, nearing the target rate of 10 percent envisaged in the Strategy for Accelerated Growth and Sustainable Development (Stratégie pour la Croissance Accroître et le Développement Durable - SCADD), adopted in 2011. This was succeeded by the National Plan for Economic and Social Development (PNDES) for 2016-2020.

As a strong reformer, the country has traditionally received large aid inflows. However, despite progress and positive growth, the country has not had a significant impact on poverty reduction or development outcomes. With the country's per capita income of US\$430 (less than half the sub-Saharan average) and 40 percent of its population (7 million) below the poverty line overall, Burkina Faso remains one of the poorest countries in Africa and is ranked 183 out of 188 countries on the UN's Human Development Index for 2015.

Burkina Faso's economy relies heavily on the performance of the cotton sector (14 percent of exports in 2014) and gold mining (51 percent of exports in 2014). Agriculture is a fundamental source of livelihood for a large portion of the population, representing 40 percent of GDP, and remains highly dependent on variable weather patterns. Yet Burkina Faso has not been able to develop sufficient opportunities for its rural population. Almost eight out of 10 Burkinabe still live in rural areas but the vast majority of the poor (90%) are also concentrated in these areas. This lack of opportunities is due to limited productivity gains in the agricultural sector, weak diversification, and the slow emigration toward cities due to weak job prospects.

However, less than 18 percent of the land in Burkina is cultivable due to poor soil quality and recent droughts and desertification. In addition, the country has experienced deteriorating climatic conditions in recent years. The economy is susceptible to fluctuations in international markets and climate shocks. Burkina Faso is prone to chronic drought, flash floods, wind storms, and disease outbreaks. The country is extremely vulnerable to changes in rainfall, dust storms, and spikes in temperature as they directly affect food supplies and yields. Climate projections reveal a worrying increase in average temperatures of 0.8 °C by 2025 and 1.7 °C by 2050, and a high variability of rainfall.

Rural populations remain highly vulnerable as approximately 80 percent of employment is related to subsistence farming and 47.5 percent of the rural population lives below the poverty line as compared with 13.6 percent in urban areas. The high rural population growth rate - over 3 percent, also one of the highest in Africa - accelerates environmental degradation which

reinforces the cycle of poverty, especially since rural populations depend largely on the natural environment for their livelihoods

Sectoral and institutional Context

Energy availability

In 2011, Burkina Faso's total energy consumption was estimated at 3.2 million tons of oil equivalent (TOE) that is an average per capita consumption of 240 kg of oil equivalent. Energy supply in Burkina Faso comes in several sources: wood energy, oil, electricity and renewable energies (negligible, other than biomass). The energy balance is evolving slowly, with traditional energy decreasing slowly.

The primary form of energy in Burkina Faso is wood, which meets 85 percent of the household energy demand. Estimates for total wood fuel consumption range from 9.693 million m³ in 2013 by PROFOR to 11.42 million m³ in 2011 by FAO. The national household consumption is almost eight million cubic meters of wood, including five million tons of fuelwood and 0.2 million tons of charcoal. According to the same PROFOR report, the balance between potential sustainable supply and current demand confirms a national deficit.

The woodland areas are the main sources of supply to meet the demand of households and craft workers. Climate change is expected to decrease biomass available in the woodlands, thus leading to a significant impact on energy security. Various policies have been tried to address this growing issue, including the promotion of improved cookstoves and the promotion of gas cooking for households. In the area of biofuels as cooking energy, multiple initiatives have promoted the production of *Jatropha curcas*, but biofuel projects in Burkina Faso are still very diverse in terms of their objectives and their implementation mode (community/household/industrial level).

The promotion of improved cookstoves, which reduce the amount of fuel needed for cooking, is concentrated in urban areas while rural areas represent 70 percent of the national domestic demand. Political subsidies for LPG initiated by the State have made access to this source of energy easier for urban households. This policy, which is very costly for the government, has failed to replace wood biomass and is neither environmentally nor financially sustainable considering Burkina Faso's economy and the impact on climate change. As potential for hydro power is very limited and solar technology is mainly targeting other domestic energy use, it is expected that Burkina Faso will continue to rely on biomass for energy production (fuelwood, agriculture byproducts and animal wastes).

Biodigester technology

One of the available technologies for transforming biomass residues and dung into clean energy is the generation of biogas with a biodigester. The formation of biogas is a natural biological phenomenon resulting from the anaerobic bacterial fermentation of organic products (biomethanization).

The first grid-connected biogas plant in West Africa by Fasobiogaz SARL has successfully started electricity production Ouagadougou. The power plant has an installed capacity of 275kW and electricity is distributed by Sonabel, the country's electric utility. Waste streams from Brakina (a leading brewery) and a municipal slaughterhouse are used to feed the biodigester.

Household level biodigesters have a much longer history in Burkina Faso. Biogas facilities for experimental purposes were introduced to Burkina Faso already some 40 years ago in 1976. But the majority of these digesters were designed for collective use, and failed to take off at the time. These domestic biodigesters are usually fed with cow or pig dung. The biogas produced is a methane compound (representing 40 to 70 percent of the biogas) in addition to mainly carbon dioxide (30 to 60 percent of the biogas). Those Biodigesters are generally intended for households that have stabled/semi-stabled cattle and thus have dung available with minimum effort required from the customer. As a rule of thumb, this requires two heads of cattle in zero-grazing conditions, four heads of cattle when they get stabled for the night, with a dung production of at least 40 kg/day for a digester with the size 6 m³ and 20 kg of dung for the smallest 4 m³ size biodigester. Sufficient amounts of dung are available to 85% of the households during wet season and by 75.7% during dry season, according to the Africa Biogas Partnership Program (ABPP) evaluation report.

Agricultural benefits of the Biodigesters

In addition to diversifying the energy supply for cooking and lighting to rural and suburban populations, household biodigesters provide high value slurry that, when composted, improves agricultural productivity and resistance to climate variation.

The main source of environmental degradation in Burkina Faso has been related to agriculture practices, livestock and small scale mining activities. Unsustainable and intensive agriculture practices have led to environmental degradation which has affected soil productivity. About 170,000 hectares per year of natural vegetation are lost as a consequence of land degradation and deforestation.

The bioslurry contains phosphorus, potassium, zinc, iron, manganese and copper, the last of which has become a limiting factor in many soils. Thus, this by-product can be used to improve soil fertility, soil structure, and crop productivity, especially if composted. Application of bioslurry has been observed to increase yields on average by 25%. Bioslurry can increase cereal crop production by 10 to 30 percent compared to raw manure alone. Regarding increased yields, the most responsive crops to bioslurry and bioslurry compost are vegetables, root crops, potatoes, fruit trees, maize, and rice. Furthermore, bioslurry has the potential to act as a plague repellent. Seeds treated with bioslurry have also given better germination rates. More details on the multiple benefits of bioslurry are available in Annex 7.

According to a recent study, 93.1% of the households that have invested in a biodigester use biogas for cooking and 86.5% for lighting. Up to 80% of these make use of bioslurry and 64% take the additional effort of composting the bioslurry.

Therefore, widespread installation of household level biogas digesters has multiple benefits, in particular in the energy and agriculture sector. In addition, it can reduce greenhouse gas emissions by reducing deforestation and increasing carbon sequestration in the soil, both directly (increased carbon inputs in the fields) and indirectly (increased biomass due to improved growth).

Potential for a Biodigesters market in Burkina Faso

According to an initial 2007 scoping report by SNV experts, the potential market for biodigesters in Burkina Faso was assessed to theoretically be up to 880,000 units for agricultural households based on availability of water and ownership of three or more cows being stabled, which is important for dung collection. A more detailed study by GTZ put the total biodigester potential in Burkina Faso lower, at some 200,000 units. Another feasibility study in 2008 resulted in a potential of 50,000 biodigesters simply for three regions (Cascades, Hauts Bassins and South-West), which, if extrapolated to all 12 regions, would result also in a potential market of 120,000 to 200,000 biodigesters. This potential is reportedly increasing as overall cattle numbers are increasing and more cattle are being stabled than before.

Interest for biodigesters is high in Burkina Faso. In a recent survey, 86% of the households confirmed they would like to buy a biodigester. The maximum amount the households interested in biogas pronounced to be able and willing to contribute as capital investment was about CFA 200,000 (US\$340) in 2007, which, considering inflation, would equal about CFA 300,000 (in constant CFA), and is close to the sale-price of the 6 m³ biodigester (CFA 320,000).

However, before 2010, market development was facing multiple challenges that reduced the spread of the technology, ranging for a low customer awareness to little knowledge and historic data on market that reduce the appetite for investors and Micro Finance Institutions (MFIs). As potential customers had limited access to credit, despite the quick payback observed, affordability of the biodigesters had been seen as strong barrier for market transformation. On the supply side, the low number of trained masons was quickly identified as clear bottleneck.

The National Biogas Program

To support the expansion of the technology and lower the various barriers that were identified, the government launched the National Biodigester Program (PNB-BF).

PNB-BF is an initiative implemented by the Ministry of Animal Resources, in place since 2009 (Phase I) and currently in its Phase II (2013-2017). It is part of the larger Africa Biogas Partnership Program (ABPP), a partnership between Hivos (a Dutch NGO) and SNV (a Dutch development NGO) supporting national programs on domestic biogas in five African countries and funded by the Dutch government. The ABPP aims at constructing 100,000 biodigesters in Ethiopia, Kenya, Tanzania, Uganda, and Burkina Faso, providing about half a million people access to a sustainable source of energy by the year 2017.

ABPP was the first large scale biogas experience in Burkina Faso, achieving sustained results at scale by partnering with local enterprises, NGOs and the government. In 2014, the program received acknowledgement of the government selecting the program as one of the most important contributors to the development of the country. The ABPP also won the Community Development Programme of the Year Award at the 2016 East African Power Industry Awards.

The objective of PNB-BF: to support market transformation

PNB-BF aims to promote the expansion of household biodigesters in rural areas and supporting the emergence of a strong biodigester sector in Burkina Faso. The set-up of the national programs is based on the lessons learned from the domestic biodigester sector development in Asia since 1992 and various other initiatives in Africa, including previous experiences in Burkina Faso. It

has been designed around the following key principles:

First, based on lessons learnt from previous experiences that showed the difficulties related to collective ownership, PNB-BF is promoting individual ownership of biodigesters.

Second, the PNB-BF approach is to support the emergence of the private sector and the creation of a self-sustaining market. Thus, PNB-BF is not itself installing biodigesters but promotes the emergence of private actors (Biogas Construction Enterprises or BCEs); thus, PNB-BF limits its role to providing services to the customers and private entrepreneurs such as quality control, training, market analysis, coaching and securing orders.

PNB-BF has been very active on various aspects of market transformation:

On customer awareness and demand strengthening, PNB-BF has been promoting the biodigester technology for households through marketing, education, and subsidies; also, by guaranteeing the quality of the biodigesters installed in Burkina Faso to create trust and consumer satisfaction (which increases the spread of the technology);

On quality improvement, PNB-BF has been providing technical assistance and quality control and training of masons for the BCEs, as well as spurring accelerated growth of sales when BCEs take over the marketing and sales as well as installations. BCEs promoted by the program are responsible for services such as construction, after sales service, and user training. BCEs can be private entrepreneurs or companies. They are trained, contracted for the works, coordinated, and report to the PNB.

On the supply side, PNB is currently involved in raising enthusiasm among groups of masons through radio and newspaper advertisements to enter the market as BCEs to reduce the bottleneck in the supply side. The PNB-BF is continuously planning to include more BCEs into the program and will be advertising for more masons and co-ops to join the PNB-BF as BCEs. Currently, all regions have at least one BCE in existence and having more BCEs joining the program will lead to more competition and a quicker response to customer interest.

PNB-BF and the government are also supporting access to finance, first through a subsidy policy, which has received continuous support at high levels of government and has been extended at least until 2018. In addition PNB-BF has partnered with banking and Micro- Finance Institutions (MFIs), resulting in the launch of the first microfinance programs to support the biodigester sector ➤(with very promising results.

Since the creation of PNB-BF, the demand for biodigesters has grown steadily by around 500 biodigesters annually from 2009. The current rate is about 2,000 biodigesters installed per year and PNB-BF expects to quickly reach 4,000 biodigesters per year in the country ➤(which translates to 10 BCEs constructing 400 biodigesters per year, which is deemed feasible.

Methodology and approach of PNB-BF

PNB-BF contracts annually Implementation Partners (Partenaire de Mise en Oeuvre - PMOs) for the dissemination of technology in their coverage area. To date, the program has fifteen (15) PMOs covering the whole country. The PMOs will also tend to problems encountered by customers and fix problems (broken pipes, leaky valves/seals etc). PMOs also advise customers on how and when the digester needs to be emptied. ➤(Boutiques Biogaz ➤(have been created, where potential clients can get information and users spare-parts and other services.

PNB-BF has a staff of 13 professionals, including a Program Coordinator, a Private Sector Development Manager, a Promotion and Marketing officer, Agriculture and Biogas technicians and support staff. Quality control is handled by the PMOs around the country; they are responsible of the quality control and promotion, but paid from their own resources. The quality is further ensured by the quality control officers in the PMOs, who visit each biodigester between 2-4 times, at start of construction and at handing over. The team is supported by the SNV biogas advisor stationed in Ouagadougou.

Dedicated teams are specifically working on market emergence, support to MFIs and identification of the private partners' needs. They will continue benefiting from SNV Technical Assistance until 2020.

PNB-BF sustainability issue after 2018 and the gap of financing

PNB-BF has been designed to be carried out in three phases: 2009-2013 (Phase I), 2014-2017 (Phase II), and 2018-2025 (Phase III). However, the PNB-BF will only receive funding from ABPP until 2018 and ABPP funding will then phase out with the intent for the program to be financed by other means.

PNB-BF's role to support the emerging and fragile biodigester sector is seen as crucial. Recent events have proven that, despite the support provided for the past six years, BCEs are still very fragile and prone to move away from the sector. In addition, MFIs are requesting visibility and commitment from the government before investing more significantly. Thus, such a winding down of the program in 2018 would be very damaging for the biodigester sector and would curtail its chance to continue attracting both investors and entrepreneurs.

In addition, the biodigester subsidies provided by the government of Burkina Faso have been recently renewed and PNB-BF received high-level political support with a pledge of continued support for the national biogas program throughout Phase II with funds totaling more than EUR 4.5 million. As the Phase II subsidy was only recently pledged, no decision has yet been made about the subsidy beyond Phase II.

In order to increase the sustainability of the private sector involvement, PNB-BF has been looking for financing sources that would cover the period 2018-2025. SNV is keen to continue providing technical support, and has identified carbon finance as a solution to provide new funds to take-over the declining international aid.

In that context, SNV, as a partner of PNB-BF, has registered the program under the Clean Development Mechanism following the Kyoto Protocol framework. This arrangement will allow for the generation and issuance of Certified Emission Reductions (CERs) that can be sold internationally. However, considering the current lethargic situation of the carbon market, the potential for carbon transactions is very limited; both PNB-BF and SNV have been actively looking for a third party willing to purchase the carbon credits and thus provide sustainability to the program.

The Ci-Dev Program

The Carbon Initiative for Development (Ci-Dev) was announced in December 2011 to build

capacity and develop tools and methodologies to help the world's poorest countries access carbon finance, mainly in the area of energy access. It is set up to use performance-based payments based on reduced emissions to support projects that use clean and efficient technologies in low-income countries. SNV and PNB-BF reached out to Ci-Dev in response to a call for proposals launched by Ci-Dev in 2013-2014. The proposed program falls under a category of programs for which carbon finance can be used to supplement existing, but insufficient program funds to ensure long term viability of the program.

Ci-Dev has shown its interest to purchase CERs from PNB-BF in order to support the program's sustainability after 2018, and ultimately the consolidation of the biodigester sector in Burkina Faso. Thus Ci-Dev's interest in the program goes beyond the scope of CDM, which is set to be replaced by new instruments emerging from the Paris Agreement process.

C. Proposed Development Objective(s)

Development Objective(s)

The Project Development Objective is to increase use of biodigesters in rural households of Burkina Faso.

Key Results

In order to reach the Project Development objective, the project will focus on the following two outcomes:

Outcome 1: the project will allow PNB-BF to operate for the phase III as its operational costs are covered by carbon finance.

Outcome 2: Biodigester market is developing with the support of private investors and institutional partners.

D. Project Description

The objective of the program is to promote the use of biodigesters in Burkina Faso and provide long term financing to the National Biogas Program (PNB-BF) in order to allow the emerging Biodigester sector to consolidate and become self-sufficient.

A biodigester is a unit that converts animal manure into biogas for use in domestic cooking and other household applications. Biodigesters are known to provide multiple services for the rural household, mostly energy (biogas), high quality fertilizer for the fields, and improved indoor air quality (health benefits). At the global level, biodigesters reduce greenhouse gas emissions by substituting the use of non-renewable biomass and fossil fuels with biogas.

The PNB-BF program promotes the use of biodigesters by supporting groups of masons or Biogas Construction Enterprises (BCEs) engaged in biodigester construction and installation. This support is given in the form of quality control, biodigester design improvements and ensuring BCEs are prepared to service the suppressed demand for biodigesters.

The PNB-BF program has been designed to be carried out in three phases: 2009-2013 (Phase I), 2014-2017 (Phase II), and 2018-2025 (Phase III). Phases I and II are already covered by a grant from the Dutch government, but a financing gap was identified after 2018 as the international aid supporting PNB-BF will be phased out in 2018, as after 10 years of having received direct donor

funding, the program is expected to find other sources of funds.

This project will aim to provide conditional results-based funds via carbon finance to cover the projected costs related to the Phase III of the program - the proposed carbon finance operation is intended to take over the financing and cover the PNB-BF program costs from 2018 until the end of 2024, thus allowing the PNB-BF to operate for a longer period and support the creation of a vibrant biodigester sector until it reaches maturity. PNB-BF costs include the Ministry of Animal Resources & Fisheries (MRAH) expenditures to coordinate the program, the technical support from SNV (Netherlands Development Organization, an NGO) as well as the training of masons, the promotion of the technology, and quality control.

By raising customer awareness and willingness to invest in biodigester technology and by increasing the availability of trusted entrepreneurs and skilled workers, PNB-BF has created an enabling environment for entrepreneurs (BCEs) to reach customers, provide high quality biodigesters and invest in a new line of business. As a result, within 5 years, the number of annually installed biodigesters has been growing from a few hundred to almost 2,000 expected in 2016.

As the biodigester technology is more broadly known and skilled masons are now available, additional work has started on customers & access to financing in partnership with local microfinance institutions (MFIs). With the support of Carbon Finance and the extension of PNB-BF action until 2025, it is expected that MFI involvement and promotion of the MFI products will be consolidated.

Since SNV has already registered this operation as a Clean Development Mechanism (CDM) Program of Activities (PoA), the World Bank will provide it support using result-based payments to purchase the Certified Emission Reductions (CERs), i.e., carbon credits generated by this PoA.

This carbon operation benefits from strong support from the government. The overall political and governance situation of the country is now stable and is not expected to impact the project, though things can of course change in the future. Operating cash shortages, either because of the possible delayed CER payments or because of under delivery of CERs, have been identified as high risks during project preparation. However, SNV and the government have reached an agreement on pre-financing of PNB-BF to cover such cash shortages. Not reaching the target installation volumes is a risk, but a quick analysis shows that biodigesters installed and operational before 2019 contribute more than 70% of the expected CERs to be purchased under the ERPA. Therefore, the timing for the installation of the biodigester is more important than the actual number of biodigesters installed

Component Name

Comments (optional)

E. Project location and salient physical characteristics relevant to the safeguard analysis (if known)

Any household throughout Burkina Faso is eligible to participate in the program. The biodigesters will be made available for purchase to interested households. However, the technology requires access to water and a minimum of 2 to 3 animals (cow, pig) - the technology is harder to implement with large scale livestock or migrating herds. Thus, the program is expected to cover the whole country, but with less focus on the Northern and Eastern regions.

F. Environmental and Social Safeguards Specialists

Abdoul Wahabi Seini (GSU01)

Leandre Yameogo (GEN07)

II. Implementation

Institutional and Implementation Arrangements

1. INSTITUTIONAL ARRANGEMENTS

SNV is the Coordinating/Managing Entity for the PoA as per the rules of the CDM and thus is the owner of the CERs generated by the program before they are sold. The World Bank, as Trustee of the Carbon Initiative for Development (Ci-Dev), intends to purchase the CERs and thus provide the results-based financing necessary for the continuation of the PNB-BF.

Since its inception, funding for the PNB-BF program costs (quality management, private sector development support, deployment costs, monitoring & evaluation, marketing and customer satisfaction, training and education) has been provided by the Dutch Government and channeled through SNV and Hivos. The World Bank, as Trustee of the Ci-Dev would provide a continuation of funding for the Program operational cost. After transitioning from ODA to carbon finance, it is foreseen that carbon payments would go to a joint account of SNV and PNB-BF and funds would be drawn with the consent of both parties for program costs.

Under the new arrangement, SNV will continue providing technical assistance for the program as well as managing the CDM-PoA program - being paid out of carbon finance revenues. The current tripartite agreement between SNV, Hivos and the Ministry of Animal Resources concerning the use of funds for the PNB-BF program would be supplemented with a bipartite agreement between SNV and the Ministry.

CPA implementing entity

SNV is the Coordinating/Managing Entity of this PoA (CME). The CME established joint ventures with local partners to carry out (National Biodigester Programmes) which are supported by local public institutions (e.g. ministries) and NGOs. These Joint Ventures will implement CPAs and hence act as CPA implementers.

The CME is responsible for:

- (€ contracting 3rd party organizations to perform baseline studies and monitoring tasks;
- (€ hiring DOE to conduct validation and subsequent assessments for inclusion of CPAs as well as verifications;
- (€ communicating with the CDM Executive Board;
- (€ signing the ERPA(s) with CER buyers and for distributing CER revenues to CPA implementers.

Each authorized CPA implementer under this PoA will sign a standard contractual agreement with the CME (a sub-ERPA) to participate in the PoA as a CPA implementer, in which the CPA implementer will commit itself to the following requirements:

- (ç Those operating the CPA are aware of and have agreed that their activity is being subscribed to the PoA.
- (ç The CPA implementer shall not assign a new CPA that has been already registered either as a CDM project activity or as a CPA of another PoA.
- (ç Passing the rights to the CERs generated onto the CME
- (ç Monitor, keep the records and report to the CME

To date, the sole CPA implementer in this program is the PNB-BF under the auspices of the Ministry of Animal Resources.

Monitoring and Verification Arrangements

PNB-BF, as CPA implementer, will maintain records on end user contact information, construction data and other inventory information in a manner that enables the CME and DOE to verify that construction is indeed occurring and biodigesters are being used by households within the border of the host countries that results in a decrease in greenhouse gas emissions.

Data on the biodigesters are recorded in the field by BCEs and by CPA implementer's personnel and reported to the CPA implementer. CPA implementer keeps the records and enters the data to the CPA database. A database is established with assistance from the CME to ensure that data is collected correctly and organized in a useable fashion.

Mandatory data to be collected include:

- (ç Name of customer
- (ç Address/location
- (ç Phone number (if available)
- (ç Unique identification code of the biodigester
- (ç Biodigester model and size (defining the installed capacity)
- (ç Date of commissioning

The CPA implementer will report the data to CME as per conditions set in the contractual agreements. The CME will enter the data to the PoA database. In addition, the CME will order field monitoring surveys from external experts, as needed. The CME will store the PoA database, the CPA implementers' reports, and the results of surveys in a secure server for monitoring purposes and will keep the records until 2 years after the end of the crediting period or the last issuance of CER for the PoA, whichever occurs later.

2. IMPLEMENTATION PLAN

The program will be implemented via the PNB-BF with SNV providing the technical assistance and serving as the CME for managing the carbon program.

In Phase II, the sales and marketing role for the biodigesters has been transferred from the PMOs to the BCEs to encourage a more market-driven approach by BCEs to accelerate sales. BCEs make sales through organizing community and village meetings or by being contacted through a neighbor

of a farmer already invested in a biodigester.

Currently, there are six BCEs functioning at a satisfactory level of performance and a further four BCEs are in the process of applying to join the program. Currently there is only one BCE per region, and to encourage competition, more masons are being exposed to the potential business opportunities and encouraged to form BCEs through newspaper advertisements. To remain eligible as part of the program, according to new PNB-BF guidelines, BCEs should build no less than 100 biodigesters per year in order to remain competitive and committed to the program. This is being monitored by the PNB-BF, and underperforming BCEs will be excluded for the program. However, it is expected that a well-performing BCE should construct 400 biodigesters per annum. Output of BCEs currently in the program varies between 155-400 units per annum.

To ensure that BCEs only construct biodigesters that will be commissioned, PNB-BF guidelines have been updated to have BCEs only agree to construct them if the household has the required amount of dung (seven cartloads or close to two tons) available to start up the digester. This is critical, as if the biodigester is not commissioned soon after construction, it will be prone to breakages. The liquid bioslurry inside the digester regulates the temperature extremes inside the biodigester, as outside temperatures often reach over 40 degrees Celsius.

Access to finance for the potential customers has been identified as one of the main risk. Fortunately, a number of Micro-Finance Institutions are already providing loan products for households for biodigester investments, and the share of micro-credit to finance the cost of the biodigester is expected to increase. In 2016 there were 26 loans from one MFI. This is expected to grow to 120 in 2018. The slow uptake has been linked to inflexible repayment terms, with repayment expected in 6-12 months. One MFI (Caisse d'Épargne et de Crédit TORIABA) is planning to extend loan repayment conditions to 12-24 months and stagger repayments to link with harvest periods when the households have more disposable income available. The need for additional support in this regard has not been deemed as urgent – it will be monitored and assessed during implementation.

III. Safeguard Policies that might apply

Safeguard Policies	Triggered?	Explanation (Optional)
Environmental Assessment OP/BP 4.01	No	Minor negative environmental or social impacts are anticipated during project implementation - in particular safety around the digester (risk of gas intoxication or misused of the methane). The training materials produced for the household level will include safety and waste management information. The training on use of the technology will be conducted in a local language and French with an emphasis to women to ensure their full participation in the project. Those safeguard mitigation actions are already in place and implemented by the PNB-BF.
Natural Habitats OP/BP 4.04	No	
Forests OP/BP 4.36	No	
Pest Management OP 4.09	No	

Physical Cultural Resources OP/BP 4.11	No	
Indigenous Peoples OP/BP 4.10	No	
Involuntary Resettlement OP/ BP 4.12	No	
Safety of Dams OP/BP 4.37	No	
Projects on International Waterways OP/BP 7.50	No	
Projects in Disputed Areas OP/ BP 7.60	No	

IV. Key Safeguard Policy Issues and Their Management

A. Summary of Key Safeguard Issues

<p>1. Describe any safeguard issues and impacts associated with the proposed project. Identify and describe any potential large scale, significant and/or irreversible impacts:</p> <p>This Program is likely to have minimal or no adverse environmental impacts, based on the nature of planned interventions.</p> <p>When utilizing the biogas, careful attention should be paid to the safe usage of the biogas. Similarly, regular checks should be made on the digesters and piping for cracks to avoid leakage of biogas into ambient air. A risk of asphyxia cannot be ruled out if anyone tending to the biodigester enters the dome without protective equipment. However, there should not be a reason for the user to enter the dome, nor is it possible to enter it by accident when the biodigester is in use. SNV incorporates internal protocols for safe installation and the BCEs provide the customers with environmental, health and safety information together with other technical documentation.</p> <p>Effluent from digesters with toilets connected often has the stigma of being a possible source of diseases through pathogen germs. According to the GTZ study (2007), university research results of projects in Burundi (1987-1990) and Tanzania (1989 – 1991) have proven that no pathogen germs could be identified from the liquid overflow from digesters with retention times over 20 days and short cut preventions by higher viscosity or inside separation walls. In case sewage waste water is treated and the retention time in the digester is below 20 days, the overflowing water should receive a mandatory post treatment in the compost pit or flow through a gravel bed and or root treatment system, which provides another retention time. However, the use of sewage waste water for biodigesters in the context of this project in rural areas is unlikely.</p>
<p>2. Describe any potential indirect and/or long term impacts due to anticipated future activities in the project area:</p> <p>Non Applicable</p>
<p>3. Describe any project alternatives (if relevant) considered to help avoid or minimize adverse impacts.</p> <p>Non Applicable</p>
<p>4. Describe measures taken by the borrower to address safeguard policy issues. Provide an assessment of borrower capacity to plan and implement the measures described.</p>

PNB already incorporates internal protocols for safe installation; in addition, the BCEs provide the customers with environmental, health and safety information together with other technical documentation.
5. Identify the key stakeholders and describe the mechanisms for consultation and disclosure on safeguard policies, with an emphasis on potentially affected people.
The key stakeholders are the BCE that install the Biodigesters and can explain to the client the risks related to gas and asphyxia. PNB is providing the training to BCE and has elaborated a guide for the customer.

B. Disclosure Requirements

If the project triggers the Pest Management and/or Physical Cultural Resources policies, the respective issues are to be addressed and disclosed as part of the Environmental Assessment/Audit/or EMP.
If in-country disclosure of any of the above documents is not expected, please explain why:

C. Compliance Monitoring Indicators at the Corporate Level

The World Bank Policy on Disclosure of Information	
Have relevant safeguard policies documents been sent to the World Bank's Infoshop?	Yes [<input type="checkbox"/>] No [<input type="checkbox"/>] NA [<input checked="" type="checkbox"/>]
Have relevant documents been disclosed in-country in a public place in a form and language that are understandable and accessible to project-affected groups and local NGOs?	Yes [<input type="checkbox"/>] No [<input type="checkbox"/>] NA [<input checked="" type="checkbox"/>]
All Safeguard Policies	
Have satisfactory calendar, budget and clear institutional responsibilities been prepared for the implementation of measures related to safeguard policies?	Yes [<input type="checkbox"/>] No [<input type="checkbox"/>] NA [<input checked="" type="checkbox"/>]
Have costs related to safeguard policy measures been included in the project cost?	Yes [<input type="checkbox"/>] No [<input type="checkbox"/>] NA [<input checked="" type="checkbox"/>]
Does the Monitoring and Evaluation system of the project include the monitoring of safeguard impacts and measures related to safeguard policies?	Yes [<input type="checkbox"/>] No [<input type="checkbox"/>] NA [<input checked="" type="checkbox"/>]
Have satisfactory implementation arrangements been agreed with the borrower and the same been adequately reflected in the project legal documents?	Yes [<input type="checkbox"/>] No [<input type="checkbox"/>] NA [<input checked="" type="checkbox"/>]

V. Contact point

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VII. Approval

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