

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

Report No.: PIDISDSC15299

Date Prepared/Updated: 27-Sep-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		7.00
	Total Project Cost		7.00
Environmental Category:	C - Not Required		
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 with 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's GDP has grown at an average rate of 6 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 5 percent in 2011 to 9 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.

However, this positive growth has not had a significant impact on poverty reduction or development outcomes. With a country's per capita income of US\$430 (less than half the sub-Saharan average) and 40 percent of its population below the poverty line overall, Burkina Faso remains one of the poorest countries in Africa and is ranked 181 out of 187 countries in the UN's Human Development Index for 2013.

Burkina Faso's economy relies heavily on the performance of the cotton sector (23 percent of exports in 2009) and gold mining (42 percent of exports in 2009 and 53 percent in 2010). 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.

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 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 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 from 89% to 82% while hydrocarbon share raised from 10% to 16%.

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. The national household consumption is almost 8 million cubic meters of wood, including 5 million tons of fuelwood and 0.2 million tons of charcoal. The primary form of energy in Burkina Faso is wood, which meets 85 percent of the household energy demand. According to a recent PROFOR

report, the balance between potential sustainable supply and current demand confirms a national deficit. The current potential sustainable wood energy production covers 95 percent of current domestic consumption. According to the UNFCCC the default fraction of non-renewable biomass is 90%. The gap between sustainable supply and demand totals 526,812 m³ per year and is expected to rise in the light of proceeding deforestation and growing demand. The woodland areas are the main sources of supply to meet the demand of households and craft workers. Climate change has a significant impact on food security and energy security and is expected to decrease the biomass available in the woodlands.

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, initiatives exist to promote production from *Jatropha curcas*; biofuels projects in Burkina Faso are still very diverse in terms of their objectives and their implementation mode (community, peasant, industrial).

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 gas prices 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 (lighting vs cooking), it is expected that Burkina Faso will continue to rely on biomass for energy production (fuelwood, agriculture byproducts and animal waste).

One of the available technologies for producing energy from biomass is the generation of biogas with biodigesters. The formation of biogas is a natural biological phenomenon resulting from the anaerobic bacterial fermentation of organic products (bio-methanization). In the case of domestic biogas (household level), it is produced in a biodigester 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). In Burkina Faso, biodigesters diversify the energy supply by making available to rural and peri-urban population biogas for cooking and lighting on the one hand, and high value slurry/compost to improve agricultural productivity and better resistance to climate variation, on the other hand.

Biodigesters are generally intended for households that have stabled/semi-stabled cattle and thus have dung available with minimum effort required from the customer. 20kg of dung is the minimum daily amount of dung required to feed the biodigester. This would be produced by two semi-stabled cattle and/or 5 adult pigs, assuming that all dung is collected when they are in the stable. However, it has been observed, that the biogas generation amounts from installed biodigesters imply a de facto average availability of 50kg of dung. This can be based on a number of factors, including a larger herd of cattle generally owned by households or a more stabled cattle raising setup.

Biogas facilities for experimental purposes were introduced in Burkina Faso in 1976, but only some twenty facilities had been installed from 1978 to 1985. The majority of these digesters are of a discontinued type and were designed for collective use. In the mid-1980s, the Government launched the "Programme Populaire de Développement (1984-1987)", involving directly each

Burkina Faso in the development of the country. One of the objectives of this program was to supply all 46 provincial health centers with a biogas plant, to use the gas mainly for the sterilization of medical instruments. During this period, several biogas installations were realized. Other projects were initiated by a variety of international organizations between 1980 and 1990. Additionally, community-oriented biogas plants were installed in military barracks or schools from 1980 to 2000. Judging from reports, early biogas programs were short lived experimental projects, which suffered from technical problems (leakage, cracking), organizational shortcomings (poor site selection, improper dimensioning of installations to demand and lack of access to dung or water supply) and lack of ownership (installations were externally financed) leading to neglected maintenance.

The Africa Biogas Partnership Program (ABPP) is a partnership between Hivos (a Dutch NGO) and SNV (a Dutch development NGO) in supporting national programs on domestic biogas in five African countries. The program aims at constructing 100,000 biogas plants 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.

Under the ABPP, a National Biogas Program (PNB-BF) for Burkina Faso has been in place since 2009 (Phase I) under the Ministry of Animal Resources and is currently in its Phase II (2013-2017). It specifically aims at promoting the expansion of household biogas plants in rural areas based on the lessons learned from previous decades. The set-up of the national programs is based on the experiences with domestic biogas sector development in Asia since 1992. Based on these experiences, PNB is promoting individual ownership of biogas plants as collective ownership may have led to neglect in the past while individual ownership and direct benefit of biogas plants will encourage households to look after their investments.

PNB-BF implements multiple types of actions: promoting the biogas technology for households through marketing, education, and subsidies; guaranteeing the quality of the biogas plants installed in Burkina Faso to create trust and consumer satisfaction (which increases the spread of the technology); technical assistance and control and training of masons to set-up Biogas Construction Enterprises (BCEs) spurring accelerated growth of sales when BCEs take over for marketing and sales as well as installations. PNB-BF is carrying out regular household user surveys and checking on the number of operational/non-operational biogas plants, providing retrofits in case some units have stopped working.

PNB-BF contracts annually Implementation Partners (PMOs) for the dissemination of technology in their coverage area. To date, the program has fourteen (14) PMOs covering the whole country. The PMOs will control construction quality, conduct user training and also monitor that BCEs adequately 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.

According to a report by SNV experts, the potential market for biogas plants in Burkina Faso has been assessed to theoretically be up to 880,000 units for agricultural households based on availability of water and ownership of three or more cows (Domestic biogas in Africa -- a first

assessment of the potential, SNV, 2007). Yet, other studies (e.g. Feasibility Study for a National Domestic Biogas Programme in Burkina Faso, GIZ 2007) put the total biodigester potential in Burkina Faso lower, at some 200,000 units. This potential is reportedly increasing as more cattle are being stabled than before. To-date, 5,460 biodigesters have been installed under PNB-BF since 2010, with over 2,000 installed in 2013 alone. The annual rate of installation was only 240 units in 2009. The target of the proposed carbon finance program is 4,500 annually, starting in 2016, with about 50,000 biodigesters in place in the country by 2025. Through carbon finance, the PNB-BF will be able to operate longer and have the time to support the creation of the biodigester sector until it reaches maturity. Also, the PNB will afford offering an extended warranty to customers, which should lead to improved customer satisfaction in the longer run compared to historical attempts to spread biogas technology.

Since its inception, funding for the PNB-BF program costs (technical assistance, training, marketing, education) has been provided by the Dutch Government and channeled through SNV and Hivos. The biodigester subsidies are provided by the government of Burkina Faso, which recently renewed its high-level political support to the program and has pledged continued support for the national biogas program throughout Phase II with funds totaling more than EUR 4.5 million. The continuation of the subsidy in Phase III is not yet certain.

Ci-Dev (the Carbon Initiative for Development) was launched 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 payments based on reduced emissions to support projects that use clean and efficient technologies in low-income countries. The World Bank is Trustee of Ci-Dev, which is housed in the Climate and Carbon Finance Unit (GCCCCF).

Biodigesters reduce the pressure on dwindling forest resources and thus emission reductions (Certified Emission Reductions, CERs, or "carbon credits") can be claimed annually for each biodigester in operation based on the predetermined avoidance of fuel wood quantity per household (3.46 tons) resulting in an annual emission reduction of 3.62 tons of CO₂ equivalent per biodigester. SNV has completed the registration of the Program of Activities (PoA - ref 9977) with the UNFCCC on June 24, 2014, of which the proposed Burkina Faso program is a part of. The methodology used to calculate the emission reductions in the PoA is AMS-I.E. ver. 5 - Switch from non-renewable biomass for thermal applications by the user. In simple terms, this requires knowing the number of operational biodigesters per annum multiplied by a default emission factor for non-renewable biomass use avoided.

Relationship to CAS/CPS/CPF

The ultimate beneficiaries are rural households and therein particularly women and children. They are benefitting because of reduced workload due to the reduced need to collect firewood and a cleaner living environment due to reduced indoor air pollution. The effluent from the biodigesters is an excellent fertilizer which helps to improve the food security situation of the households.

The project is aligned with the Burkina Faso Country Partnership Strategy (CPS - FY13-16), which indicates that the WBG "will support sector- and gender-specific measures, [?] to ensure food security?, "work with the government [?] to mitigate climate change" and promote "SME linkages with local communities, and better management and use of natural resources". It is in line with CPS's main objectives, which includes reducing economic, social, and environmental vulnerabilities as one of its three main pillars.

The proposed project will directly contribute to climate change mitigation, an objective which is well-aligned with the CPS and the government strategy for Accelerated Growth and Sustainable Development (SCADD). It will also support greater retained incomes at household level from both the use or potential sale of slurry generated by the biodigesters instead of purchasing inorganic fertilizer and the increased agricultural production. Improved agricultural productivity via the use of slurry in domestic gardens and fields directly benefits local communities. Those impacts will subsequently improve food security, resilience to climate change as well as agriculture productivity and improved NRM management.

Considering its multiple benefits, the PNB is supporting Axes 1 and 3 of the National Program for the Rural Sector (?Programme National pour le Secteur Rural?, PNSR), which are (1) to support food security and independence through an increase of sustainable farming products and (2) the sustainable management of natural resources. As such, this project is supported by both the Ministry of Animal Resources (which steers the PNB) and the Ministry of Environment (which oversees the Forest Investment Program).

As a whole, the project would target a number of development challenges, including providing access to clean, renewable off-grid energy; combating deforestation and providing climate change mitigation benefits; improving livelihoods; empowerment of women and children and improved health from reduced indoor smoke exposure. These are all supporting the World Bank Group's twin goals of eradicating extreme poverty and boosting shared prosperity.

C. Proposed Development Objective(s)

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The project would aim at spreading the use of biodigesters in rural households in Burkina Faso to achieve GHG reductions.

Key Results

The key PDO level indicators are listed below:

1. Cumulative GHG reductions achieved;
2. Number of biodigesters installed;
3. Direct project beneficiaries (number) of which female (percentage).

D. Concept Description

The purpose of this project is to support Burkina Faso's efforts in mitigating climate change through the promotion of the biodigester technology to consumers, which, in addition, provides several benefits for the households, including better access to clean energy and slurry to improve soil fertility.

As the international aid provided by the Dutch government to support PNB will be phased out by beginning of 2018, the proposed carbon finance operation is intended to take over the financing and cover the PNB program costs from 2018 until end of 2025. PNB costs include the Ministry of Animal Resources expenditure to coordinate the program, the technical support from SNV as well as the training of masons, the promotion of the technology and quality control.

Component 1: Support to the PNB-BF through carbon finance

SNV has registered a Clean Development Mechanism (CDM) Program of Activities (PoA) called "West African Biodigester Program of Activities" promoting fixed-dome household biogas digesters in rural West Africa. This PoA is the vehicle for generating the Certified Emission Reductions (CERs), i.e. "carbon credits". The proposed project thus delivers results-based financing generated from each individual household's biogas units. Based on annual monitoring of biogas units installed and in operation, CERs are generated following verification and certification by an independent third-party auditor (Designated Operational Entity, DOE).

SNV is the Coordinating/Managing Entity for the PoA as per the rules of the CDM and thus is the owner of the CERs. 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.

Component 2: Facilitating the scaling up of biodigester use

The Government of Burkina Faso currently provides a subsidy of roughly US\$300 per biodigester to households as part of the total household investment requirement of US\$780. The GoBF recently made a commitment to extend this subsidy at least until the end of 2017. However, even with this subsidy, not all interested households are able to afford a biodigester due to lack of savings and lack of access to capital or loans. Therefore, household access to finance limitations have been identified as one of the major risks that could undermine the success of the operation. The activities proposed under this component are seen as enabling activities to mitigate this risk of not reaching the expected amount of Biodigesters installed. Therefore, the component will be implemented mostly through preparation grants from various sources, including a first "Readiness Grant" from Ci-Dev .

Since 2013, only a few local Micro Finance Institutions (MFIs) have actually included loans for biodigester construction as part of their offer, and even that is on a very small scale. MFIs operating in Burkina Faso have generally expressed their lack of familiarity with the biogas sector, lack of capital to lend for biodigesters and perceived high risk profile of the investment. Commercial banks have also cited the lack of data and experience to explain their absence from this sector, arguing that proof of a clear return on investment would help them gain confidence in this new business.

To unlock this potential for additional biodigester demand, the proposed project will include an access to finance component that would seek to create a conducive environment for MFIs to provide small loans to households for this purpose. The availability of a credit, combined with the decent return on the investment a biodigester owner can expect, would give an additional boost to the demand notably among the smaller farmers. Indeed, in the regions where biodigesters were installed, the PNB-BF has observed that after an initial period of some 6-8 months, where the market becomes aware of the product and its profitability, an increase in the demand can be seen of some 50% compared to regions with a similar climate, biodigester history and economy.

Various solutions have been pre-identified but more detailed assessments and the creation of a financing instrument to support the Micro-Finance institutions are needed. For example, MFIs already have environmental credit lines that could be expanded to cover biodigesters. Commercial banks have also already indicated that a partial risk guarantee would allow them to propose more agreeable terms to capitalize or lend to MFIs, as it would reduce their risk in the new market.

However, further analyses are needed to identify precisely what are the causes for the MFIs? current weak support to the sector, what are the potential bottlenecks (lack of capital; interest rates higher than the farmers? willingness to pay; lack of information on the actual profitability) and which tool(s) could facilitate the engagement of the banking sector (MFIs and commercial banks) to support the emerging biodigester sector.

Thus, the proposed project will finance studies to understand the current causes for MFIs? low engagement and identify with them the best instrument to increase the financing offer to households (and improve the terms and conditions). If the project can benefit from complementary financing, it will work with the MFIs and commercial banks to establish the most relevant instrument (guarantee fund, line of credit, or grant to MFIs).

II. SAFEGUARDS

A. 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.

B. Borrower's Institutional Capacity for Safeguard Policies

PNB-BF team includes dedicated staff (Supervisors and Biogas technicians) to check the quality of the installation and avoid any risk of gas leakage or plant collapse. Those technicians assist the masons for the delivery and can check the safety at that time. In addition, masons explain the basic safety rules when the biodigester is initiated. Finally, the user's manual already includes the safety instructions.

C. Environmental and Social Safeguards Specialists on the Team

Abdoul Wahabi Seini (GSU01)

Leandre Yameogo (GEN07)

D. 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	

E. Safeguard Preparation Plan

1. Tentative target date for preparing the PAD Stage ISDS

30-Jun-2016

2. Time frame for launching and completing the safeguard-related studies that may be needed. The specific studies and their timing should be specified in the PAD-stage ISDS.

Considering the low level of risks, no further studies are expected.

III. Contact point

World Bank

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V. Approval

Task Team Leader(s):	Name: Loic Jean Charles Braune, Juha Antti Kalevi Seppala	
<i>Approved By</i>		
Safeguards Advisor:	Name: Maman-Sani Issa (SA)	Date: 01-Jun-2016
Practice Manager/ Manager:	Name: Benoit Bosquet (PMGR)	Date: 01-Jun-2016
Country Director:	Name: Pierre Frank Laporte (CD)	Date: 29-Sep-2016

1 Reminder: The Bank's Disclosure Policy requires that safeguard-related documents be disclosed before appraisal (i) at the InfoShop and (ii) in country, at publicly accessible locations and in a form and language that are accessible to potentially affected persons.