

State of Climate Change Adaptation and Mitigation Efforts for Agriculture in Burkina Faso

National Survey

prepared for the CGIAR Research Program on Climate Change, Agriculture
and Food Security (CCAFS), 2011

by Hamissou Samari

A. Overview

Burkina Faso epitomizes the increasing concerns over food security in the Sahel region. Over the past three decades, the country has gone through a series of natural calamities marked by droughts and flooding, which negatively impacted crop production and greatly increased concerns over food supply. This vulnerability of the country to climate change has led successive governments and policymakers to seek solutions through various initiatives. As a country whose economy and sociopolitical stability strongly depend on the primary sector – Burkina Faso is a regional powerhouse for cotton production and exports – Burkina Faso has indeed been proactive in tackling environment-related issues within its borders and across the region. These ongoing efforts are far from solving the entire problem, however. Serious material and financial limitations as well as technical and technological handicaps are still preventing the country from fully achieving its set goals.

(a) Burkina Faso as a leading force in environmental issues

Burkina Faso has been credited with being the first African nation to have adopted a national program of adaptation to climate change through a support to smallholder farmers. This has served as a model for other countries such as Senegal, Tunisia and recently Benin. The country's restless efforts on environmental issues have made it a major regional voice by

hosting the headquarters of CILSS¹, a nine-member organization with primary mission of combating desertification and drought in the Sahel. Burkina Faso also hosts the Executive Secretariat of CORESA (The West African Food Security Council), an ad hoc organization of 17 countries (30% of Africa's population), which works on addressing the many environmental and economic challenges for food security. Along with other neighboring countries, Burkina Faso is an active party to regional and international conventions – including Kyoto Protocol – on climate change, biodiversity preservation and environmental protection. Burkina Faso is also part of the Great Green Wall initiative meant to shield the region from potential Sahara desert invasion. On the agricultural front, as a major producer of cotton – and given the concerns over growing deforestation and soil overexploitation – Burkina Faso has been authorized by ECOWAS and UEMOA's bio-security regulatory bodies to experiment and adopt GMOs for the cotton sector.

In terms of South-South cooperation, Burkina Faso has signed multiple conventions and partnerships, including with the Brazilian EMBRAPA² (along with Benin, Chad, Ghana and Mali) through the Brazilian Technical Cooperation Agency. The state-owned EMBRAPA mainly involves a transfer of agricultural technology from the South American country to cotton producing countries of West Africa, and as a major producer and exporter of cotton, Burkina Faso has greatly benefited from it.

(b) Using local knowledge for mitigation and adaptation needs

¹ Permanent Inter-State Committee on Drought in the Sahel/*comité Permanent Inter-Etats de Lutte contre la Sécheresse au Sahel (CILSS)* has nine member-states: Bissau Guinea, Burkina Faso, Cape Verde, Chad, The Gambia, The Islamic Republic of Mauritania, Mali, Niger and Senegal

² *Empresa Brasileira de Pesquisa Agropecuária*

One of the unique characters of the country has been the incorporation of endogenous methods of mitigation and adaptation into formal national strategies. Thus, techniques like *Zai*³, Stone Lines⁴, *Demie-Lune*⁵, fallow, and many other have been formalized, vulgarized and promoted by policymakers, research centers and NGOs. Another important feature of national policies on climate and environment is the interconnection and interaction amongst various agencies from different departments pursuing a common purpose. For instance, national meteorology (affiliated to the Ministry of Transportations) is just as much involved in agro-forestry as CONEDD is, and INERA⁶ (which is under the Ministry of Research) is heavily involved in mitigation and adaptation projects for the agriculture sector. Also, forestation has been for long a national priority. Looking ahead, the country has serious ambitions towards green economy through solar energy and carbon market.

In terms of human factor and institutional arrangements, CONEDD, for example, is a conglomerate of focal points, communication coordinator, biodiversity coordinator, carbon project coordinator, environmental policy chair and many more. Similar structures appear in other agencies such as national meteorology, whereas the department of applied meteorology is quasi-entirely dedicated to agro-meteorology, to address the needs of farming communities for adaptation to changing climate. The downside of such institutional fragmentation and multifaceted contributions to mitigation and adaptation efforts is problem of communication. Indeed, this highly diverse community of capable individuals and services sometimes faces a problem of administrative coordination as they belong to (and report to)

³ *Zai* is a local three-step technique of organic fertilization: (1) dig small holes, which will be filled with water (from rain); (2) then add organic products (mostly animal excrements); (3) and finally put seeds of millet

⁴ Cordon Pierreux consists of making small barriers of small stones on hilly soils in order to prevent erosion from taking away nutritive substances and using these areas as seed planting spots.

⁵ *Demie-Lune* is a local technique used to fight soil erosion and degradation. It consists of making U-shaped holes (especially on hilly soils) facing water direction. These holes will retain rich matters (and keep them from running away with erosion) when it rains. These holes will later serve as seed planting spots.

⁶ Institut National de l'Environnement et des Recherches Agricoles [Institute of Environment and Agricultural Research] – details are below, in latter paragraphs.

different government departments. This has a consequence of delaying multi-institutional projects or assignments such as preparation, submission and execution of national communications, NAPAS and NAMAS.

(c) Challenges ahead

In Burkina Faso, climate-related risks are multiple, but can be summarized into two main categories: the country's very location as a Sahel country on the one hand, and human-led threats to the environment on the other hand. Out of these two challenges, the latter appears more dynamic and aggressive. According to many analysts involved in the 2007 NAPAs preparation, the most visible signs of human impact on the environment are ever growing deforestation and forest destruction with heavy consequences such as droughts, soil degradation and threats to biodiversity. Worse, smallholder farmers – deemed most dependent on stable climate and biodiversity – are among the biggest threats. This leads to a vicious circle whereas farmers and cattle herders need to exploit (and overexploit) lands and forests for their own (or their cattle's) nutritional needs, which leads to soil degradation and deforestation. Growing soil degradation and deforestation decreases agricultural productivity and threatens food security for families, which forces farmers to rely on both chemical fertilizers and land expansion to improve harvests. With limited financial and material means, larger farms become hard to manage. As a result, productions do not necessarily augment; food security remains in peril, and the environment is put under multiple threats of chemical dangers, increased soil degradation and desertification.

The 2007 NAPA warned that, with business as usual, darker days are ahead for the country and its most vulnerable citizens. Indeed, the negative trend of changing climate is likely to hold up for long into the future, and the most exposed communities to these effects

will be smallholder farmers and cattle owners. Specialists, therefore, urge policymakers to come up with balanced solutions of addressing farmers' needs while preserving the ecosystem. Such solutions are yet to be found due partly to lack of political will.

More than farmers' inability to self-discipline themselves and protect the environment, it is policymakers' incapability or unwillingness to strictly enforce their own laws and policies on environment and ecosystem safeguards that are worrisome. Indeed, Burkina Faso's acclaimed and acknowledged leadership on climate issues does not fully translate into day-to-day practices and activities. This insufficiency on the government's part often forces NGOs (such as NATURAMA) and development agencies and partners to step in and help convey the message through campaigns and workshops. For example, experts in environment and agriculture as well as research centers such as INERA have been tasked with helping find BPAs (*Bonnes Pratiques Agricoles* [*Best Practices for Agriculture*]) which include a host of recommendations and guidelines to farmers for increased productivity and production as well as on methods of mitigation and adaptation⁷. But unfortunately these documents, along with their contents, have remained unknown to most farmers. These useful documents, in fact, have remained in the hands of their enactors and technical contributors, and their contents are not properly disseminated to farmers. Among other reasons, analysts have blamed this on the fact that most farmers ignore up to the very basic regulatory policies enacted by the government in the sector, for policymakers do not make sufficient effort to educate and spread their messages. The direct consequence is

⁷ BPAs as recommended are: (1) use of improved seed/plant varieties; (2) rational use of chemical fertilizers; (3) production and use of organic fertilizers (of good quality); (3) GIPD (pest management); (4) proper preparation of soils prior to planting; (5) practice and adoption of techniques of water and soil conservation and agro-forestry; (6) adoption and use of mechanical agriculture (animal traction); (7) appropriate use of motorization; (8) transformation and conservation of productions prior to sale; (9) use of research-created varieties.

perpetuation of old-fashion agricultural practices with devastating effects on the environment.

Another limitation to mitigation/adaptation efforts is the pace at which deforestation and degradation occur, compared to the pace at which solutions are found. INERA, for instance, has been working on breeding the most resisting and environment-friendly varieties, but due to the lengthy process preceding each creation, these efforts seem always outpaced by farmers' harms to soils and forests. This greatly undermines the impact of the findings.

Moreover, as a developing country with limited resources, Burkina Faso heavily depends on foreign support and partners to achieve its projects and programs. This sometimes requires lengthy negotiations for project validation, which explains delays in some important duties such as elaboration and submission of NAPAs and National Communications.

Moving forwards, along with the upcoming submission and publication of the second national communication, there is one thing to keep an eye on: the ambitious multiple-project program of carbon (still under preparation). It has the particularity of bringing together different actors and stakeholders. This multimillion program will indeed involve the private sector (interested in investing in the solar energy, especially), international partners and donors, NGOs (local and foreign), as well as the State (mainly for coordination and regulation purposes). The result of this new orientation could be a test of this new policy orientation, and would possibly help shape future agriculture- and environment-related policies

B. Profile

1. National government

1.1 Organization and structure of actors

1.1.1 National government coordinating body

The main coordinating body for environment-related programs is SP/CONEDD (*Secretariat Permanent du Conseil National pour l'Environnement et le Développement Durable [National Council for Environment and Sustainable Development]*). Its role is cross-institutional and transversal as it is in charge of climate and development matters for all departments and government agencies. It hosts the focal point for climate change, has supervised the elaboration of the two Communications thus far – one in 2001 and the latest awaiting final approval. Indeed, during the designing of the national communications, CONEDD is responsible for reaching out to all other agencies and research institutes (such as the National Direction of Meteorology, INERA) and gathering all the necessary information for final synthesis and submission to the UNFCCC. It also coordinates the elaboration and application of the NAPAs.

CONEDD was established in October 2002 to replace the then seven-year old CONAGESE (*Conseil National pour la Gestion de l'Environnement [National Council for Environmental Management]*), which was tasked with harmonizing and coordinating all environment and development related matters of the country. CONEDD's mission is twofold and can be summarized into the following:

- Ensure coherence of various environment and development programs initiated by the public and private sectors, as well as those undertaken by international partners.
- Ensure centralization and dissemination of useful information on environmental issues as well as on those dealing with sustainable development.

CONEDD has two organs/committees:

- The Conference, which has a consultative role; that is, it analyzes and examines various reports on environment and on SP/CONEDD's activities, listens to interesting communications, and makes recommendations to policymakers – the government
- The Permanent Secretariat primarily tasked with executing and implementing all the missions and programs of CONEDD.

As far as human composition goes, the agency is male-dominated – for the agency's SP has no say on his staff's selection, which is decided by his hierarchical superiors (the ministry of environment). Also as a government agency with highly administrative duties, farmers and unions are not represented. Nonetheless they do participate in project execution (such as NAPA projects) on the community level.

The agency relies on public funding for personnel and office management, as well as on international donors for project executions. As a coordinating body, it is just as strong as each agency it coordinates, and the more limited these agencies are financially the weaker CONEDD gets. In fact, one of the weaknesses resides in the limited material resources and technical capabilities of some critical agencies such as the national meteorology system [*Direction Nationale de la Météorologie*].

1.1.2 Major government units

Several research institutes and centers are involved in addressing the mounting concerns over the impact of climate change on agriculture and food security:

INERA (*Institut National de Recherches Agricoles* [*National Institute for Agricultural Research*]) is a research center whose main purposes revolve around finding the most suitable practices, methods and seeds to the changing climate and ecological landscape. It has

fivesub-centers referred to as CRREA (*Centres Régionaux de Recherches Environnementales et Agricoles* [Regional Centers for Research on Environment and Agriculture]) spread across five regions (Sahel, West, North-West, Center, East), and one training-focused center known as CREAM (*Centre de Recherche Environnementale, Agricole et de Formation*). INERA relies on these various sub-centers to conduct its experiments and create newer adaptation and mitigation methods. In average one new variety of rice and/or cereal is created by INERA every 2-3 years. INERA has four main functional departments: department of natural resource management (which includes remote sensing and a laboratory for soil, waters and plants), department of animal production, department of vegetal production and department of forestry. Parts of the research focus on problems over rainfall and desertification, overexploitation of lands due to population increase and fall in productivity. INERA also brings technical support to endogenous knowledge and adaptation practices by helping formalize these methods into actual projects worthy of funding. Some of these indigenous initiatives include: *Zai*, *Demi-lune* (half-moon), *Tapis herbacé* (grass layer), *Cordons pierreux* (stone lines) and many more. As of today, there is an ongoing Germany-sponsored project on capacity building and training meant to help INERA researchers and personnel better address current climate change challenges. Two other projects – both sponsored and funded by the World Bank – account for among the most important over the past thirty years: Agricultural Research Project, Phase I (between 1985 and 1990) and National Program for Development of the Agricultural Service, Phase II (between 1990 and 2004). In terms of funding, the main financial sources are: government budget, loans (from the World Bank), international conventions and subsidies, own revenues (from contracts and services). Other important sponsors and partner-programs include USAID, Canada's IDRC (International Development Research Centre), INTSORMIL (Sorghum, Millet and Other Grains

Collaborative Research Support Program), IFAD (International Fund for Agricultural Development), the Australian government, Germany and the European Union.

CNSF (*Centre National de Semences Forestières*): it has vocation of making own revenue through the sale of their findings to local NGOs and international clients (mainly from Latin American region (i.e. Brazil) due to similarities of the climate with the Sahel region). CNSF, as a public agency, also receives funding from the government's budget. In terms of research on adaptation and mitigation, CNSF has been working on finding better and more appropriate species (like *Acacia Senegalensis*, which, in addition to its drought-resistibility virtues, produces gum for sale). Current initiatives include reforestation in the most drought-affected regions of the north. To that end, the first steps have involved fostering grass revival (which could include temporary suspension of any agriculture-related activities) in these regions as grass resurgence is believed to be an important step toward reforestation. Tree planting will follow later. Another important finding by the center is the selection of four plants whose protection and vulgarization is deemed crucial for the region. These plants are: Baobab (*Adansonia digitata*), Néré (*Parkia biglobosa*), Tamarind (*Tamarindus indica*) and Local Jujub (*Ziziphus mauritania*). They are seen as the four most important plants for Burkina Faso.

SP/CONEDD is responsible of finalizing and submitting national communications to the UNFCCC. As a purely administrative institution, CONEDD relies on the technical expertise of various other institutions – such as national meteorology, INERA, etc. – to collect useful information, data and recommendations, which are then synthesized into one coherent document. As public institutions, and given the scarcity of financial and material resources, these structures experience some handicaps in their respective missions. Thus, in terms of needs, other than material and financial limitations, there are serious capacity

building and training issues. For instance, national meteorology suffers some serious expert scarcity – which includes a relatively limited number of qualified engineers in the climate field – as there is no national or regional training institution for meteorology engineers and researchers – except the one in Niamey, Niger (Aghynet). Access to this training institution is not easy, and only individuals who can afford it – or can secure scholarship or third-party funding – are admitted, as there is no government assistance.

Another capacity building concern is on information dissemination both top-down and bottom-up. One of the biggest concerns raised by Ms. Judith Bienvenue Sanfo (Engineer in Agro-meteorology at the national meteorology) is how little use farmers make of their publications and forecasts – national meteorology publishes a free agro-meteorological bulletin every ten days as well as detailed maps on seasons' breakdown every year. Reasons of such dismissals by farmers, in good part, include limitations of skills and lead time of the forecasters, which affect forecasts' accuracy and reliability. To help remedy this issue, the agency has organized a series of workshops and fairs designed to better educate farmers on the usefulness of their data for better productivity. This seems to have made little to no impact on farmers' attitude. Thus the institution has needs in technical support and better training methods. Another technical/material support need raised by Ms. Sanfo revolves around the spread of useful information through public media – as of now, the agency's access to the national TV is not free. Thus, assistance in getting free access to media outlets will help a great deal with their efforts to help farmers.

From bottom-up there are crucial technical needs on data collection as most materials at the agency's disposal are either non-adapted or out of order.

1.2 National policy

1.2.1. NAMAs, NAPAs

NAMAs do not exist. Nonetheless, negotiations and preparations are underway, and the final outcome cannot be predetermined until negotiations are complete. Among other things, negotiations concern modalities of elaboration and application.

NAPA, on the other hand, does exist. Burkina Faso completed its first NAPA in 2007. SP/CONEDD is the coordinating structure⁸, and various other institutions, civil society, international partners and stakeholders are deeply involved. In terms of funding and material support, GEF (through UNDP), Japan and Denmark have been the major contributors. NAPA in Burkina Faso is a twelve-project document including:

- Capacity strengthening and food crisis management;
- Securing cereal production in the northern and center-northern regions;
- Management of the Oursi pond
- Forage production and buildup for livestock in the Sahelian region of the country (including hay, agricultural residuals, etc.);
- Development of natural trainings in the eastern region;
- Sand removal in the Mouhoum, Nakanbé and Comoé rivers;
- Development of irrigation-based agriculture in the Gourma, Namentenga, Tapoa and Sanementenga regions;
- Securing and developing livestock zones in the Sahelian and eastern regions;

⁸ Mr. Blaise Sawadogo (bbobodo@yahoo.fr) is responsible of NAPAs within CONEDD.

- Development of agricultural production for use for the CES/DRS techniques (zai, anti-erosion initiatives, etc.) in the southern and eastern regions;
- Management and care of the fauna in the Mouhoun zone;
- Protection of waters against pollution;
- Promotion of improved cook stoves, water-heaters, solar dryers...

Financial and technical limitations have, however, been the biggest handicaps in the execution of these various projects and programs and explain the overreliance on international donors.

1.2.2 National Communications to UNFCCC

The most recent communication was submitted in December 2001, and the second one (2010) is currently in its final stage of submission – the writing part is complete, but needs final administrative validation prior to submission. According to this first communication, the transportation represents the biggest CO₂ emitter (about 325 Gg), followed by the industry sector (275 Gg), then the energy sector (240 Gg).

1.2.3.2 If **Low carbon development plan or equivalent exists:**

As a net consumer of pollution, and as per the Kyoto Protocol, Burkina Faso is not required to adopt any carbon reduction strategy. Nonetheless, the SP/CONEDD has recently undertaken numerous projects aimed at gaining from a green economy. The projects are still in the stage of elaboration and include:

- Recuperation of methane from waters
- Project on Biomass Energy
- Project *Foyers Améliorés* [Improved Cook Stoves]

- Project on Solar Energy (run by private sector)
- Project on Energy Efficiency
- Two project on tree planting
- Investment in Forestry (program): through the policy on clean development

As shown in the list above, not much of the carbon program actually involves the agricultural sector. *Table 1* gives a summary of the main CDM projects

1.2.3.3 For agricultural development plan

According to UNDP's estimates, agriculture and livestock represent 85% of the national economy (including 70% of the exports) and employ more than 80 percent of the active population. Yet 30% of the arable lands are under increasing threat of degradation – *de facto* one of the most alarming concerns for the national economy and social stability. Mr. Léopold Somé⁹ prepared the latest report (April 2010) on vulnerability and adaptation of the agricultural and livestock sector to climate change as part of the National Communication to be submitted – *Vulnérabilité/Adaptation des Principaux Secteurs Economiques aux Changements Climatiques: Agriculture et Elevage*. The document presents a number of forecasts and projections on the states of livestock and agriculture over the next 15-40 years, as well as strategies to adapt to the changing climate and increasing soil degradation and desertification (the attached pdf file “Vulnerability” provide details).

1.2.3.4 Climate change policies

Meteorological forecasts and research centers' projections are the main tools used by both policymakers and various agents to make informed decisions. According to an official at the

⁹ Mr. Léopold Somé is an Engineer at INERA: bsomel@yahoo.fr

applied meteorology department, national meteorology, for instance, analyzes climate variations across previous 10-15 years and uses this as a basis of predicting changes in the years to come. These findings are made available to various ministries including ministries of agriculture and livestock for them to make appropriate decisions. Also on a regular basis, the agency makes predictions on numbers of raining months, lengths of droughts in each geographical region, and shares insights and advice with farmers on when to plant crops and what types of seeds are more appropriate to given seasons. This enables the various stakeholders to be prepared and make more informed decisions ahead of time.

1.2.4 Financing

Public institutions: operate on government budget, partners' support and donors' assistance. They are legally not allowed to take out loan or spend more than their budgetary authorizations. The SP/CONEDD official that I spoke to about the financing issue did not identify any additional sources of funding, other than their budgetary allocations and the donor community. Possible loans could only exist in the central government's national budget, which makes it hard to single out any specific department's share. However, private initiatives have emerged in the areas of tree planting, solar energy and many other clean energy programs – these initiatives are self-financed through microloans or out-of-pocket expenditures.

NGOs: they have their own funding sources.

Private sector: they could take out loans to finance environment-related programs, expecting to make enough profits to pay back.

1.2.5 National issues or debates

No major protests or serious debates on the policies as of now.

1.2.5.1 Priorities

Due to limited land fertility in many parts of the country, and given the high dependence of populations on agriculture, the government has no strict policy against the use of chemical fertilizers, though efforts are being made to promote and vulgarize the use of organic fertilizers. Also the introduction of the GMOs in the cotton sector contributes to reducing the use of chemical fertilizers as well as other pesticides. In terms of opportunities in the sector, there are numerous incentives by the government and SP/CONEDD in investing in agriculture and environmental protection:

- Green economy under elaboration: it could be a major source of revenue and could combine both public investment and private sector participation.
- Investment in agro-forestry: the CNSF provides technical expertise and advice to private investors interested in investing in tree planting and forestation industries.
- Solar energy: under consideration as part of carbon reduction projects is entirely dedicated to the private investment and entrepreneurship.
- The cotton sector, which represents an important portion of national economy, is already receiving important private sector involvement.

As a result of these new opportunities, there has been a great push for agricultural intensification over the past decade, with more private investments in larger scale exploitations. Agriculture is becoming a major money-making business and more and more producers are increasing their investment, which leads to a slow disappearance of small area productions (*Table 2*).

1.2.5.2 Linkages between adaptation and mitigation and potential for coordination

Several local, national and regional projects and policies combine mitigation and adaptation. From local indigenous methods to the more elaborate ones produced by research centers, lines between adaptation measures and mitigation methods may appear quite blurry and sometimes non-existing – except in a few cases such as carbon policies and solar energy, which seem to have little to no adaptation purpose.

One of the takeaways from my conversation with an official of INERA is the efforts of this institution to always provide farmers with not only the most adapted varieties (such as short-cycle varieties of sorghum and millet for the northern region of the country in order to match with the relatively short rainy seasons), but also those proven more resilient vis-à-vis potential external predators or rainfall shortages. Also by being the first (and so far the only) country in the region to adopt GMOs in the cotton sector, Burkina Faso has found a way not only to adapt to rainfall shortages and reduce producers' dependence on chemical fertilizers, but also to produce a more resilient (and yet more productive) variety of cotton¹⁰.

Moreover, the INERA-recommended fallowing technique (for both adaptation and mitigation purposes) is meant not only to help soils rejuvenate, but also to enable trees to grow and reduce carbon pollution. Furthermore, as revealed in the 2001 national

¹⁰ Biotech, Facts & Trends: Burkina Faso – “Yield increase plus labor and insecticide savings (2 rather than 6 sprays) resulted in a gain of US\$65.57 per hectare compared with conventional cotton; this translated to a 206% increase in cotton income. For the average cotton farm with 3.16 hectares of cotton, Bollgard®II increased farm income by US\$207.20; INRA surveys indicated that the average cotton farm income of US\$657.11 increased by 31% with the use of Bollgard®II. The main benefit of Bollgard®II derives from the increase in yield whereas the reduction of production costs associated with four less insecticide sprays is offset by the higher cost of the seed;” available from: http://www.isaaa.org/resources/publications/biotech_country_facts_and_trends/download/Facts%20and%20Trends%20-%20Burkina%20Faso.pdf

communication, the energy sector has the lion's share in terms of contribution to CO₂ in Burkina Faso. Thus adapting to newer and less polluting means of production – through mechanical and animal draft methods, as recommended by CPF – by integrating livestock into agriculture, helps decrease the use of carbon-polluting machines and thus the level of carbon.

Finally, Burkina Faso is the only African country chosen by FAO for the experimentation of the Cashew tree project. This plant, imported in Africa from Brazil thanks to its proven potentials of adaptation to tough soils and difficult climate conditions, has quickly been embraced by mitigation experts and policymakers. This has made it one of the favorite choices for reforestation in a number of African countries since the 1970s. In Burkina Faso, the first Cashew tree plantings occurred around 1960 by CTFT (*Centre Technique Forestier Tropical [Technical Centre for Tropical Forestry]*). Between 1981 and 1991, CCCE (*Caisse Centrale de la Cooperation Economique [Central Bank for Economic Cooperation]*) – which became AFD – and CSPPA (*Caisse de Stabilisation des Prix des Productions Agricoles [Bank of Stabilization of Agricultural Productions]*) had stepped in to finance the promotion of this plant through the *Projet Anacarde*. The local value chain that its intensification and transformation – most of the cashew kernels are handmade or processed in small units – have created, has been acknowledged by FAO's experts as having valuable carbon reduction potentials: “some projections for the five upcoming years were assumed regarding the carbon balance of the value chain.”¹¹ Thus, ultimately Cashew trees serve more than just adaptation purposes; it also helps contain carbon emission.

¹¹ United Nations Food and Agriculture Organization. *Cashew nuts mitigation potential in Burkina Faso* <<http://www.fao.org/tc/exact/ex-act-applications/on-value-chains/cashew-in-burkina-faso/en/>>

1.2.5.3 REDD

According to the Focal Point for climate change, Burkina Faso has not yet formulated a REDD policy per se. Instead, the country has formulated its PIF¹² (*Programme d'Investissement Forestier*), which has just been approved during an international session in South Africa – Burkina Faso is one of six countries in the world to have initiated this World Bank-funded program. This is a first step toward a full formulation and adoption of REDD.

1.2.5.4 Capacity strengthening

As mentioned earlier, one of the major challenges faced by the various institutions is the scarcity of world-class educational and training institutions and the dearth of government support. Several aspiring engineers choose to go abroad (especially in Niger) on their own to perfect their skills and become more competitive (and potentially more marketable to foreign companies – which causes some brain drain). Thus, capacity strengthening is more required and needed in technical and research-heavy areas, such as meteorology and INERA.

1.2.5.5 Research priorities on agricultural adaptation and mitigation

As a country whose economy heavily depends on agriculture and livestock, these two sectors are among the top priorities in any adaptation and mitigation initiatives. Better techniques for improved productivity (including genetically modified organisms in the cotton sector) are being introduced to adapt to the changing climate and limit land overuse and overexploitation seen as a major contributor to soil degradation and environmental deterioration. Other programs like Saaga (proven to have a positive impact on rainfall) have

¹² A full version of the PIF document can be downloaded from:
http://www.climateinvestmentfunds.org/cif/sites/climateinvestmentfunds.org/files/FIP_Scoping%20mission%20-%20report_121410_french.pdf

been implemented by the government, according to leaders of the Biodiversity department of CONEDD.

The Saaga program was indeed launched in 1998 to address a decades-long trend of decreasing rainfalls. Also known as operation “provoked rainfalls [*pluies provoquées*],” the Saaga program was a Morocco-inspired and Morocco-sponsored initiative aiming at an “artificial modification” of the weather to increase rainfalls. A snapshot of the preliminary results of the program is available in the *Table 5*. Objectives include:

- Increasing water retentions for nutrition as well as for hydroelectric use (specifically in the Ouagadougou, Loumbila and Bagré dams)
- Improve rainfall capacities in the areas with chronically deficient agricultural production such as the northern and central regions
- Ensure knowledge transfer in terms of artificial modification of the weather to benefit the population

2 Other major actors

2.1 Non-governmental institutions

Numerous non-governmental institutions participate in various initiatives and projects with adaptation and mitigation ends. Here are some of the most notable:

- NATURAMA is an NGO whose primary mission is to help preserve and protect biodiversity and the ecosystem in the country. It raises awareness on the threats to the environment and natural resources, trains local populations on methods of preservation. As a result of these initiatives, NATURAMA helps training beneficiaries set up local committees and associations for follow-up.

- CPF (*Confédération Paysanne du Faso*) is a farmers' union with assigned mission of helping farmers in their efforts to improve productivity and profits, as well as bargaining and negotiating with policymakers on behalf of the members. The confederation has created among its members five different committees [organizations] which are tasked with undertaking numerous major projects, including: (1) protection and restoration of exploited lands, (2) integration of livestock into agriculture sector, (3) agro forestry (reforestation of exploited lands). Future projects will include (1) introduction of water retention techniques to attenuate the effects of rain scarcity, (2) support of family-run exploitations. Decentralization is another goal CPF is working on achieving in a near future – leaders intend to reach out to more farmers across the country and become a nationwide entity. On the policy level, CPF serves as a lobbying tool for Faso farmers. It has been working with the government and lawmakers on a wide array of measures dealing with agriculture and livestock.
- YANTA is an association of women from villages surrounding the Dindéresso forest. Their objectives include on the one hand protecting the forest from potential illegal exploitations, and on the other hand making money out of it.

2.2 Private Sector

The private sector has greatly contributed to the realization of several projects, and is expected to be even more present with the new green economy initiatives. In the cotton industry, MOSANTO is already exploiting and investing in the first and only GMO plants in the region. In the forestry industry, CNSF has been working with private developers – who

plant trees for commercial use – and giving them guidance on the selection of seeds, on better methods of tree planting according to species and areas.

2.3 Agricultural input providers

In the forestry sector, the main national entity in charge of creating and testing seed varieties is CNSF. The center works with international partners and clients to adapt new species to local lands and climate requirements. In the agriculture sector, INERA plays a similar role. Both are public research institutes, and as such, their engineers and researchers have been certified by their respective administration to conduct tests and introduce varieties that they (and their partners) deem appropriate for given areas and seasons.

On the private sector, MONSANTO has dominated the cotton sector since the introduction of the Bt cotton. GMO seeds are engineered and provided to cotton farmers by this U.S.-based corporation. For crops, farmers use traditional methods of seed storage and conservation for future use.

2.4 Influential individuals

Contact information available in *Table 3*

2.5 Major donors

World Bank → FIP + various research projects/programs in agriculture

FEM/UNDP → various projects on mitigation and adaptation

African Development Bank → FIP (2010)

African Development Fund → FIP (2010)

IFAD → numerous projects

Canada/IDRC (International Development Research Center) → projects on rural development researches on adaptation

Germany → capacity building at INERA

USAID → various projects and researches on adaptation-mitigation and development

Denmark → various

Luxemburg → biodiversity and natural resource preservation

Japan → in various sectors, including the \$2,901,250 funding for a capacity building program on climate change and food security¹³

¹³ BURKINA FASO: “Strengthening capacity to address climate change adaptation concerns in the preparation and implementation of development plans, programmes and projects,” available at: <http://www.undp-aap.org/sites/undp-aap.org/files/Burkina%20Faso.pdf>

3 Project and program inventory: Climate change and agriculture

3.1 Overview

Like in most other countries in the region, one of the most crucial issues is land degradation due to locally high rural population densities and subsequent overexploitation. Smallholder farmers have limited resources and cannot afford to purchase additional lands, and are forced to use same surfaces over and over, which leads to their degradation. This explains in part why many IFAD-led initiatives and projects are oriented towards farmers' empowerment and poverty alleviation, as this could, on the long run, can have a positive impact on mitigation efforts. On the brighter side, local farmers are quite aware of the seriousness of the issue, and have developed over years their own techniques of adaptation and mitigation, which many NGOs and development agencies now build on. This gives farmers a sense of ownership of the projects and increases their interest in participating. Any future initiative (i.e. carbon projects) should deeply look into the same path.

As part of the clean development initiatives, carbon projects are nowadays drawing a great deal of attention from across sectors. Mr. Isidore Zongo, who is the main contact person on this upcoming multi-project initiative, expects it to cost millions of dollars. It will range from improved cook stoves to biomass, to solar energy, and involve actors from the public and private sectors, as well as traditional development partners. As a project that is still on the making, it seems too early to predict the level of enthusiasm that it could generate. As a project that involves long-term commitments, one could not fully forecast its potential shortcomings, nor could one accurately predict the extent of its impact on the environment.

3.2 Tables with basic information: (Table 4)

Appendix

Table 1: CDM Projects

Summary of the Clean Development Projects – ongoing or under construction					
PBE ¹⁴	clean development mechanism/mitigation	All sectors	≈XOF 1billion	Long-term project	TBD ¹⁵
PFA ¹⁶	mitigation/clean development	All sectors	TBD	No deadline	TBD
PES ¹⁷	mitigation/clean development	All sectors	TBD ¹⁸	No deadline	Private investors
PIE ¹⁹	mitigation/clean development initiatives	All sectors	Unknown	No deadline	TBD ²⁰
PBR ²¹	mitigation/clean development	All sectors	≈USD 30-50 mil	No deadline	TBD ²²

¹⁴ Project Biomass Energy

¹⁵ Under elaboration

¹⁶ Projet Foyers Améliorés

¹⁷ Projet Energie Solaire [Project on Solar Energy]

¹⁸ Under elaboration

¹⁹ Projet Efficacité Energetique [Project on Energy Efficiency]

²⁰ Under elaboration

²¹ Projet Boisement & Reboisement

²² Under construction

Table 2: Expansion in Agricultural Sector

Area	2002	2009
Less than 10 ha	27%	15%
From 10 to 19 ha	28%	28%
From 20 to 49 ha	22%	34%
From 50 to 99 ha	9%	11%
From 100 to 200 ha	5%	8%
Undetermined	8%	4%

Source: Fourth National Report of Burkina Faso on Biological Diversity, 2010.

Table 3: Contact Information

Name	Organization	Title/Responsibility	Contact
Dr. Augustin Kaboré	SP/CONEDD	FP UNFCCC	+226.50.31.24.64 +226.70.12.44.85 kabaugustino@yahoo.fr
Blaise Sawadogo	SP/CONEDD	Coordinator NAPAs/ Communications	+226.50331088 bbobodo@yahoo.fr
Eric Ouédraogo	Confédération Paysanne du Faso	Project Coordinator	+226.70.70.20.22
Pélèga Athanase Kinda	SP/CONEDD+U NDP	Training in Climate Change Issues	+226.50.31.31.66/ kinda_athanase@yahoo.fr
Dr. Hamidou Traoré	INERA+GRN/SP +SISTC	Scientist/ Researcher/ Project Coordinator	+226.70.25.80.60/ +226.50.34.02.70 hamitraore8@yahoo.com
Léopold Somé	INERA	Researcher/member of NAPAs team	bsomel@yahoo.fr
Isidore Zongo	SP/CONEDD	DNA/Carbon Initiatives	+226.70.23.97.83 isidorez@yahoo.com
Judith Bienvenue Sanfo	National Meteorology	Agrometeorology/Chair of Applied Meteorology	+226.50.35.60.32/39 sanfo_b@yahoo.com
Kouka Ouédraogo	DPE ²³ /CONED D	Environmental policies	+226.70.12.99.06 fpfnsokouka@yahoo.fr
Ernest Ouédraogo	National Meteorology	Engineer/researcher	ernest_ok@yahoo.com
Soumaila Bancé	CONEDD (Biodiversity)	Technical Coordinator	bancebo@yahoo.fr
Ignace Diendéré	DPPS/CNSF ²⁴	Chair/Research Engineer	+226.70.78.84.71 +226.78.83.78.64 diendereignace@yahoo.fr

²³ Direction of Environmental Policies

²⁴ Centre National de Semences Forestières

Table 4: Projects and Programs on Mitigation and Adaptation

Project/ Program	Goal/objective	Beneficiaries	Cost	Duration	Funding/ partnerships
SCACC ²⁵	adaptation/ mitigation/ food security/capacity ²⁶	Public institutions and personnel	\$2,901,250	3 years	Japan
PIPE ²⁷	evaluate environmental contribution to economy	Farmers	TBD ²⁸	TBD	TBD
PIGEPE ²⁹	adaptation/ capacity building/ food security	17,000 households	USD 19.1 mil	2008-2014	IFAD/OPEC
PASPRU ³⁰	eradicate poverty through private entrepreneurship	12,000 households	USD 52.2 mil	TBD	IFAD
ClimProspect	adaptation/food security ³¹	West Africa/ Burkina Faso	TBD	Long-term	IAVS ³²
PROFIL ³³	poverty reduction/food security/ capacity building	20,000 households	USD 16.9 mil	2007-2013	IFAD
PDRD ³⁴	adaptation/ poverty reduction/capacity	30,000 households	USD 38.3 mil	2005-2013	BOAD ³⁵ / IFAD

²⁵ BURKINA FASO: Strengthening capacity to address climate change adaptation concerns in the preparation and implementation of development plans, programmes and projects

²⁶ Food security for the vulnerable group and the sustainable natural resource management is improved; Systematic prevention against natural/climate disaster strengthened

²⁷ Initiative Poverty-Environment

²⁸ Project still under elaboration

²⁹ Projet d'irrigation et de gestion de l'eau à petite échelle [Small Scale Irrigation and Management Project]

³⁰ Programme d'Appui et de Promotion du Secteur Privé en Milieu Rural [Program for Support and Promotion of the Private Sector in Rural Areas]

³¹ Assure food Security by providing the West African region with a viable framework of intervention for adaptation to climate change

³² International Association for Vegetation Science

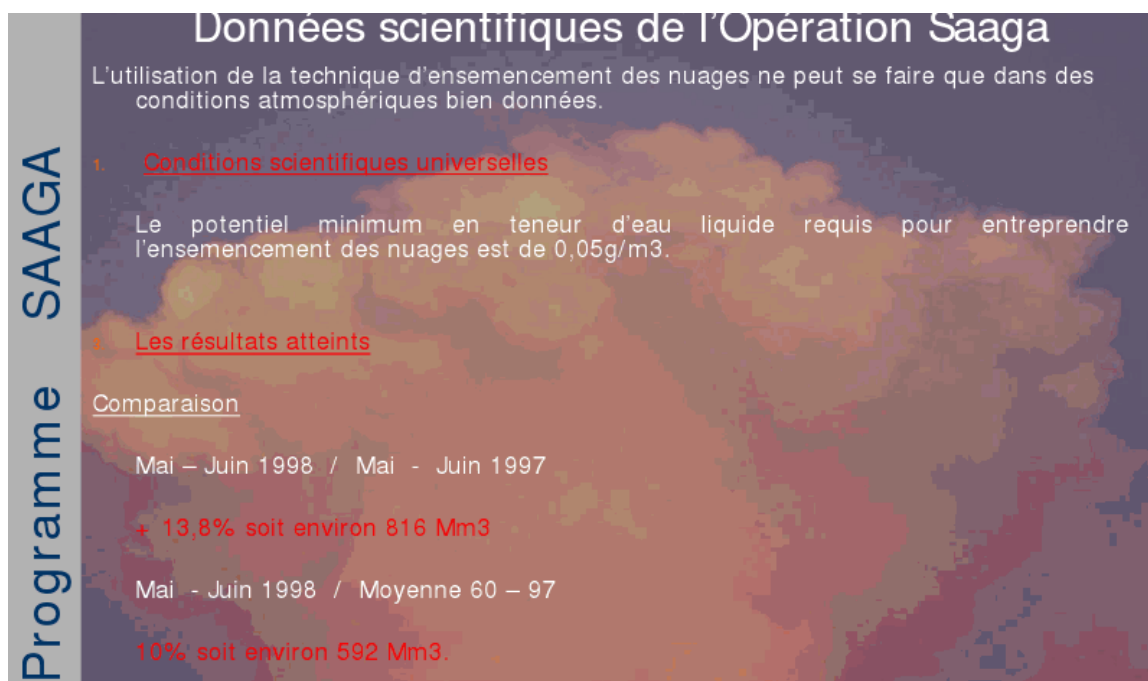
³³ Projet d'appui aux filières agricoles [Project on Support for the Agricultural Sector]

³⁴ Programme de développement rural durable [Program for Sustainable Development in Rural Areas]

³⁵ Banque Ouest-Africaine de Développement [West African Development Bank]

	building				
PICOFA ³⁶	adaptation/ mitigation/ food security	12,000 households	USD 26.9 mil	2004-2011	IFAD/BAD ³⁷ /BOAD
PNGT II ³⁸	adaptation/mitigation	210,000 households	USD 114.85 mil	2002-2007	IFAD/WB/ Denmark/
PDRSO ³⁹	rural development	10,000 households	USD 25.2 mil	1998-2005	IFAD/ BOA/ Belgium

Table 5: Impact of Saaga program on rainfalls



³⁶ Programme d'investissement communautaire en fertilité agricole

³⁷ African Development Bank

³⁸ Deuxième projet national de gestion des terroirs

³⁹ Projet de développement rural dans le Sud-Ouest